

Annex B - Comments on the draft REF BREF representing the view of certain members of the forum

Overall Comment Number	Comment from (Forum Member)	Chapter / section No.	Page # (PDF of July'13 Final Draft)	BATC#	Comment description	Proposal for modification	Rationale
1	EEB				The objective of IED is to "prevent, reduce and as far as possible eliminate pollution". The current REF BREF proposal does not achieve this aim at all. The levels are made for keeping the current level of pollution and for protecting the major part of refinery industry from investing in environmental protection and innovation.	Repeat the final TWG meeting based on a wide data collection and based on "best" performing plants ONLY according to the spirit of the IED . Determine BATAELs cutting off a high number of polluting installation to enforce them making investments in pollution control and environmental protection.	The current REF BREF proposal is not fit for purpose as it does not contribute to progress and pollution reduction in the sector. As stated in the binding (for the stakeholders concerned, including the EIPPCB) guidance document for the BREF review "the BREF should serve as a driver towards improved environmental performance across the Union." Comparing the BATAEL values of the 2003 BREF with the current new draft of 2013 for the majority of pollutants actually constitutes a SETBACK of environmental performance / and significant WORSENING of the BATAEL. As it stands it is not fit for purpose and should NOT go to a comitology vote.
2	Austria				The restrictive procedure of "The submitted data will only be dealt with by European IPPC Bureau personnel" is not in line with the IED or the IPPC directive which require an information exchange between Member States, NGOs and industry. This approach caused a significant drawback on the Seville process since neither Member States nor environmental NGOs did have fill information and thus were not able to assess and evaluate the proposed BAT values. It has to be clearly stated that IED provisions must not be overruled by the TWG.	According to Art. 13 IED all information regarding emissions and abatement technologies (those information cannot be claimed as business sensitive, since - regarding IED Art. 24 and the directive on public access to environmental information 2003/4/EC - environmental and compliance are public) shall be made available to the whole TWG (i.e. questionnaires on BATIS, which allow a clear reference to the individual units).	Regarding IED Art. 24 environmental and compliance data are public. Furthermore the implementing decision 2012/119/EU on the collection of data and on the drawing up of BAT reference documents states clearly that the focus on plant specific data and the shared information between the members of the TWG are the basis to asses BAT. Furthermore the information exchange based on plant specific data is common practice since 1997. Otherwise MS and NGOs are excluded from the assessment process and no scrutiny of the submitted data (time reference, only normal operating conditions, etc.) and of the EIPPCB proposal is possible. Without these prerequisites neither the derived values nor the revision process can be accepted.
3	Austria				The change from daily to monthly averages in 2012 without reassessing the values on the basis of plant specific data can not be accepted. Upper BAT AELs more than doubled in comparison to BREF 2003 as BAT Conclusion in 2012 are unacceptable (see Comment Nr. 12). Upper BAT AELs for combustion units as high as the exceptional provisions in Annex V Part 1 IED concerning plants that were granted a permit before 27.November 2002 are unacceptable as BAT conclusion 2012.	Short time averages should be provided (i.e. daily averages) for BAT-AELs since they are necessary regarding environmental protection and compliance. Additionally provided long term averages may be beneficial but their technology specific relation to short term averages has to be derived accurately.	The whole revision process of the BREF Refineries was mainly based (besides yearly averages provided in Chapter 3) on daily averages. Especially the proposal for BAT-AELs were based on daily averages until shortly before the final meeting (D2 Rev. 2). A last-minute change from daily to monthly averages without reassessing the values can not be accepted. The proposal for BAT-AELs were based on daily averages. Furthermore a change to longer averaging periods should show a significant reduction of the values since typical daily fluctuations should have no impact.
4	Sweden				General comment: We are in favour of as much transparency as possible. All reported emission data and information regarding techniques should have been available for the TWG and the BREF document should be as transparent and informative as possible.	Publish the names of refineries in the BREF document as much as possible.	In order to increase the readability and use of the document transparency is important. See also 2.3.7.2.9 and 5.5 in Commission decision 2012/119/EU
5	Germany				General comment: Early in the review process, unfortunately the decision was taken not to publish the questionnaires in BATIS (disclaimer on the questionnaires: "The submitted data will only be dealt with by European IPPC Bureau personnel"). The evaluation of the results by TWG-members was subsequently difficult and sometimes not possible. The applied procedure is also not in line with the spirit of the guidance IEF 20-4 from June 2008 on the collection and submission of data. It would have been desirable that the EIPPCB would have taken a clearer position in this regard. Agreements on the IEF level and the agreed spirit of the information exchange on BAT shall not be overruled by the TWG.	We would appreciate if the questionnaires in BATIS would be published (after seeking agreement with the refineries that have provided filled-in questionnaires). Please share the names of the refineries that are referred to in the additional data provided by CONCAWE in May 2012 and that were used by the EIPPCB to derive BAT-AELs. If confidential business information or sensitive data are included, data can be shown in anonymised manner or be removed from the questionnaires or other data sources. We recommend to re-open the discussion on TWG level.	In view of the fact that BATs and BAT-AELs have become more binding under the IED, transparency or traceability is particularly relevant; BAT-AELs should be derived from traceable and accessible information, which can be checked by the whole TWG. The TWG members could obviously not trace back any data to individual questionnaires and was thus unable to assess if those BAT-AEL were justified. All TWG members must be in a position to assess and verify whether the data base for BAT-AELs is appropriate or whether or not the refineries selected for the data collection by use of questionnaires and other means have really implemented BAT. It must also be possible for the TWG members to determine whether or not the provided emission data are correct and include (or not) e.g. other than normal operating conditions, and whether the BAT conclusions have been derived correctly. Sets of data at individual-installation level must be available to all TWG members and are indispensable in order to exchange BAT information. As MS are faced with the consequences of today regulation (implementation of BAT under the IED regime) we think the explanation of the EIPPCB at the last Art. 13 Forum for the chosen non-traceable procedure is not sufficient or satisfying (provisions of the Guidance for the exchange of information (2012/119/EU) available not before 02/2012).
6	Germany				General comment: The information exchange on BAT and the determination of BAT is based on sharing collected data with other TWG members and the EIPPCB. For this reason all participants in the information exchange must have the opportunity in a reasonable time to evaluate data, from which conclusions are derived. It is difficult for German regulators and permitting authorities to base their future ELVs (that will at least partially be transposed from BAT-AELs of the BREFs) on BAT conclusions and data that are not possible to be validated by us.	EIPPCB to clarify data basis and data selection process for derivation of BAT-AEL. Make sure traceability of BAT-relevant data.	For the revision of the REF BREF, data were collected by the method of questionnaires. Because of the disclaimer on the questionnaire, that states that only the EIPPCB will receive and assess the submitted data, the completed questionnaires were not entered into BATIS. After publishing the second draft the industry organisation CONCAWE provided additional anonymised data. We think these data led to changed BAT conclusions (monthly instead of daily averages and higher emission values). Also here, the TWG members should have had the chance to check the accuracy and completeness of the provided data and whether or not these examples are good reference plants for deriving BAT conclusions. Data however were anonymised and verification by MS were not possible. It was unfortunately also not transparent for the TWG members that the EIPPCB was intending to use new data provided e.g. in May 2012 as a basis for the new BAT-AEL proposals. We would have appreciated it, if EIPPCB would have informed the TWG, that new and very relevant data had been submitted by CONCAWE.
7	EEB	3		115	Chapter 3 does not provide sufficient basis for deriving BAT conclusions. The information collected was and is not transparent to the members of the TWG as the questionnaires were "only be dealt with by European IPPC Bureau personnel". This was and is against the rules of the IED on exchange of information between EC, Member States, industry and environmental NGOs. EEB is not able to assess whether BAT conclusions were built on a full picture of the sector and on a selection of indeed the best performing plants according to the official criteria of what constitutes "best" according to the IED. For this reason, EEB does not accept the outcome of the process and calls for prior clarification of the derivation basis for BATAEL for the final draft.	Questionnaires of refineries shall be made available to the TWG, allowing the evaluation of environmental performance data and related techniques. The final TWG meeting shall be repeated on the basis of the current proposal, allowing all TWG members enough time to evaluate the data base.	IED 2010/75/EU (Article 24) and Directive 2003/4/EC on Public Access on Environmental Data underline that environmental permitting and monitoring data are not confidential. The TWG was unable to assess BAT and BATAEL proposals of the Bureau as no transparency on data was achieved. A prior clarification of the derivation basis for BATAEL for the final draft needs to be conducted, also to provide a proper basis for ELV derivations by the competent authorities at a later stage

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8	EEB	3			115	-	Chapter 3 should provide a picture of the entire sector regarding emission concentrations achieved, appropriate for selecting best performing units and analysing related abatement techniques in chapter 4. The data now included in chapter 3 (e.g. figure 3.26, 3.27, 3.28, 3.33, 3.34, 3.36) do not allow an evaluation whether a full sector picture is achieved because no information on origin and coverage of the data is given.	Include information on coverage of the data to prove that the sector picture is complete. Indicate which countries and which number of installations or specific units is missing in each sub-chapter. EEB doubts that a full picture is achieved and assumes that e.g. data of the country with highest number of refineries and high level of environmental protection is not included or not well covered (Germany).	REF BREF Drafts 1 and 2 (2012) did not give an overview on concentration data in chapter 3. Revised REF BREF Draft 2 (2013) has taken up a lot of data in a late stage without indicating whether this picture covers the entire sector. We appreciate that CONCAWE delivered a lot of additional data for Draft 2 (2013). However, if such a high amount of new data is received by the Bureau (which should be normally presented in Draft 1 based on the questionnaires), a new Draft should be published for commenting. Data should allow an assessment about the coverage of the sector.	
9	EEB	4			240	-	Chapter 4 should present ONLY best performing units identified in chapter 3 data collection analysing the techniques for achieving best performances. It seems, that due to late delivery of data for chapter 3, operational data of chapter 4 was not adapted. It does not take up best performing units presented in chapter 3, presenting more detailed information (e.g. on min/max/5-Percentile/95-Percentile values) and related techniques.	Revise operational data of chapter 4. Base chapter 4 on only on best performing units and exclude low performing units. Present detailed information on these best performers (e.g. variation of daily averages, min/max/average/5-/95-Percentile data). A prior clarification of the selection basis for BATAEL for the final draft needs to be conducted	Chapter 4 should present best performing units identified in chapter 3 data collection analysing the techniques for achieving best performances.	
10	EEB	4			240	-	High amount of new data was inserted between Draft 2 (2012) and Draft 2 (2013). In this case, time for commenting should be given to TWG for appropriate assessment.	Provide sufficient time for technical commenting of new data in Draft 2 (2013). Repeat final BAT conclusions debate.	All TWG members should be given time to assess new information inserted in BREF draft documents before final BAT Conclusions debate. This was not the case with draft 2 (2013) of the REF BREF.	
11	EEB	4	5	5	2	290	-	Clearly distinguish 3-field or 4-field ESP for FCC in separate chapters or in different paragraphs when describing ESPs, in particular when presenting operational data on performance. Clearly flag all units showing whether they are provided with 3- or 4-field ESP (missing in descriptions of figures 4.15, 4.16, 4.17). Add second figure of 4-field ESP of German FCC unit provided by Ökopoll (showing better performance than figure 4.17). Provide detailed emission data in tables with min/max/average/5-/95-Percentile and related technique (e.g. with ammonia injection, without ammonia injection) for best performers.	Revise operational data of chapter 4. Base chapter 4 on only on best performing units and exclude low performing units. Present detailed information on these best performers (e.g. variation of daily averages, min/max/average/5-/95-Percentile data). Consider all data provided by EEB on good FCC units in Germany (both tables to be reported)	Chapter 4 should present best performing units identified in chapter 3 data collection analysing the techniques for achieving best performances. It is not clear why the second example of a -better performing- FCC unit was not reported in the Final draft.
12	Austria	4	5	7		312-313	-	Chapter 4.5.7 regarding abatement techniques and emissions variability of FCC units and Table 4.31 The late introduction (post 2nd draft) of such a substantial amount of data regarding FCC units which have a severe effect on the proposed BAT-AELs is not acceptable (i.e. change from daily to monthly averages). This is especially critical since the provided information are neither transparent nor verifiable.	The chapter should be deleted and the BAT-AELs should be derived from transparent and assessable information, which can be reproducibly checked by the whole TWG, including: • unit (clear reference) • short/long term averages • normal operating conditions	The information shown in this chapter were provided in a non-transparent way which does not allow any verification or scrutiny. A technical analysis of the data showed evidence that the values are NEITHER from well performing plants NOR that other than normal operating conditions were excluded from the gathered data sets. Furthermore no information on short time averages is provided. Furthermore regarding the very high emission figures of several units it is very questionable if the samples considered are among well performing plants. General emission figures should be presented in Chapter 3. However we appreciate that at least the units "3" and "O" have been removed since they showed very high emission values and could not be considered as BAT.
13	Austria	4	5	7		314	-	Fig. 4.25 - Fig. 4.28.: It is very questionable if the detailed emission figures (in context to Tab. 4.31) are among the well performing units (c.f. Chapter 3). Neither is it always clear if abatement techniques were applied (e.g. refinery "YZ") nor why the spots of high emission (daily averages) occur. It has to be expected that other than normal operating conditions were not excluded.	The chapter should be deleted and the BAT-AELs should be derived from transparent and assessable information, which can be reproducibly checked by the whole TWG, including: • unit (clear reference) • short/long term averages • normal operating conditions	The information shown in this chapter were provided in a non-transparent way which does not allow any verification or scrutiny. A technical analysis of the data showed evidence that the values are NEITHER from well performing plants NOR that other than normal operating conditions were excluded from the gathered data sets. Furthermore no sufficient information on short time averages is provided.
14	Germany	4	7	3		324	-	In this section new data have been implemented after D2. These data were first revealed in the revised D2 (dated end of February 2013). Consequently, these data could not be evaluated in an adequate time by TWG members. It was impossible to properly assess the basis for deriving these BAT conclusions.	In future information exchanges on BAT it is recommended that the EIPPCB highlights for the whole TWG information received from TWG members which will especially be relevant for deriving BAT-AELs. It seems that the CONCAWE contribution submitted e.g. in May 2012 is of this type and possibly also other data submitted later. However, a number of TWG members were not aware of the importance of this new information. In practical terms, every TWG member should have received a short note from the EIPPCB that - in cases where it applies - provided new data are considered as a key piece of information that will most probably lead to changes of the proposed BAT-AELs (as carried out for the CWW BREF in a note dated 16.07.2013 in an exemplary manner) and that it is recommended to scrutinize them carefully. It is not reasonable to expect TWG members to follow ALL information downloaded into BATIS because there is very significant data that are used for deriving BAT, and obviously less relevant information of the type "background information".	Relevant e.g. with regard to conclusion No. 32, table 5-8. It seems that based on these new data presented in Section 4.7.3. of the REF BREF, new BAT-AELs have been derived. This process does not seem transparent for us.
15	Germany	4	10	3	2	357	-	idem previous comment	idem previous comment	Relevant e.g. with regard to conclusion No 34, table 5-9. It seems that based on these new data presented in Section 4.7.3. of the REF BREF, new BAT-AELs have been derived. This process does not seem transparent for us.
16	Austria	4	10	3	2	358	-	Table 4.43: The late introduction (post 2nd draft) of such a substantial amount of data regarding gas turbines which have a severe effect on the proposed BAT-AELs is not acceptable (i.e. change from daily to monthly averages). This is especially critical since the provided information are neither transparent nor verifiable.	The chapter should be deleted and the BAT-AELs should be derived from transparent and assessable information, which can be reproducibly checked by the whole TWG, including: • unit (clear reference) • short/long term averages • normal operating conditions	The information shown in this chapter were provided in a non-transparent way which does not allow any verification or scrutiny. A technical analysis of the data showed evidence that the values are NEITHER from well performing plants NOR that other than normal operating conditions were excluded from the gathered data sets. Furthermore no sufficient information on short time averages is provided. Furthermore regarding the very high emission figures of several units it is very questionable if the samples considered are among well performing plants. General emission figures should be presented in Chapter 3.

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17	Austria	4	10	7	387	-	Chapter 4.10.7 regarding abatement techniques performance and emission variability The late introduction (post 2nd draft) of such a substantial amount of data regarding combustion units which have a severe effect on the proposed BAT-AELs is not acceptable (i.e. change from daily to monthly averages). This is especially critical since the provided information are neither transparent nor verifiable.	idem previous comment	The information shown in this chapter were provided in an non-transparent way which does not allow any verification or scrutiny. A technical analysis of the data showed evidence that the values are NEITHER from well performing plants NOR that other than normal operating conditions were excluded from the gathered data sets. Furthermore no information on short time averages is provided.
18	EEB	4	10	7	387	-	The chapter is not useful. A commenting period is necessary if such an amount of new data is included.	Delete chapter. Shift data regarding each emission parameter to the section where the emission parameter is discussed. Delete bad performers from chapter 4. Comment on sector coverage (e.g. by providing country origin of data). Include at least monthly average value, if possible 5-/95-Percentiles. Include short term performance data. Provide time for commenting of TWG.	Such information should be found in the related sections, not as an overview table. Information restricted to min/max data is not useful to describe normal operation mode as these values are generally outliers. Presenting only monthly average data is not sufficient for BREF documents as permit writers need guidance on short term data. TWG should be able to comment on high amount of new data included in a draft BREF document.
19	Austria	4	10	7	389	-	Table 4.61: The late introduction (post 2nd draft) of such a substantial amount of data regarding combustion units which have a severe effect on the proposed BAT-AELs is not acceptable (i.e. change from daily to monthly averages). This is especially critical since the provided information are neither transparent nor verifiable.	The chapter should be deleted and the BAT-AELs should be derived from transparent and assessable information, which can be reproducible checked by the whole TWG, including: <ul style="list-style-type: none"> unit (clear reference) short/long term averages normal operating conditions 	The information shown in this chapter were provided in an non-transparent way which does not allow any verification or scrutiny. A technical analysis of the data showed evidence that the values are NEITHER from well performing plants NOR that other than normal operating conditions were excluded from the gathered data sets. Furthermore no information on short time averages is provided. Furthermore regarding the very high emission figures of several units it is very questionable if the samples considered are among well performing plants. General emission figures should be presented in Chapter 3.
20	EEB	4	24		536	-	Chapter 4 is not linked with chapter 3 data collection.	Repeat data of best performers identified in chapter 3 data collection. Present related reduction techniques for each parameter or for a combination of parameters. Provide time for commenting of TWG.	Chapter 4 on water emissions should be based on best performing plants identified in chapter 3 regarding each environmental pollutant or (as water treatment allow) a combination of parameters. TWG should be able to comment on data from best performing plants before making BAT conclusions.
21	Greece	4	25		574	-	The section should not be deleted. These techniques are applied in the sludge/biosludge treatment.	Stabilisation/solidification methods as solid waste treatment methods should be included in this BREF.	Solidification, stabilisation and encapsulation are often combined to achieve the waste treatment purpose. These methods have been proven to be successful according to leaching and extraction tests. References: 1) US EPA Report 402-R-96-014, June 1996 Stabilization/solidification processes for mixed waste 2) US EPA Report 542-B-99-002, April 1999, Solidification/Stabilization Resource Guide.
22	Greece	4	25	5	582	-	References list considering application of waste biodegradation in oil and gas industry has to be updated. The section should mention clearly that refinery sludges can be treated by applying the biodegradation process	This section contains methods for the biodegradation of refinery wastes (including refinery sludges) that may be used specifically within refineries on-site. Greece recommends to update (at least) the reference list, as initially requested during the REF BREF revision procedure (see yellow highlighted comment of D2). To this purpose, please find below two references that includes recent examples of the biodegradation application in refinery's waste management: 1. CONCAWE Report 6/03 "A guide for reduction and disposal of waste from oil refineries and marketing installations", November 2003, CONCAWE, 2. Mountouris A., Leventos D., Papadimos D., Antotsios Ch., Papadopoulos St., Vatsaris Ch., Wallner H., Kiroplastis A. and Karnavos N. (2011) "Biotreatment of oil Sludge", Journal of Desalination and water treatment, vol. 33, pp. 194-201.	Greece (and CONCAWE) uploaded various documents (scientific articles, technical reports) in BATIS with recent applications of waste biodegradation applied in many refineries in Europe. Biodegradation consists one of the most cost-effective waste treatment method in countries like Greece where a) climate conditions contribute significantly to the completion of biodegradation reactions and b) there are no available incinerators. Biological treatment and stabilisation /solidification is a widely used treatment of the management of oily sludges .The management of the oily sludges in combination with the environmental target as it is described in 2003/33/ec, meets the environmental objectives and protects human health. The biological treatment as a physico-chemical mechanical treatment is in complete compliance with the target of reduction of energy demands. References 1) CONCAWE Report 6/03 2) A. Mountouris, D. Leventos, D. Papadimos, Ch. Antotsios, St. Papadopoulos, Ch. Vatsaris, H. Wallner, A. Kiroplastis and N. Karnavos (2011) "Biotreatment of oil Sludge", Journal of Desalination and water treatment, vol. 33, pp. 194-201 3)Tien, A. J., D. J. Altman, A. Worsztynowicz, K. Zacharz, K. Ulfig, T. Manko, T. C. Hazen. 1999. Bioremediation of a Process Waste Lagoon at a Southern Polish Oil Refinery - DOE's First Demonstration Project in Poland. M#9. Proceedings Fourth International Symposium and Exhibition on Environmental Contamination in Central and Eastern Europe (Warsaw98). Institute for International Cooperative Environmental Research at the Florida State University. LBNL-44216.
23	The Netherlands				585	-	General comment: The replacement of the IPPC by the IED has had an influence on the ambition levels and on the way in which the exchange of information on BAT has proceeded. The ambition levels do not show much progression compared with the first BREF (2003) and are weaker in some cases, which is a disadvantage for those plants that had to implement the 2003 version. The supplementary information submitted by the industry in the D2 commenting period has lead to substantial adaptations in the BREF (e.g. the change of BAT-AEL's from daily to monthly averages), whilst some BAT-AEL's were raised. For a number of BAT, AEL's have now been adopted based on these new data, that in our view cannot be regarded as data of well performing plants, that give the most effective and advanced stage in the development of activities and their mode of operation.(art. 3 def.10 IED).	A better comparison between well performing plants and other plants could be made by giving more transparency about the data given by different plants.	Information about environmental measures in different plants should in general not be confidential, but in some cases sensitive data and confidential issues could be shown in an anonymized manner.
24	Austria	5			585	-	Change from daily averages to monthly averages - without changing the emission levels - in a very late phase of the revision process is not acceptable.	Short time averages should be provided (i.e. daily averages) for BAT-AELs since they are necessary regarding environmental protection and compliance. Monthly averages may be provided additionally but their technology specific relation must be correct.	The whole revision process of the BREF Refineries was mainly based (besides yearly averages provided in Chapter 3) on daily averages. Especially the proposal for BAT-AELs were based on daily averages until shortly before the final meeting (D2 Rev. 2). Furthermore it is not acceptable to change the averaging period without changing/reassessing the associated emission values.

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25	Austria	5			585	-	The derived BAT-AELs are based on data that are non-transparent. Therefore it is unclear which units, that are shown in Chapter 3, were discussed in Chapter 4 and were the basis of the drawn conclusions. Furthermore it is even questionable if only well performing plants were considered for BAT and BAT-AELs.	BAT and BAT-AELs should be derived from transparent and assessable information, which can be reproducibly checked by the whole TWG, including: <ul style="list-style-type: none"> • units (clear reference) • short/long term averages • normal operating conditions 	To a large extent the derived BAT and BAT-AELs are based on information which were provided in a non-transparent way that does not allow any verification or scrutiny. It has to be suspected that the information provided that way are not exclusively from well performing plants and that other than normal operating conditions were included. Regarding IED Art. 24 environmental and compliance data are public. Furthermore the implementing decision 2012/119/EU on the collection of data and on the drawing up of BAT reference documents states clearly that the focus on plant specific data and the shared information between the members of the TWG are the basis to assess BAT. Furthermore the information exchange based on plant specific data is common practice since 1997. Otherwise MS and NGOs are excluded from the assessment process and no scrutiny of the submitted data (time reference, only normal operating conditions, etc.) and of the EIPPCB proposal is possible.
26	Austria	5			585	-	The argumentation that monthly averages are necessary to cope with large fluctuations on a daily basis can not be followed. Since many BAT-AELs are equal to the minimum requirements to Annex V of the IED the daily averages must only exceed the monthly averages by 10 per cent (regarding installations in scope of Art. 28 IED). Obviously even the EIPPCB did not have access to the detailed data as it is apparent on p. 276 (and p. 280; regarding information on SCR and SNCR units) of the second draft (D2): "Question to CONCAWE: data traceability is crucial! Please could you provide the EIPPCB, on a confidential basis, with the name of the sites concerned so that corresponding questionnaire references could be added? Answer: NO" It is unacceptable to base BAT AELs and subsequently ELVs on data that are not traceable and not possible to be validated by Member States and their authorities.	BAT and BAT-AELs should be derived from transparent and assessable information. The Questionnaires, at least the emission data, shall be made available on BATIS. Short time averages should be provided (i.e. daily averages) for BAT-AELs since they are necessary regarding environmental protection and compliance. Additionally provided long term averages may be beneficial but their technology specific relation to short term averages has to be derived accurately (c.f. Annex V Part 4 IED).	The whole revision process of the BREF Refineries was mainly based (besides yearly averages provided in Chapter 3) on daily averages. Especially the proposal for BAT-AELs were based on daily averages until shortly before the final meeting (D2 Rev. 2). The necessary of monthly averages due to large fluctuations - as claimed by industry - cannot be followed. However monthly averages may be provided additionally but their technology specific relation must be correct.
27	EEB	5			585	-	Time for TWG members' assessment of data newly presented in Draft 2 (2013) of the REF BREF was not sufficient to start final BAT Conclusions debate. Data quality is not sufficient for deriving BAT Conclusions.	Repeat final BAT Conclusions decision after improvement and completion of data presented in chapters 3 and 4 of draft 2 (2013) and related TWG commenting period.	BAT Conclusions should be based on an assessment of emission data by Member States, industry and environmental NGOs. An assessment of newly included data was not possible before the final TWG meeting. Data is lacking information at current stage, in particular regarding its origin and its appropriateness to provide a full picture of the sector. Short term emission data is lacking. Long term (monthly) emission data is often insufficient for deriving BAT Conclusions e.g. in cases where only min and max data is provided.
28	Spain	5	5 7 9 17	25 26 29 32 36 54	585	-	Reassessment of the decision to remove texts on economic viability in the applicability part of BAT 25.II.i (ESP); BAT 26.II.i (non-regenerative scrubbing); BAT 26.II.ii (regenerative scrubbing); BAT 29.I.iv (COS converter); BAT 32.i (ESP); BAT 36.II.i (non regenerative scrubbing); BAT 36.II.ii (regenerative scrubbing); BAT 54.iii (TGTU)	Spain supports the next proposal to reformulate those applicability constraints referred to in BAT 25, 26, 29, 32, 36 and 54 For BAT 25 (II.i) and 32 (i): "For existing units, the applicability may be limited by space availability. For existing units equipped with a 3-fields ESP, the applicability of upgrading to a 4-fields ESP may be limited by the high investment and marginal abatement costs" For BAT 26 (II. i) and ii) and 36 (II. I) and ii): "For existing units, the applicability of the technique may be limited by the high investment and operational costs and may require significant space availability" For BAT 29 (iv) "For existing units, the applicability of the techniques may be limited by the high investment and operational costs and by space availability" For BAT 54: the footnote should read as follows "For retrofitting existing SRUs, the applicability of technique may be limited by the SRU size and configuration of the units and the high investment costs related to upgrading the type of sulphur recovery process already in place".	In the REF BREF Draft 2 Rev.1 release on 26.02.2013, economic elements to assess the applicability of certain techniques in existing units were mentioned in BAT conclusions 24, 25, 28, 30bis, 34 and 60 and were supported by information available in chapter 4. At the Final TWG meeting in March 2013 it was decided to remove any reference to economic considerations as part of applicability restrictions for the application of those specific techniques in existing units because of the terms "economic viability" that were deemed inappropriate. Later EIPPCB deemed as admissible the industry dissenting view aiming to re-instate the applicability restrictions for existing units due to economic considerations in the BAT conclusions. The BREF Guidance Decision (section 2.3.7.2.7) refers to the assessment of the economic viability of a given technique for the sector concerned. It clearly states the economics sub-section under chapter 4 includes cost elements that serve two purposes: a) allowing the TWG to decide (through an assessment made on the basis of the ECM REF) on whether the technique at stake is economically viable and can therefore be BAT for the sector as a whole, and b) when this is the case (the technique is BAT), allowing the TWG to decide which of the economic limitations to its applicability will be recorded in the BAT conclusions chapter. "Economic viability" should not be part of the formulation of applicability constraints for BAT. However the decision made at the final TWG meeting to remove all elements used to assess the applicability of those BAT referred to above was not justified.
29	The Netherlands				585	-	BAT associated emission levels for emissions to air should in general refer to a short term averaging period, i.e. daily averages. In cases of high fluctuations of daily averages that cannot be avoided, (additional or only) monthly averages can be useful.	Present the BAT AEL's as daily averages, and only use monthly averages if considered necessary and when the emissions are continuously monitored.	If emission fluctuations on a daily basis are (very) high, the question could be raised if an installation is well performing and operating stable enough from an environmental point of view. Environmental protection must also be ensured on a short time basis.
30	EEB	5			585	-	Setting short term averages on a daily basis for air emissions as BAT-EALs is essential for local air quality control. BATAEL based on monthly average values are not the right means for adequate pollution control as they allow high short term peak emissions. To avoid this, it is common practice of permitting authorities setting short term average ELVs. The current draft REF BREF (2013) shows a lack of guidance because permitting authorities cannot find the basis for permitting refineries with the necessary short term DAILY average BATAEL. EEB has expressed its split view.	Short term emission BATAELs shall be proposed by the Bureau, associated with the use of BAT. The TWG meeting shall be repeated to define short term BATAELs for the refineries sector.	Short term BATAEL are necessary for air pollution control and for giving guidance for permitting authorities. The CONCAWE Report of March 2009 (see BATIS), titled "Refining BREF review – air emissions, prepared by the CONCAWE Air Quality Management Group's Special Task Force on Integrated Pollution Prevention and Control (AQ/STF-70)" proposed to generally base BATAEL on daily average values. Read page 84 (Conclusions): "Consistent with the current BREF proposed AELs should be based on daily averages unless specified otherwise and comprise ranges of values with the position of specific technologies within the ranges identified." data collection was intended to be based on short-term emission data. The questionnaires aimed at collecting mainly short-term average data. The sudden u-turn on this approach is not justified.
31	UK	5	1	4	592	4	This comment relates to BAT4 and the requirement to continuously monitor for dust. Continuous monitoring of dust is required for all combustion units >50 MW. This seems unnecessary for gas fired plant, as the BATAEL in BAT35 only applies to multi fuel fired plant.	Footnote (8) to the table in BAT4 removes the requirement to monitor for metals from gas fired plant, the UK believes it was intended to also be applied to the requirement to continuously monitor dust from gas fired plant.	If there is no BATAEL then there is no justification to carry out continuous monitoring.
32	Sweden	5			592	4	View on BAT 4 regarding monitoring of dust from gas fuelled units	Add foot note 8 to i) monitoring of dust from units fired with 100 % gas	When refinery fuel gas is the only fuel there is not a need to monitor dust continuously

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Overall Comment Number	Comment from (Forum Member)	Chapter / section No.	Page # (PDF of July'13 Final Draft)	BATC#	Comment description	Proposal for modification	Rationale
33	CONCAWE, Slovakia	5 1 4	592	4	Continuous monitoring of dust is required for all combustion units > 50 MW. However this should not apply to gas fired units (same approach as the one applied to metals emissions).	We suggest to refer to footnote (8) in the case of dust monitoring : i) Monitoring of SOx, NOx and dust (8) emissions	Consistency within REF BREF chapters. Continuous measurement of dust is only justified in case of liquid/solid fuels fired combustion units. Consistency with Chapter 5.9. and BAT 35 where no BAT AELs are set up for gas fired combustion units.
34	Czech Republic, Poland	5 1 4	592	4	Continuous emission measurement is required for combustion units of 50 up to 100 MW. Continuous measurement should be required for combustion units > 100 MW only as it was in the previous BREF version. For combustion unit < 100 MW minimum frequency once a year should be maintained.	To change text for the column "Minimum frequency": Periodic emission measurement in a frequency once a year.	Periodic measurement carried out by independent authorized company is sufficient to prove compliance with limits. Maintaining of continuous emission measurement leads to additional costs but does not bring any improvement in environmental performance. Combustion units > 100 MW require continuous monitoring by direct measurements because of their substantial environmental impact. On the contrary, the impact of smaller sources is no longer such significant. Thus, periodic measurements in conjunction with the monitoring of technological parameters directly affecting on emission, such as temperature, oxygen content, the quality of fuels and raw materials are sufficient from environmental point of view and do not generate excessive (or even unreasonable) costs.
35	Sweden	5 1 4	592	4	View on BAT 4 regarding lack of definition of "multi fuel firing"	Multi fuel firing should either be defined how much gas resp oil is allowed. We suggest that a weighted value is used as BAT-AEL where table 5.10 is used for 100% gas and table 5.11 is used for 100%oil. In between a weighted BAT-AEL is calculated proportionately depending on the share of gas resp. oil	It is not acceptable to allow much higher BAT-AEL for units using a small portion of oil. This will create a situation where refineries are encouraged to use a small amount of oil in gas fired units to get a high BAT-AEL.
36	Czech Republic, Poland	5 1 4	593	6	Original text in the document BREF D2 REV 1 (before final TWG meeting) "BAT is ...using an appropriate combination of the techniques..." should be maintained. Requirement to carry out all techniques simultaneously is excessive. (PL) In our opinion all mentioned techniques overlaps. Obligatory requirement to use all techniques mentioned in BAT 54 seems to be not in line with art. 15.2 of IED and the general rule being applied for every BREF saying that "techniques listed and described in these BAT conclusions are neither prescriptive nor exhaustive. Other techniques may be used that ensure at least an equivalent level of environmental protection". Therefore, we propose to replace "all techniques" by: "one or a combination of the following techniques (or techniques given below)".	To change the text: BAT is to monitor diffuse VOC emission to air from the entire site by using an appropriate combination of the following techniques:	(CZ) It is excessive (inadequate and excessive costs) to require using all techniques at the same time. For example the execution of LDAR method is sufficient to monitor fugitive emission from flanges, seals etc. (PL) Due to local conditions, including the possibility of the existence of other industrial complexes in vicinity of the refinery, and their related impact on the measurement results, the decision on the most appropriate VOC monitor methods should be taken by the refinery operator.
37	EEB	5 1 5	594	8	reservation on the upper end value since BATAEL are well below <5 mg in case of SCR	Considering the huge difference of ammonia emissions to air by a factor 3! (SNCR compared to SCR) we propose to require SCR for units with capacity exceeding 50MWth = BATAEL <5 mg/Nm3.	
38	CONCAWE	5 1 5	594	9	We support making BAT 9 consistent with BAT 54. The case of specific refineries with a small production of sour gases and no installed sulphur recovery plant should be addressed.	Modify text as follows: "In order to prevent and reduce emissions to air when using a sour water steam stripping unit, BAT is to route the acid off-gases from this unit to an SRU or any equivalent gas treatment process. It is not BAT to directly incinerate the untreated sour water stripping gases(1). (1) May not be applicable for stand-alone lubricant or bitumen refineries with a release of sulphur compounds of less than 1 t/d."	Small specialised refineries will generate small quantities of sour gases as a result of their operations but in insufficient quantities to justify installing a sulphur recovery plant. This was recognised in the TWG meeting and the final BAT conclusion 54 but internal consistency between BAT needs to be ensured.
39	Czech Republic	5 1 7	595	11	Original text in the document BREF D2 REV 1 (before final TWG meeting) "BAT is to use a combination of the techniques..." should be maintained. Requirement to use all techniques would result in complete rebuilding of refinery water systems and this is technically unfeasible at existing units or existing installation. Also would require inadequate and excessive costs.	To change the text: In order to reduce water consumption and the volume of contaminated water, BAT is to use one or an appropriate combination of the following techniques:	If one or a combination of the technique is sufficient to reach desired parameters then it is not justified to require all of them which would lead to additional inadequate excessive costs.
40	EEB	5 1 7	595	12	ELV for water emissions are usually referring to 24-hour sample or to mixed grab sample e.g. all 2 minutes (if flow proportionality is proven). REF BREF draft 2 (2013) does not provide a basis for permitting authorities as short term BATAEL are missing. EEB has expressed its split view.	Repeat BAT Conclusions discussion for inclusion of short term BATAEL for water emissions.	BREF documents should be the basis for permitting. Permitting authorities need short term BATAEL on water emissions. Art 13 (2) (a) IED states, that the exchange of information shall, in particular, address the performance of installations and techniques in terms of emissions, expressed as short- and long-term averages, where appropriate, and the associated reference conditions (...)
41	Czech Republic	5 1 7	595	12	Original text in the document BREF D2 REV 1 (before final TWG meeting) "BAT is to use a combination of the techniques..." should be maintained. Requirement to use all techniques would be excessive. Design of WWTP should take into consideration refinery configuration and quality of streams entering WWTP. Also would require inadequate and excessive costs.	To change the text: BAT is to remove soluble and insoluble polluting substances by using one or an appropriate combination of the following techniques:	If one or a combination of the technique is sufficient to reach desired parameters at the discharge then it is not justified to require all of them which would lead to additional inadequate excessive costs.
42	Czech Republic	5 1 7	596	12	Footnote No. 6 concerning total Nitrogen concentration when nitrification/denitrification steps are used: not clear how the value 15 mg/l was determined. Should be used only general statement that when denitrification/nitrification is used than levels below 25 mg/l can be achieved. Proposal: to delete footnote No.6	To delete footnote No.6.	Might lead to more strict requirements from state authority during limits discussion even though it is not necessary from desired parameters at the discharge.

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Overall Comment Number	Comment from (Forum Member)	Chapter / section No.			Page # (PDF of July'13 Final Draft)	BATC#	Comment description	Proposal for modification	Rationale
43	Greece	5	1	7	596	12	Increase values of AELs for direct wastewater discharges to the sea	Our proposal is that the range of limits from the wastewater treatment plants must be put in relation with the existing condition of the receiver. According to Water Framework Directive the monitoring of hazardous substances should be yearly or even less depending on the present values. Our proposal is presented below for the achievable limits of wastewater treatment plant effluent, routed to the sea: TSS(mg/l):40, COD(mg/l):150, Lead(mg/l):0.1, Nickel (mg/l):0.5, Benzene (mg/l): 0.5	Regarding the wastewater management, it must be taken into consideration the Water Directive 2000/60/EC, recognizing the different kind of receiver and that the range of limits should be consistent with the receiver. The waste treatment effluent of Greek refineries routes to the sea. In addition the ranges of achievable levels from the waste treatment plants are not consistent with the results of CONCAWE Report 02/2010, including 105 refineries in Europe and there is no distinction between the achievable emission levels and the applied technology. The possibility of modification of water monitoring plan should be accepted, in particular the measurements of hazardous substances, whose concentrations are very low.
44	EEB	5	1	7	596	12	Table 5.3 is missing BATAEL for phenol as it was declared spontaneously a "non-priority" parameter.	Repeat BAT Conclusions discussion for inclusion of BATAEL for phenol emissions.	Phenol is classified as toxic and mutagenous (cat. 3) substance. Therefore permitting authorities should set ELVs on phenol. + See comment above.
45	EEB	5	1	7	596	12	BATAEL Conclusions on HOI (Hydrocarbon oil index) was determined by data spontaneously mentioned by different Member States without basis provided in chapters 3 and 4.	Repeat BATAEL Conclusions discussion for HOI BATAEL, based on data that can be found in chapters 3 and 4.	Total carbons or HOI are essential water pollution parameters of refineries. Deriving BAT Conclusions should happen on a serious data basis which can be checked in chapter 4. + see comment above
46	EEB	5	1	7	596	12	BATAEL Conclusions on metals were not determined based on data provided in chapters 3 and 4. See for example upper value of Lead BATAEL = 0.03 mg/l (yearly average). This value is three times higher than 0.01 mg/l which is described as 95-Percentile of 25 annual average data provided in Table 3.16 on page 151 ("Typical refinery influent/effluent annual average composition and load") and therefore not considered as associated with BAT. See also upper value of Nickel BATAEL = 0.1 mg/l (yearly average). This value is the same as the value of 0.1 mg/l described as 95-Percentile of 22 annual average data provided in Table 3.16 and therefore covering all but one installations, hence not only those installations using BAT.	Repeat BATAEL Conclusions discussion for Ni and Pb, based on data that can be found in chapters 3 and 4.	Metal emissions of Pb and Ni are of environmental concern and should be prevented / significantly minimised in refinery water emissions. BATAEL should be linked to data of chapters 3 and 4 and associated with best performance, not covering the entire sector. + see comment above on EQS.
47	EEB	5	1	7	596	12	It was argued that too little data is delivered to derive BATAEL for vanadium. However, BATAEL Conclusions on vanadium can be derived from data provided in chapters 3 and 4.	Analyse 10 data sets on vanadium delivered for Table 3.18. Derive BATAEL by setting upper value lower than 95-Percentile of data.	Metal emissions of V are of environmental concern and should be minimised in refinery water emissions. The BREF should give guidance to permitting authorities. BATAEL should be linked to data of chapters 3 and 4 and associated with best performance. 10 data can be sufficient to derive BATAEL ranges.
48	EEB	5	1	7	596	12	Table 5.3 needs to be reviewed in depth in order to take into account the new Environmental Quality Standards set under Directive 2013/39 of 12 August 2013. Certain MAC values have been strengthened for a list of Priority Substances (PS) and Priority Hazardous Substances (PHS). The IED requires the operator to go beyond BAT in order to achieve those MAC values and obliges Immission source REDUCTION measures for PS as well as immission source PHASE OUT for PHS. The table needs to be reassessed on the basis of the new EQS	Re-assess all BATAEL which are listed as PS and PHS according to the Annexes and define appropriate BATAEL that: 1°) guarantee compliance with the MAC values = include BATAEL based on ug/l with the same basis of the EQS for the type of water concerned 2) set an obligation for the operator to implement and demonstrate compliance with the immission reduction obligation for PS 3) set a phase out obligation for the PHS substances to be achieved by 2020, as required according to the OSPAR Convention and the Water Framework Directive. 4) require continuous monitoring for ALL PS and PHS listed in the new EQS. This proposal concerns in priority the following pollutants: benzene, hexachlorobenzene (PHS), pentachlorobenzene (PHS), benzofluor anthene, benzo (fluor anthene, benzo (g, hg, l) perylene, trichlorobenzenes, cadmium and compounds (PHS), Chloralkanes (PHS), lead and compounds, mercury and its compounds (PHS), Nickel and its compounds, Nonylphenol (PHS), Octylphenol, Pentachlorophenol, PAH (PHS),	The IED requires the operator to go beyond BAT in order to achieve EQS such as the Directive 2013/39 on EQS in relation to water quality. A clear compliance requirement is to be contained in the BREF since non-compliance is not an option and in order to fully implement the polluter prevention and pays principle. hose MAC values and obliges Immission source REDUCTION measures for PS as well as immission source PHASE OUT for PHS. The table needs to be reassessed on the basis of new findings and requirements of the EU legislator. The Commission as a guardian of the Treaty has to safeguard those requirements. Safeguarding the good ecological and chemical status of surface water is clear policy objective to be achieved according to international treaty obligations by 2020 at the latest (Ospar convention). Pollution prevention at source is the most cost-effective and "fair" measure to be taken
49	Poland	5	1	10	598	18	Bubble concept should be included in BAT Conclusions chapter of REF BREF. Therefore Poland sustain its dissenting view expressed during final meeting of REF TWG.	"Bubble concept" should be considered as "technique" and included into chapter 5 BAT conclusions. We propose to add new point 19 in section 5.1.10 describing ways of effective reducing of emissions to air form refinery sites by applying bubble approach.	Bubble concept, as in our opinion was agreed during final TWG meeting, is a technique being in line with definition of "best available techniques" stated in IED Article 3, par. 10: "techniques" includes both the technology used and way in which the installation is designed, built, maintained, operated and decommissioned. Applying "bubble" concept the same or even better environmental effect can be achieved as by applying BAT AELs for single emission sources. Therefore bubble approach should be treated as a technique, used for an efficient and effective air emissions management, being in line with BAT definition.
50	Greece	5	1	10	598	18	"Bubble concept" must be included as an alternative method for integrated management of air emissions at refinery level.	Greece recommends to include in the Paragraph 5.1.10 the Bubble concept technique as an alternative to the individual BAT-AELs. Greece fully supports the proposal of CONCAWE-EUROPIA that has been uploaded to BATIS (Forums > Mineral Oil and Gas Refineries > 02 Revision of REF BREF > 14 Forum meeting: 2013 07 24 EUROPIA letter to the Forum members about REF BREF BAT conclusions and the bubble approach.pdf), i.e. inclusion a separate paragraph include BAT formulation, description of the technique, applicability constraints and BAT-AELs Table (formulas to derive AELs at refinery site level).	Greece believes that the REF BREF BAT Conclusions, by including the bubble approach, will meet the IED requirements while remaining cost-effectively achievable for the Greek refineries. This is also clearly demonstrated for the majority of EU refineries by a recent CONCAWE survey where bubble approach delivers the same or lower emissions as compared to a scenario where the individual BAT AEL would be applied, but at significantly lower cost. It must also be considered that Greece includes Bubble limit values in current refineries' environmental permits, which are constantly monitored and evaluated, in order to ensure a high level of accuracy and an equivalent (to the application of individual BAT-AELs) level of environmental protection. Finally, considering a realistic view on the availability of the capital today, it must be underlined that exclusion of the "bubble approach" from the Chapter 5 as a BAT will dramatically increase the cost of investment needed by the majority of the EU refineries, without a significant environmental benefit.

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51	CONCAWE	5	1	10	598	18	The site bubble is a best available technique which has to be included in the BAT conclusions chapter	1°) refer the site bubble by introducing the following statement in the General consideration of the upcoming Decision on BAT conclusions for the REF BREF: Due to the specificity of refineries, including the refinery energy systems, emissions to air are often evaluated at a refinery installation level by considering the total emissions from a clearly identified set of units. Consistent with the application of this management technique of air emissions, and as an alternative to considering each of the individual BAT conclusions related to emissions to air on their own, these BAT conclusions, or a subset of these BAT conclusions, can be considered on an aggregated basis (expressed either as a weighted average concentration and/or total emission load) to establish BAT associated emission levels ("BATAELs") for the installation as a whole which should provide emission levels which are equal or lower to the total emission levels that would be achieved on the basis of application of the individual BATAELs concerned. 2°) Insert an additional BAT conclusion as BAT 18bis based on the proposal attached to our 24/7 letter circulated to the forum members (uploaded on BATIS - subfolder 13 'specific comments on the bubble approach).	Design and operation of the refinery site can be optimised to ensure that the total emission levels are equal or lower than the levels that would be achieved on the basis of application of the individual BAT AELs concerned by the REF BREF BAT conclusions. Achieving an equivalent level of protection of the environment in a cost-effective manner should be fully recognised having regard to the specificity of refineries.
52	France	5			598	18	The chapter 5 "BAT conclusions" does not include the technique of the "bubble approach" for the management of air emissions at refinery level.	Recommendation to include in the chapter 5 "BAT Conclusions" the technique of the "bubble approach" as an alternative to the individual BAT-AELs. (written proposal was attached)	Concerning the bubble approach, France submitted a formal dissenting view to the EIPPC Bureau (March 2013) and sent a note including a proposition of BAT conclusions on this point (dated 13 May 2013). France strongly supports the "bubble" approach as we consider that this method will ensure an equivalent level of protection of the environment with strongly diminished costs. For example, as explained in the note of May 2013, the costs of implementation of the REF BREF for the French Refinery industry would be over 400 million euros for the implementation of individual BAT and 100 million euros with the bubble approach (which corresponds to division by 4 of the costs). As Italy, France has been adopting a kind of "bubble" approach for the management of air emissions at refinery level since 20 years and therefore French refinery installation already have properly designed monitoring systems that can be used for such an approach. In order to clarify the "equivalent environmental benefit" aspect of our BAT conclusions proposal, we enclose a new version of it [see Annex I] which states that the performance to achieve would be calculated using the mass flows that would be obtained by implementing BAT enabling to achieve BATAELs for all relevant combustion and process units.
53	Italy	5			598	18	The chapter 5 "BAT conclusions" does not include the technique of the "bubble approach" for the management of air emissions at refinery level.	Recommendation to include in the chapter 5 "BAT Conclusions" the technique of the "bubble approach" as an alternative to the individual BAT-AELs. (written proposal was attached)	Concerning the conclusion to exclude from the Chapter 5 the technique of the "bubble approach" for the management of air emissions at refinery level Italy submitted a formal dissenting view to the EIPPC Bureau (note sent to the EIPPC Bureau on 21 March 2013). It has to be highlighted that Italy has been adopting the "bubble" approach for the management of air emissions at refinery level since more than 20 years and properly designed monitoring systems in all refineries are constantly being optimized to ensure a high level of accuracy for the determination of the emissions to be used for such an approach. Italy strongly supports the "bubble" approach as a technique leading to an equivalent level of environmental protection, allowing the operator concerned to achieve further emissions reduction target in a more cost-effective manner, taking into account the wide variety of refinery configurations and crude slate supply and processes. To this extent, it should be underlined that in the current Final Draft (paragraph 4.15.4.7 and Annex 9.6) the main assessments undertaken in 2010-2011 within the "Subgroup on site-level air emission data evaluation and potential bubble-expressed AELs" (in which Italy was directly involved) are clearly summarized. In consideration of the foregoing, in order to favor the definition of a compromise solution aiming at including the technique of the "bubble approach" for the management of air emissions at refinery level in the chapter 5 "BAT conclusions", we would like to share within the Forum art. 13 an updated version of the Italian proposal on the "bubble" approach (compared to the version of 14 March 2013, circulated after the final REF TWG meeting, with our anticipated formal dissenting view on such an issue), reconsidered to improve and better clarify certain key aspects in the text, briefly summarized below. -Scope: The proposal details parameters (SOx and NOx) as well as process/combustion units (permanent sources of emissions) to be considered when applying the "bubble" at refinery site level. - Equivalence level of emissions: In our opinion, equivalence should be ensured on a monthly basis in terms of mass emissions (tons), besides concentration (mg/Nm ³). Thus, supporting the "Bubble-AEL" in concentration with the corresponding "Bubble-AEL" expressed in tons (to be both applied on a monthly basis) should guarantee an equivalent level of environmental protection, allowing the operator concerned to achieve further emissions reduction target in a more cost-effective manner. - Dynamic bubble: We deem appropriate to introduce an explicit reference to the need of reconsidering the "Bubble-AEL" when substantial changes (in the nature, functioning or extension) occur at refinery installation level. Therefore, "new units" (as defined in the "Definition" paragraph on page 586 of the Final Draft) should be designed in order to fulfil the related BAT-AELs set in chapter 5 "BAT conclusions". Finally, Italy would clearly emphasize that excluding the "bubble" as a BAT from the Chapter 5 may heavily affect the economics of the EU refining sector in a worldwide market scenario, by further triggering undesirable distortion of competition.

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54	Portugal	5	598	18	During the final TWG meeting, TWG members were invited to express their position about bubble. PT support the bubble concept defined by ConCawe in the BAT conclusions, with those main considerations: - Cover all sources of permanent emissions from a refinery (i.e. combustion plants, catalytic crackers, sulphur recovery units, coke calciners and other processes where appropriate); - Applicability of BAT for each source; - Instead the efficient control of a yearly bubble, bubble should require a very frequent or continuous monitoring regime of all emissions concerned.	Support the bubble concept in the BAT conclusions	
55	Denmark	5	598	18	Bubble approach	the "bubble approach" can be introduced in chapter 5 of the BREF specifying the calculation of the bubble concentration on basis of a concentration level within the BATAEL range that is, the level which would be achieved when using the best available techniques.	It is still the Danish opinion, that the "bubble approach should be regarded as a tool for the permitting authority of IED. This opinion we base on, that we do not think, that the "bubble approach" can meet the criteria in IED Art. 3 par.10a for a technique. It is also the Danish opinion, that IED does not legalise the use of the "bubble approach" in Art. 40, par. 3, because here the focus of IED is several units already connected to one stack or several units, which could be connected to one stack without unnecessary high expenses, and not several stacks spread over a large area of a refinery. This being said, it is also the Danish opinion, that the use of the "bubble approach" will not block the development of BAT nor the collection of the necessary data to the future revision of this BREF. Therefor Denmark will not block a introduction of the "bubble approach" in chapter 5 if a majority are in favour for this. Should the "bubble approach" be introduced in chapter 5, the use of a "site bubble" should result in "equal or lower overall emissions" compared to the emission that would be achieved when applying the BAT for every individual emission source.
56	Belgium	5	598	18	Bubble approach	introduce the "bubble approach" in chapter 5 of the BREF (the BAT conclusions) specifying that for the calculation of the bubble instead of using the upper BATAEL level, a concentration level should be used within the BATAEL range that is, or would be achieved when using the best available techniques.	"Belgium is in favor of the inclusion of the "bubble" approach in the BAT conclusions. However, the use of a "site bubble" should result in "equal or lower overall emissions" compared to the emission that would be achieved when applying the BAT for every individual emission source. In reality when BAT is applied to an individual source the concentration will be within the BATAEL range, and thus often lower than the upper BATAEL level. Therefore when calculating a "site bubble" on the basis of upper BATAEL levels this will not result in an "equal or lower overall emission". The BAT conclusions therefore should specify that for the calculation of the bubble instead of using systematically the upper BATAEL level, a concentration level should be used within the BATAEL range that is, or would be achieved when using the best available techniques. It would be useful that the commission would elaborate a methodology to calculate the bubble, taking into account the concerns mentioned above and incorporate it into the BAT conclusions (e.g. as an annex in the BAT conclusions)."
57	Austria	5	598	18	Austria is strict against a bubble approach, because it contradicts the principle of BAT.	The bubble approach shall not be included in the BAT Conclusions of any BREF.	Austria is strict against a bubble approach, because it contradicts the principle of BAT. A bubble approach based on the upper BAT AELs of this draft BREF (monthly averages, upper BAT AELs) would allow for very high emissions from refineries over the next ten years.
58	Finland		598	18	BAT statement for refinery bubble approach is needed at least for SOx and NOx (emission to air). BAT levels should be set.	Add BAT statement of the bubble approach to the BREF. The calculation should be done as mentioned in D2 rev 1 of REF BREF (chapter 4.15.9.3. and annex 9.9). There should be BAT-levels for the bubble approach in the BREF.	The bubble approach has been used in many countries to lower emissions to the air in oil refining. In Finland the bubble approach has been used for SO2 and NOx and in Finnish refineries emissions have reduced. As far as we can see there is no doubt bubble approach is a technique to lower and control emissions. The data collection process for the bubble approach was completed before the Final TWG meeting. In our study we have not found any legal concerns using the bubble approach in oil refining. So therefore it should be possible to include a BAT statement and set BAT levels for the bubble approach.
59	Sweden		598	18	Bubble	We are in favour of the use of bubble. However it is not clear how to fully use the bubble in this case. We suggest therefor that bubble as a possibility should be mentioned under the condition that the use of bubble gives a lower emission than use of individual BAT-AELs. At least the kind of "stack bubble" mentioned in comment 14 should be adapted in this BREF.	The bubble has been discussed all through the work with the BREF. We see advantages both from environmental point of view and from economic efficiency aspects as long as they are used in a proper way. As mentioned before we prefer Load bubbles (since these will include energy efficiency aspects) but accept the concentration bubble at this late hour of the work.
60	Germany		598	18	In the IED, a single exception is included with regard to average emission limits of SO2 released from refineries: Art. 40 (3) and Part 7 of Annex V IED that refer to average emission limit values for SO2 for multi-fuel firing combustion plants within a refinery, with the exception of gas turbines and gas engines, which use the distillation and conversion residues from the refining of crude-oil for own consumption, alone or with other fuels. For these specific cases, a kind of bubble approach allows for existing plants setting an overall emission limit value instead of setting an ELV according to the relations to the total thermal input. Apart from this single exception, according to our interpretation of the IED it is questionable whether the Directive provides a legal basis for a wider application of the bubble. Our current analysis of the IED leads us to the view that the bubble approach contradicts the principle of BAT and a number of other provisions. The REF BREF should not interpret the Directive nor shall Implementing Decisions on BAT Conclusions change the content of the IED.	As it stands now, the bubble approach shall not be included in the BAT Conclusions of the REF BREF.	We have doubts about the legal basis for the "bubble approach" in the context of the IED. Once, there is a clear position of the Commission available and assessed we could possibly start a discussion on the detailed scope, shape and content of a bubble. For the possible use of the "bubble approach" under IED, it is first of all necessary that the Commission shares its interpretation of the IED with the Art. 13 Forum. On this ground, Germany could assess related detailed questions such as a technical appropriate proposal for the scope, limitations, content, and control of a bubbles for refineries. We have doubts that this major aspects can be solved during the Art. 13 Forum in such a way that the BAT conclusions can be changed with respect to the use of the "bubble approach".

Annex B - Comments on the draft REF BREF representing the view of certain members of the forum

Overall Comment Number	Comment from (Forum Member)	Chapter / section No.		Page # (PDF of July'13 Final Draft)	BATC#	Comment description	Proposal for modification	Rationale
61	Spain	5		598	18	The chapter 5 "BAT conclusions" does not include the technique of the "bubble approach" for the management of air emissions at refinery level.	Spain recommends the inclusion of "bubble approach" in the chapter 5 "BAT Conclusions" as an alternative to the individual BAT-AELs because it can deliver the same or lower emission levels at significantly lower cost compared to a non-bubble approach. Please find enclosed to this table a written proposal [see Annex I].	Regarding the conclusion to exclude from the Chapter 5 the technique of the "bubble approach" for the management of air emissions at refinery level, Spain submitted a formal dissenting view to the EIPPC Bureau. We would reiterate that Spain strongly supports the "bubble" approach as a technique leading to an equivalent level of environmental protection, allowing the operator concerned to achieve emission reductions in a more cost-effective manner. CONCAWE has conducted a survey amongst its member companies that has been made available to the Technical Working Group in BATIS. Analysis of the data has clearly shown that the bubble approach will deliver the same or lower emissions of SO ₂ and NO _x at significantly lower cost compared to a non-bubble approach. In order to achieve an overall reduction of emissions to air of specific pollutants from the refinery site as a whole in an optimised way, with an equivalent or better performance compared with the reduction achievable when applying each of the individual BAT AELs, Spain supports the definition of the "bubble approach" as a BAT as it is described in Annex I.
62	Slovakia	7		598	18	Bubble approach	Refer the Bubble approach in the Chapter 5 BAT Conclusion.	Bubble approach is very effective way to reach at least equivalent level of environmental protection as would be achieved by setting individual BAT AELs for every particular emission sources within the refinery boundaries, especially in cases of existing units where several applicability restriction of primary or end of pipe techniques can occur.
63	The Netherlands			598	18	The Netherlands support the use of a bubble methodology under the right premises because this approach is practicable and can have environmental advantages as well as a better cost effectiveness. Too much relaxation however of the individual BAT on which a bubble must be based may lead to bubbles that are too voluminous.	The bubble approach can be qualified as a technique in the BAT conclusions if there is an appropriate ambition level that prevents exceeding of emission ceilings that are already agreed on in national and local covenants and permits and does not hamper future developments in emission reduction.	In the Netherlands load bubbles are used in 5 refineries and additionally a concentration bubble in one refinery. The environmental ministry, the competent authorities and the companies agree on most assumptions and conditions under which a bubble in a permit should be calculated. (see also the next comment)
64	Croatia	7		598	18	BAT conclusions should make reference to the bubble approach. It is to allow It is to allow MS to maintain or include the bubble approach in the national legislation. The bubble approach guarantee the same emission level as individual source emission in refineries, but on substantially lower implementation costs.	BAT conclusions should make reference to the "bubble approach" (recorded in TWG meeting conclusions). in our view, European Commission first version definition should be applied, as follows: "due to the specificity of refineries, including the refinery energy systems, emissions to air are often evaluated at a refinery installation level by considering the total emissions from clearly identified set of units. Consistent with the application of this management technique of air emissions, and as an alternative to considering each of the individual BAT conclusions related to emissions to air on their own, these BAT conclusions, can be considered on an aggregated basis (expresses either as a weighted average concentration and/or total emission load) to establish BAT associated emission levels (BATAELs) for the installation as a whole, provided that the level of protection of the environment achieved by such installation is at least equivalent to the level that would be achieved on th basis of application of the individual BATAELs concerned." where: - installation BAT AEL = aggregated BAT AEL= weighted average of individual sources related to BAT; -"individual sources" real emissions = emissions in the case a set of measures enabling meeting individual sources BAT AELs would be applied (emissions to be lower or equal to Installation BAT AEL) - bubble real emissions = emissions in the case a cost-effective set of measures enabling meeting installation BAT AEL is applied (emissions can be either below - case A - or above - Case B the IS real emission level).	
65	EEB	9	6	585	-	A bubble concept contradicts the BAT concept, which is aiming at minimization of emissions. A bubble concept is not equivalent to setting BATAEL for each unit.	Do not include the bubble concept in BAT Conclusions. The formula proposed in section 9.6 leaves open what air flows are related to when calculating bubble emissions. Chapter 9.6.2 refers all air flows to input ("kg foe: kg of fuel oil equivalent" or "t feed") and seems to allow MAXIMUM CAPACITY input of each installation. This can never lead to similar emissions as if BATAEL based on concentration values are set. Please add an information that the bubble concept is therefore not equivalent with the use of BAT even if using BATAEL values for determining the bubble emissions.	BATAEL based on emission concentration values guarantee high performance of each unit independently from variation of feed input. Bubble concepts are based on feed input assumptions. Their basic principle is not in compliance with BAT as bubbles are upper cap values, not requiring best performance independently from feed input. Therefore, bubble concepts can only serve as long term monitoring of total emissions but are not appropriate for ensuring local air quality. The bubble emission calculation of chapter 9.6 does not lead to emission reduction but allows filling up emissions as input capacity values usually serve as starting point of the calculation. Such bubble emission values would lead to similar problems as observed when allocating CO ₂ certificates to installations based on assumed input: If input is lower (like happened in economic crisis), emissions caps were set much too high and did not lead to emission reduction. EEB has strong reservations on whether the bubble concept may be considered as "technique" according to the IED from a legal point of view, let alone BAT. The term "installation", "BATAEL" and different type of plants / units such as "gas engine" multi-fuel combustion plant" etc. are clearly defined in the IED and setting of ELVs relate to "the" (single/component) of an installation. The bubble concept assumes that a refinery complex would be "a single installation" which does not make sense.
66	EEB	5	3	600	22	BAT 22 on Base Oil Production does not require technique "iii" as "one or a combination of the techniques" is required.	Change BAT 22 making technique "iii" obligatory and allow one or a combination of techniques "i", "ii" and "iv". As stated in the previous draft, make clear tat the substitution of hazardous solvents is a stand alone BAT	Technique "iii" ("Extraction unit using less hazardous substances") is generally applicable to new plants and - with substantial changes - also to existing plants. It was required in REF BREF 2003 and should be kept as BAT and not be made optional. The principle of substitution of hazardous chemicals by better alternatives - even non chemical solutions- is a general principle and approach of Chemicals policy (see REACH). Substitution is therefore a stand alone Best Available Practice.

Overall Comment Number	Comment from (Forum Member)	Chapter / section No.		Page # (PDF of July'13 Final Draft)	BATC#	Comment description	Proposal for modification	Rationale	
67	CONCAWE	5	5	602	24	The BAT AEL range in table 5.4 (<100-300) concluded at the final TWG meeting in the case of existing units (full combustion mode) does not take into account the NOX additive reduction efficiency which may lead to higher observed and reported levels.	We support the inclusion of the following additional footnote to the BAT-AEL range for existing units in full combustion mode: (2): "in case NOX additive reduction efficiency is limited to less than 50 % NOX levels up to 400 mg/Nm3 may occur"	Best Available Techniques : <input type="checkbox"/> Process optimisation: low O2 full combustion mode (FC) and air staging partial combustion mode (PC) with applicability restriction for the latter related to design characteristic of the CO boiler. <input type="checkbox"/> Low NOx CO promoters: only applicable in FC for substitution of Pt CO combustion promoters. Efficiency could be restricted by inappropriate air distribution. <input type="checkbox"/> NRA (NOx reducing Additives): only in FC mode, can be restricted by inappropriate design. Applicability of Cu based additives may be limited by gas compressor. <input type="checkbox"/> SCR : may be restricted by space availability <input type="checkbox"/> SNCR :applicability restricted by required temperature window and residence time <input type="checkbox"/> Lotox: limited applicability having regard to the same restrictions as documented on SOx scrubbers (BAT 26, former BAT 25 in D2Rev2) and specifically for NOx removal by nitrate load on waste water and insufficient supply of liquid oxygen. Rationale for derivation of BAT-AEL: <input type="checkbox"/> Fig 3-26 shows distribution of questionnaire data for NOx as a yearly average. Data point # 28 is highest full combustion mode and has 730 mg/Nm3 even with application of low NOx CO promoter. Dataset H (830 mg/Nm3) from section 4.5.7 (table 4-31 on p. 313) confirm this level on a monthly average basis. In this case no Sb in used. Although the additives are not always applicable to FC units, a 45 % reduction on NRA is used (per section 4.5.4.4, table 4-19 p 282 we calculate an 'average' performance from a wide distribution of performances equal to 48%). Combination of a 45 % reduction with an unabated level of 730 mg/Nm3 results in a level of 400 mg/Nm3	
68	Portugal	5	5	602	24	The BAT-associated emission level (BAT-AEL) ranges for emissions to air of NOx from the catalytic cracking units in full combustion mode should be complemented by the following footnote (2): (2) In some FCC designs, all secondary techniques include applicability restrictions and in case the NOX additive reduction efficiency is limited to less than 50 %, NOX levels up to 400 mg/Nm3 may occur		See split view of CONCAWE to BAT conclusion 24 (FCC NOX) <u>Techniques</u> - Process optimisation: low O2 (FB) and air staging (PB) with applicability restriction for the latter related to design characteristic of the COB. - Low NOx CO promoters: only applicable in FB for substitution of Pt CO combustion promoters. Efficiency could be restricted by inappropriate air distribution. - NRA (NOx reducing Additives): only in FB mode, can be restricted by inappropriate design. Applicability of Cu based additives may be limited by gas compressor. - SCR : may be restricted by space - SNCR :applicability restricted by required temperature window and residence time - Lotox: limited applicability having regard to the same restrictions as documented on SOx scrubbers (BAT 25) and specifically for NOx removal by nitrate load on waste water and insufficient supply of liquid oxygen. <u>Rationale for derivation of BAT-AEL:</u> - Fig 3-27 shows distribution of questionnaire data for NOx as a yearly average. Data point # 28 is highest full combustion mode and has 730 mg/NM3 even with application of low NOx CO promoter. Dataset H (830 mg/Nm3) from section 4.5.11 (table 4-35 on p. 346) confirm this level on a monthly average basis. In this case no Sb in used. Although the additives are not always applicable to FB units, a 45 % reduction on NRA is used (per section 4.5.8.4, table 4-23 p 314 we calculate an 'average' performance from a wide distribution of performances equal to 48%). Combination of a 45 % reduction with an unabated level of 730 mg/Nm3 results in a level of 400 mg/Nm3	
69	Spain	5	5	23 table 5, 4	602	24	BAT 24 FCC NOx: A footnote should be added to the table 5.4 "BAT-AELs for NOX emissions from catalytic cracking process (regenerator)"	Include the following additional footnote to the BAT-AEL range for existing units in full combustion mode: (2): "in case NOx additive reduction efficiency is limited to less than 50% NOx levels up to 400 mg/Nm3 may occur".	Regarding the BAT-associated emission levels for NOx emissions from the catalytic cracking units, as set out in Table 5.4, Spain submitted a formal dissenting view to the EIPPC Bureau. We would reiterate that Fig 3-27 shows distribution of questionnaire data for NOx as a yearly average. Data point # 28 is highest full combustion mode and has 730 mg/Nm3 even with application of low NOx CO promoter. Dataset H (830 mg/Nm3) from section 4.5.11 (table 4-35 on p. 346) confirm this level on a monthly average basis. In this case no Sb in used. Although the additives are not always applicable to FC units, a 45 % reduction on NRA is used (per section 4.5.8.4, table 4-23 p 314 we calculate an 'average' performance from a wide distribution of performances equal to 48%). Combination of a 45 % reduction with an unabated level of 730 mg/Nm3 results in a level of 400 mg/Nm3.
70	Finland	5	5		602	24	Change BAT AEL of Fluid Catalytic Cracking NOx.	Add flexibility to the FCC NOx limit from 400 mg/Nm3 up to 450 mg/Nm3	On the basis of the data in REF BREF it is clear that FCC technology is sensitive to many parameters. The chemistry in FCC regenerator is complex and therefore, flexibility for AEL is needed. All secondary or end of pipe technologies (SCR, SNCR or low temperature oxidation) given in c24 includes restrictions in applicability. Use of primary or process related techniques only is considered to be BAT. It is difficult estimate how effective an additive will be in order to reduce NOx emissions from FCC. The effectiveness is not a result of only the quality of feed but also the type of the regenerator, catalyst selection before the DeNOx- additive use and numerous other parameters. The proposed upper end of BAT AEL 400 mg/Nm3 is justified by applying NOx reducing additives as a technique to a refinery 28 (fig 3-27, p 178) assuming reduction efficiency of around 40 %. Due to likely variation of the additive reduction efficiency, arising from operational parameters and other technical reasons listed above, the proposed flexibility is justified.

Annex B - Comments on the draft REF BREF representing the view of certain members of the forum

Overall Comment Number	Comment from (Forum Member)	Chapter / section No.		Page # (PDF of July'13 Final Draft)	BATC#	Comment description	Proposal for modification	Rationale
71	EEB	5	5	602	24	Table 5.4, FCC NOx BATAELs for existing units are not based on information included in the document. EEB has expressed its split view.	Repeat BATAEL Conclusions discussion for existing FCC NOx emissions, based on data that can be found in chapters 3 and 4. Define DAILY average BATAEL < 150 mg/m3; additionally MONTHLY average value may be defined with < 100 mg/m3.	BATAEL should be based on information in the BREF. In chapter 4.5.4, information regarding NOx emissions of existing FCC units using BAT (e.g. SCR or SNCR) are described with upper values of 180 mg/m3 (upper value of DAILY average emissions) for SNCR with full combustion mode and 99 mg/m3 for SNCR with partial combustion mode and values < 100 mg/m3 (German example). However, BATAEL have been set much higher and on a MONTHLY average generally associated with lower BATAEL values than DAILY average values. Art 13 (2) (a) IED states, that the exchange of information shall, in particular, address the performance of installations and techniques in terms of emissions, expressed as short- and long-term averages, where appropriate, and the associated reference conditions (...)
72	EEB	5	5	602	24	Table 5.4, definition of FCC NOx BATAEL for existing units was linked with a footnote regarding higher values up to 700 mg/m3 in case of Sb injection. This was based on a spontaneous comment from industry, not based on written information or information already included in the document.	Delete footnote! Or provide information of plant performance using BAT and Sb injection not able to perform below 300 mg/m3 (full combustion) or 400 mg/m3 (partial combustion mode).	BATAEL should be based on information in the BREF. No information regarding higher NOx emissions linked with Sb injection can be found in the BREF, neither in chapter 3.5.2.1 nor 4.5.4. The footnote is in breach of agreed procedures and needs to be removed also on that basis.
73	EEB	5	5	602	24		Table 5.4 EEB rejects those high values and in particular for existing units. Keep daily average BATAEL < 150 mg/m3 for all units. Alternatively	For NOx emissions the BREF 2003 quoted BAT AELs of 40-150 mg/Nm3 daily average. The final draft quotes 100-300 (400) mg/Nm3 but monthly average. Considering that BAT conclusions would not be published before 2014 and the 4 years deadline for compliance with the new BAT conclusions (2018) would mean for existing units a postponement at best by 15 years on what constituted BAT decades ago. Worse those BATAEL are significantly weaker! The credibility of the Sevilla process is at stake if these values are kept
74	Austria	5	5	602	24	An analyses of the BAT AELs for FCC plants and the comparison with the BREF 2003 leads to the conclusion, that the upper BAT AELs do not describe BAT. A monthly average for dust emissions of 50 mg/Nm3 (upper value) for existing units in 2012/13 is out of question for BAT. The BAT AEL in the BREF 2003 10- 40 mg/Nm3 daily average. We found evidence in the internet, that an FCC plant was retrofitted to comply with 20 mg/Nm3 for dust. For NOx emissions the BREF 2003 quoted BAT AELs of 40-150 mg/Nm3 daily average. The final draft quotes 100-300 (400) mg/Nm3 monthly average for existing units - thus encouraging to postpone the use of abatement equipment until the next BREF revision in about 2024. How shall those, who implemented the BREF 2003 explain why they set ELVs requiring investments in retrofitting the units when BAT AELs are weakened over time instead of implemented and developed further? We quote this just as examples, to show why we cannot accept the BAT conclusions of this document that are a substantial draw back from the BREF 2003.	BAT and BAT-AELs should be derived from transparent and assessable information. The Questionnaires, at least the emission data, shall be made available on BATIS. Short time averages for BAT AELs should be provided (i.e. daily averages) for BAT-AELs since they are necessary regarding environmental protection and compliance. Monthly averages may be provided additionally (especially for dust emission from FCC plants) but their technology specific relation must be correct. Obviously too high BAT AELs shall be removed from the draft BREF - with a time effort of about two months work this draft BAT Conclusions can be made ready for the Art 13 forum and the Art 75 committee.	The chapter quotes BAT AELs that are out of question for BAT (50 mg dust/Nm3 (upper value) monthly average for existing units in 2012/13). The chapter quotes BAT AELs that are more than doubling the upper BAT AELs of the BREF 2003 (300/400 mg NOx/Nm3 (upper value) monthly average for existing units in 2012/13). The change from IPPC to IED may lead to some adaptations in BAT AELs but not in doubling the upper values (in numbers or via time reference or via both of them) and thus discriminating all those who implemented the BAT AELs of the BREF 2003 and have already retrofitted their units. We quote this just as examples, to show why we cannot accept the BAT conclusions of this document that are a substantial draw back from the BREF 2003.
75	EEB	5	5	602	25	FCC dust BATAEL for existing units (Table 5.5) of up to 50 mg/Nm3 as MONTHLY average is not associated with BAT and not based on best performing units reported in the document. EEB has expressed its split view. The fact that the value is not associated with BAT is shown in the current footnote of table 5.5: A 4-field ESP achieves less than half of the concentration as DAILY average. This technique, installed in existing units, is described in the document in chapter 4.5.5.2 with related emission values. Values below 10 mg/m3 and yearly average of 10.94 mg/m3 is documented. Typical daily average is documented with 5-25 mg/m3 and associated with BAT.	Repeat BATAEL Conclusions discussion for existing FCC dust emissions, based on data that can be found in chapter 4. Define DAILY average BATAEL < 20 mg/Nm3; additional MONTHLY average value may be defined with < 15 mg/m3, based on reported yearly average value of 11 mg/m3. As a matter of comparison dust BATAEL in "smaller sectors" like Cement and Lime are set at <10 mg/Nm3 (fabric filters) and 10-20mg/Nm3 on a daily basis. The same holds true for the glass sector <10 (melting furnace) or 10-20 (flat glass)	Revised REF BREF should contribute to prevention and minimisation of emissions. Dust emissions from FCC are of very high relevance when evaluating the refinery sector as a whole, in particular as FCC dust emissions are associated with emissions of toxic heavy metals. Progress has been made and reported and documented since the last BREF data collection (2003) which defined a DAILY average of maximum 40 mg/m3 for FCC dust emissions as BATAEL associated with BAT. In 2003 the higher range was argued on the basis of "technical difficulties to upgrade the existing ESP may be difficult to reach" "Some refineries have upgraded existing installations and achieve (with and without ammonia injection) low dust emissions with 4-field ESP. The revised REF BREF should take this development into account and should contribute to making progress in environmental protection. Dust background level is high in most parts of Europe, leading to exceedance of air quality limits if additional local emissions occur. For health protection, it is essential that refineries contribute to minimising dust background levels by applying BAT. How can the EIPPCB justify to the public that smaller industrial sectors with less economic capabilities compared to the oil majors, like the Cement, Lime and Mg industries as well as Glass sector - probably including SMEs- have to comply with BATAEL in the range of 10-20 mg/Nm3 on a DAILY basis for dust that would be unreachable for refineries?!? The principle of proportionality and equal treatment needs to be respected.
76	UK	5	5	603	25	This comment relates to low sulphur feedstock. Low sulphur feedstock is specified as a primary technique in BAT25 but an interpretation of 'low' is not provided.	Following inclusion of a definition of low sulphur feedstock in section 5.19.3; In BAT25 Amend the description of primary or process related technique ii to read : ' Use of low sulphur feedstock. See description in section 5.19.3 (e.g. by feedstock selection or by hydrotreatment of feed) '	Without a definition of 'low' the regulator cannot determine whether the technique has been applied or not. The UK considers: low sulphur feedstock as feedstock with <0.5% S.

Overall Comment Number	Comment from (Forum Member)	Chapter / section No.		Page # (PDF of July'13 Final Draft)	BATC#	Comment description	Proposal for modification	Rationale	
77	CONCAWE	5	5		603	25	The BAT AEL range in table 5.5 (10-50) concluded at the final TWG meeting in the case of existing units does not take into account neither the applicability restrictions for ESP nor the cross-media effect related to the use of SO ₂ reducing agents	We support the inclusion of the following additional footnotes for inclusion to the BAT-AEL range for existing units: (3): "When only a multi-stage cyclone is used the upper end of the BAT AEL range is 100 mg/Nm ³ " (4): "When a 3 field ESP is applied and when SO ₂ reducing agents are used the upper end of the BAT AEL range is 70 mg/Nm ³ "	Primary techniques (use of attrition resistant catalyst and use of low S feedstock) are not 'generally applicable'. Secondary techniques: <input type="checkbox"/> Multi-stage-cyclone-separator is generally applicable. <input type="checkbox"/> 3-stage Blow-back filter has limited applicability <input type="checkbox"/> ESP: Its applicability for existing units may be limited by space availability <input type="checkbox"/> Wet Scrubbing: applicability restrictions related to space, arid areas and by-product/salt disposal/reuse The upper AEL range should be based on the performance of generally applicable techniques which in this case is multi-stage-cyclone-separators. The inclusion of the footnote (3) is supported by data (see section 4.5.7 table 4-31 on p. 313) where a range of 60 to 155 and a median value of 107 mg /Nm ³ is observed; and section 3.5.2.1. fig 3-27 on p.166) and supported by the performance range quoted for TSS in the Achieved Environmental Benefits paragraph (section 4.5.5.1, p 288). The inclusion of the footnote (4) is supported since actions on reducing SO ₂ may lead to dust that is harder to remove or to different amounts of dust leaving the regenerator upstream of the secondary technique(s). This is supported by the following elements: <input type="checkbox"/> In the case of refinery J where a 4 field ESP (+ NH ₃ injection) is applied (table 4-31 on page 313 [27-46 mg/Nm ³] we observe a cross effect of using SRA at a normal rate of 60-130 kg/day. The observed increase can be up to 20 mg/Nm ³ in dust concentration. <input type="checkbox"/> Section 4.5.6.1 (SO _x -reducing additives might have a detrimental effect on PM by increasing catalyst losses due to attrition) see Cross-Media Effects, 3rd bullet (p.300).
78	Spain	5	5	25	603	25	BAT 25 FCC Dust: Two footnotes should be added to the table 5.5 "BAT-associated emission levels for dust emissions from the catalytic cracking process (regenerator)" .	BAT 25 FCC Dust, Table 5.5: Spain proposes to introduce the following two footnotes: (³) When only a multi-stage cyclone is used, the upper end of the BAT AEL range is 100 mg/Nm ³ and (⁴) When a 3-fields ESP is applied an when SO ₂ reducing agents are used the upper end of the BAT-AEL range is 70 mg/Nm ³ .	Regarding the BAT-associated emission levels for dust emissions from the catalytic cracking units, as set out in Table 5.5, Spain submitted a formal dissenting view to the EIPPC Bureau. We would reiterate that the upper AEL range should be based on the performance of generally applicable techniques, which in this case is multi-stage-cyclone-separators. As it is well recognized in the applicability criteria of BAT 24, for refineries that have yet installed an ESP 3 fields in FCC "applicability may be limited by the high investment /operational costs and space availability". There are no reasons that justify that ESP 4 fields technique can have associated less investment and operational expenses for those refineries that do not have installed ESP in FCC units that for those that have ESP 3 fields yet mounted. If space availability is a reason for not installing ESP 4 fields for refineries that do possess ESP 3 fields attached to FCC units, this reason should be recognized also for refineries that do not have any electrostatic separator. Moreover, refineries with ESP3 at least owns the space of this voluminous unit while those that do not have ESP installed, generally, do not have plots close to FCC to install ESP and space availability is a mayor reason to limit the application.
79	UK	5	5		604	26	This comment relates to low sulphur feedstock. Low sulphur feedstock is specified as a primary technique in BAT26 but an interpretation of 'low' is not provided.	Following inclusion of a definition of low sulphur feedstock in section 5.19.3; In BAT26 Amend the description of primary or process related technique ii to read : " Use of low sulphur feedstock. See description in section 5.19.3 (e.g. by feedstock selection or by hydrotreatment of feed) "	Without a definition of 'low' the regulator cannot determine whether the technique has been applied or not. The UK considers: low sulphur feedstock as feedstock with <0.5% S.
80	CONCAWE	5	5		604	26	The BAT AEL ranges in table 5.6 (<100-800 and 100-1200 respectively for full and partial combustion mode in the case of existing units) concluded at the final TWG meeting do not take into account the applicability restrictions and achievability limitations when BAT are applied	We support a BAT-AEL of < 100 - 1000 mg/Nm ³ for existing full combustion units and a BAT-AEL of 100 - 1700 mg/Nm ³ for existing partial combustion burn units	Techniques: <input type="checkbox"/> SO _x Reducing Additives (SRAs): applicability may be restricted by regenerator design conditions or H ₂ S removal capacity. <input type="checkbox"/> Use of low S feedstock : applicability may be restricted by availability of low S feedstock. <input type="checkbox"/> Scrubbers (non-regenerative and regenerative) have applicability restrictions associated to space, by-products, salts in waste water, arid areas The SRA technique is considered to have the least restrictive applicability limitations and therefore should be the basis for deriving the upper AEL range. Rationale for proposed upper end of the AEL range: <input type="checkbox"/> Unabated SO ₂ varies over a wide range due to feed S content and type of feed. <input type="checkbox"/> This explains Fig. 3-28 (section 3.5.2.1 on p. 167) which shows distribution of data from questionnaires on a yearly average basis (on a monthly average basis this may have an even broader distribution). The upper end of questionnaire distribution is 2600 mg/Nm ³ for partial combustion mode (data point # 20) and 2500 mg/Nm ³ for full combustion mode (data point # 57). The 2500 mg/Nm ³ starting point is also supported by dataset V in section 4.5.7 (table 4-31 on p. 313). <input type="checkbox"/> Applying performances of SRA in PB (35%) and FB (60%) (Section 4.5.6.1, p298 to 301) to the above data points results in 1700 mg/Nm ³ for PB and 1000 mg/Nm ³ for FB. Additional support for the 35 % reduction efficiency on PB is dataset YZ1 in section 4.5.7
81	UK	5	5		604	26	This comment relates to the availability of sulphur recovery capacity as an applicability criteria, associated with regenerative scrubbing in BAT26. Sulphur recovery is an SO ₂ emissions reduction technique in its own right and where implemented in combination with other techniques, should be designed to have sufficient capacity to deliver the BAT associated performance standards.	The applicability criteria associated with regenerative scrubbing in BAT26 should read: "The applicability is limited to the case where regenerated by-products can be sold. The applicability of the technique may require significant space availability."	The commission's implementing decision, of 10 February 2012, makes provision for consideration of plant size or capacity in determining applicability. The UK believes that this relates to the size or capacity of the plant producing the pollution (i.e. the catalytic cracker unit), not the capacity of other provisions for abating emissions, such as the existing sulphur recovery unit. It is not therefore appropriate to consider the capacity of the SRU in determining the applicability of an upstream technique. If it is found that an upgrade to the SRU is needed to meet BAT standards and the operator considers this investment disproportionate, then a derogation should be sought.

Annex B - Comments on the draft REF BREF representing the view of certain members of the forum

Overall Comment Number	Comment from (Forum Member)	Chapter / section No.			Page # (PDF of July'13 Final Draft)	BATC#	Comment description	Proposal for modification	Rationale
82	EEB	5	5		604	26	EEB rejects the high BATAEL upper ranges for existing units. Remove the footnote since inconsistent with Chapter 4 observed values (wet scrubber)	reinstate the daily average of <10-350 mg/Nm3 as stated in the REF 2003 BREF. Remove the footnote.	The REF BREF of 2003 retained DAILY BATAEL for SO2 of <10-350 mg/Nm3 . One Member State also provided data justifying a BATAEL of 10-100 since FGD is always applicable. Chapter 4 mentions examples of units achieving levels below or <60-160 for wet scrubbers. It seems that the purpose of the BREF has been misunderstood in relation to the setting of BATAEL of the SO2 parameter. The extreme values of the upper end are directly derived from the minimum requirements of Annex V of the IED (the EU safety net). In practice it would mean that the BATAEL is set at the same level of the lowest common denominator for setting ELVs at EU level (the EU safety net). The credibility of the BREF review process are at stake if those values are kept.
83	Spain	5	5	25 table 5, 6	604	26	BAT 26 FCC SOx: In Table 5.6, the BAT-associated emission levels for SO2 emissions from catalytic cracking should be revised.	Spain proposes to introduce different BAT-AELs for SO2 emissions from existing units according to data shown in Fig. 3-29 (section 3.5.2.1 on p. 181), as follows: For full combustion units, the upper range should be 1000 mg/Nm3. For partial combustion units, the upper range should be 1700 mg/Nm3	Regarding the BAT-associated emission levels for SO2 emissions from the catalytic cracking units, as set out in Table 5.6, Spain submitted a formal dissenting view to the EIPPC Bureau. We would reiterate that the SOx Reducing Additives technique is considered to have the least restrictive applicability limitations and therefore should be the basis for deriving the upper AEL range. The applicability of the use of low sulfur feedstock may be restricted by availability of low S feedstock and the applicability of the scrubbers (non-regenerative and regenerative) may have restrictions associated to space, by-products, salts in waste water, arid areas. Therefore, the AEL should be according to the figures in Fig. 3-29 (section 3.5.2.1 on p. 181) which shows distribution of data from questionnaires on a yearly average basis (on a monthly average basis this may have an even broader distribution). The upper end of questionnaire distribution is 2600 mg/Nm3 for partial combustion mode (data point # 20) and 2500 mg/Nm3 for full combustion mode (data point # 57). The 2500 mg/Nm3 starting point is also supported by dataset V in section 4.5.11 (table 4-35 on p. 346). Applying performances of SRA in PB (35%) and FB (60%) (Section 4.5.10.1, p331 to 334) to the above data points results in 1700 mg/Nm3 for PB and 1000 mg/Nm3 for FB. Additional support for the 35 % reduction efficiency on PB is dataset YZ1 in section 4.5.11
84	EEB	5	7		607	30	BATAEL for NOx emissions from coking units is missing and should be defined as use of SNCR technique is described in chapter 4.	Repeat BATAEL Conclusions discussion deriving BATAEL of < 350 mg/m3 on a DAILY basis from Coking units when use of SNCR is possible.	BATAEL of < 350 mg/m3 DAILY when using SNCR was agreed by industry but not taken up.
85	UK				607	31	This comment relates to the availability of sulphur recovery capacity as an applicability criteria, associated with regenerative scrubbing in BAT31. Sulphur recovery is an SO2 emissions reduction technique in its own right and where implemented in combination with other techniques, should be designed to have sufficient capacity to deliver the BAT associated performance standards.	The applicability criteria associated with regenerative scrubbing in BAT31 should read: "The applicability is limited to the case where regenerated by-products can be sold. The applicability of the technique may require significant space availability."	The commission's implementing decision, of 10 February 2012, makes provision for consideration of plant size or capacity in determining applicability. The UK believes that this relates to the size or capacity of the plant producing the pollution (i.e. the coking unit), not the capacity of other provisions for abating emissions, such as the existing sulphur recovery unit. It is not therefore appropriate to consider the capacity of the SRU in determining the applicability of an upstream technique. If it is found that an upgrade to the SRU is needed to meet BAT standards and the operator considers this investment disproportionate, then a derogation should be sought.
86	EEB	5	7		608	32	Table 5.8: BATAEL for dust emissions from coking units is not associated with BAT and should be based on BAT and associated performance values reported in the document.	Repeat BATAEL Conclusions discussion deriving BATAEL of < 20 mg/m3 for dust from Coking units on a DAILY basis, based on information provided in section 4.7.8.1.	No basis for BATAEL up to MONTHLY average of 50 mg/m3 associated with the use of BAT have been reported in the document.
87	UK	5	9		610	34	This comment relates to low nitrogen refinery fuel oil. Low nitrogen refinery fuel oil is specified as a primary technique in BAT34 but an interpretation of 'low' is not provided.	Following inclusion of a definition of low nitrogen refinery fuel oil in the glossary in section 5.19.3. In BAT34 Amend the description of primary or process related technique i. (b) to read : " Use of low nitrogen refinery fuel oil (RFO). See description in section 5.19.2. e.g. by RFO selection or by hydrotreatment of RFO."	Without a definition of 'low' the regulator cannot determine whether the technique has been applied or not. The UK considers: low nitrogen RFO as fuel with <0.5% N.
88	EEB	5	9		610	34	BATAEL for combustion units is not based on BAT and should be based on BAT and associated lower emission values reported in the document.	Repeat BATAEL Conclusions discussion after commenting period for new data.	BAT Conclusions should be based on an assessment of emission data by Member States, industry and environmental NGOs. An assessment of newly included data, in particular many data for combustion units, was not possible before the final TWG meeting. Data provided is lacking information regarding its origin and its appropriateness to provide a full picture of the sector. Short term emission data is lacking. Long term (monthly) emission data is often insufficient for deriving BAT Conclusions e.g. in cases where only min and max data is provided.
89	Austria	5	9		610	34	Many of the derived BAT-AELs (e.g. SOx, NOx and dust for multifuel combustion, NOx for gas turbines) are close to the minimum requirements stipulated in Annex V of the IED. An analyses of the BAT AELs showed, that for combustion plants even the exceptional provisions of Annex V Part 1 (concerning plants that were granted a permit before 27. November 2002) are referred to as upper BAT AEL in the Draft. These unacceptable upper BAT values are: dust 50 mg/Nm3 monthly average for existing units (Tab. 5.12) and NOx 300 mg/Nm3 monthly average for existing units (Tab. 5.11). For plants permitted or submitted a complete permit application before 7.1.2013 and put into operation at the latest 7.1.2014 Annex V Part 1 of the IED sets minimum requirements of 20/25/30 mg/Nm3 for dust and 200 mg/Nm3 for NOx monthly average and daily average 110% of these values. The "safety net" (IED Annex V Part 1 and 2) is currently more ambitious than the upper BAT AELs, both in height of values and reference time (Annex V provides daily and monthly averages). The ELVs in the IED rely on the upper BAT-AELs of the BREF LCP from 2006 (database from 1998-2002) and the Refinery BREF from 2003 (database about 1998). Therefore some upper BAT-AELs have to be expected to be lower than IED Annex V when derived in 2012 derived from data 2008-2010.	BAT and BAT-AELs should be derived from transparent and assessable information. The Questionnaires, at least the emission data, shall be made available on BATIS. Short time averages for BAT AELs should be provided (i.e. daily averages) for BAT-AELs since they are necessary regarding environmental protection and compliance. Monthly averages may be provided additionally but their technology specific relation must be correct. Obviously too high BAT AELs (above the minimum requirements of Annex V Part 1 IED; also considering the daily averages - 110% of the ELV numbers) shall be removed from the draft BREF - with a time effort of about two months work this draft BAT Conclusions can be made ready for the Art 13 forum and the Art 75 committee.	BAT-AELs should describe the emission and performance values of well(!) performing plants. Many of the derived BAT-AELs (e.g. SOx, NOx and dust for multifuel combustion, NOx for gas turbines) are close to the minimum requirements stipulated in Annex V of the IED. An analyses of the BAT AELs showed, that for combustion plants even the exceptional provisions of Annex V Part 1 (concerning plants that were granted a permit before 27. November 2002) are referred to as upper BAT AEL in the Draft. These unacceptable upper BAT values are: dust 50 mg/Nm3 monthly average for existing units (Tab. 5.12) and NOx 300 mg/Nm3 monthly average for existing units (Tab. 5.11). For plants permitted or submitted a complete permit application before 7.1.2013 and put into operation at the latest 7.1.2014 Annex V Part 1 of the IED sets minimum requirements of 20/25/30 mg/Nm3 for dust and 200 mg/Nm3 for NOx monthly average and daily average 110% of these values. The ELVs in the IED rely on the upper BAT-AELs of the BREF LCP from 2007 (database from around 2000) and the Refinery BREF from 2003. Therefore some upper BAT-AELs have to be expected to be lower than IED Annex V when derived in 2012 derived from data 2008-2010.

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Overall Comment Number	Comment from (Forum Member)	Chapter / section No.		Page # (PDF of July'13 Final Draft)	BATC#	Comment description	Proposal for modification	Rationale
90	UK	5	9	611	34	This comment relates to BAT conclusion 34 and the application of the NOx BATAELs for combustion plant. The BATAELs given in tables 5.9, 5.10 and 5.11 for NOx emissions from combustion are described for combustion units, whereas the table associated with BAT4 requires continuous monitoring to be carried out at stack level, so compliance with a unit based limit cannot be validated for shared stacks.	Set combustion BATAELs on the same basis as the monitoring requirements. i.e. Set both at combustion plant (i.e. stack) not combustion unit level. Amend tables 5.9, 5.10 and 5.11 to include a footnote which reads, 'BATAELs apply at the stack where the emission occurs not at the individual combustion units'	BATAELs should be applied at combustion plant not combustion unit level, this would be consistent with the monitoring requirements in BAT4, which are set for each stack not each combustion unit; and would also be consistent with the approach to application of ELVs in Article 30 of IED.
91	Sweden	5		592	4, 34	Views on BAT 4 and as a consequence views on BAT 34 regarding monitoring in common stacks.	Clarify the BAT-4 in such away that it is clear that when a number of combustion units are connected to one common stack it is sufficient to monitor continuously (SOx, Nox, Dust) only at the common stack. Once a year each combustion unit should be monitored at each individual combustion unit. As a result of this it should be clarified in BAT-34 that BAT-AEL for combustion units connected to one stack is a weighed average for all units to that stack	The discussion during the final TWG meeting ended up (as we recall) that we agreed on such a stack wise monitoring model. It is not expressed in the BAT-4. Continuous monitoring at each unit is not cost effective and what is important from environmental point of view is the total emission. It is also cost effective to do emission reduction measures on the large units especially. That means that in some cases it can be both from environmentally point of view and for economical reasons to take more advanced measures at units with initially large emissions and a bit less advances measure at small units or units less frequently used. What is important from environmental point of view is to keep the total emission at a low level.
92	Italy	5	9	611	34	BAT 34: In Table 5.10, the BAT-associated emission levels for NOx emissions from gas-firing combustion units (with the exception of gas turbines) should be differentiated according to the size of the combustion plants.	Italy proposes to introduce different BAT-AELs for NOx emissions according to the size of the combustion plants, as follows: - For existing units > 50MWt, the upper range should be 200 mg/Nm ³ . - For the existing units < 50 MWt, the upper range should be 300 mg/Nm ³	Regarding the BAT-associated emission levels for NOx emissions from gas-firing combustion units (with the exception of gas turbines), as set out in Table 5.10, Italy submitted a formal dissenting view to the EIPPC Bureau (note sent to the EIPPC Bureau on 21 March 2013). We would reiterate that the implementation of primary techniques such as low NOx Burners (LNB) in the most of the existing gas-fired combustion units, particularly in units with thermal input below 50 MW, is strongly affected by retrofitting restrictions (see BAT 34, technique ii - e), depending on specific plants features (e.g. the radiant box that cannot accommodate the longer flame from LBNs or larger dimension of LBN compared to the conventional burners which may require heavy modifications of the furnaces). Thus, for existing gas firing combustion units, costs of BAT implementation and related environmental advantages need to be taken properly into account also according to the size of the units and the significance of the emissions reduction expectancies. Finally, it should be noted that even where LBNs have been installed, the data collected (see section 4.10.7, Table 4-61 on pages 390-392) show that a significant number of gas firing units < 50 MWth perform with NOx emissions levels ranging from 220 up to 335 mg/Nm ³ maximum monthly average, therefore higher than the upper BAT-AELs of 150 mg/Nm ³ .
93	CONCAWE	5	5	611	34	The BAT AEL range (30-150) in table 5.10 for existing units concluded at the final TWG meeting does not take into account the smaller size of units and their capability meeting it.	CONCAWE support a separate BAT-AEL range 30 - 300 mg/Nm ³ for existing units of less than 50 MW	The upper AEL level has to be based on the use of LNBs because this technique is generally applicable. Its applicability may however be restricted for retrofitting existing units where complexity depends on site specific conditions e.g. furnaces design, surrounding devices as documented in the draft BAT Conclusions –Technique ii(e). This restriction is even more relevant in the case of smaller units (< 50 MW) since many of these only have one furnace or boiler tied into the stack. Particularly the existing radiant box may not accommodate the longer flame from LNBs. Data collected in section 4.10.7. (table 4-61 on p. 389) show 5 out of 10 LNBs related datasets for units < 50 MW ranging from 220 to 335 mg/Nm ³ maximum monthly averages.
94	Greece	5	9	611	34	Higher values must be proposed, in agreement with Directive 2010/75/EE (Annex V)	The upper emission level for NOx emissions from combustion new gas turbines should be 100 mg/Nm ³	The proposed value (50 mg/Nm ³) is applicable only with end-of-pipe technique.
95	Greece	5	9	611	34	Higher values must be proposed for BAT-associated emission levels for NOx emissions from gas-firing combustion with the exception of gas turbines.	The upper emission level should be 150 mg/Nm ³ for both new and existing units.	
96	EEB			611	34	table 5.9 EEB rejects these extreme upper end values. Same comment as comment 26 in regards to derivation from Annex V EU Safety Net values. BATAEL correspond to the minimum ELVS to be achieved according to Annex V of the IED!	review values according to Chapter 4 best performers	Please double check with the LCP BREF 2006 on what is achievable and ensure consistency and restore credibility in the Sevilla exchange.
97	CONCAWE	5	9	612	34	The BAT AEL range (30-300) in table 5.11 is not the one concluded at the final TWG meeting	Replace the BAT AEL range with : 50 - 300 (text from REF BREF D2 Rev.2 from 8/5/2013 on page 691)	Consistency with final TWG meeting outcome (15/3/2013) and revised draft from 8/5/2013
98	EEB			612	34	"values up to 450 mg/Nm ³ may occur" according to very specific cases. That does not mean that this eventuality justifies a higher BATAEL upper range	remove footnote 1	use Art 15.4 of IED for derogation to the standard BATAEL
99	UK	5	9	612	35	This comment relates to low sulphur refinery fuel oil. Low sulphur refinery fuel oil is specified as a primary technique in BAT35 but an interpretation of 'low' is not provided.	Following inclusion of a definition of low sulphur refinery fuel oil in section 5.19.3; In BAT35 Amend the description of primary or process related technique i. (b) to read : " Use of low sulphur refinery fuel oil (RFO). See description in section 5.19.3 e.g. by RFO selection or by hydrotreatment of RFO "	Without a definition of 'low' the regulator cannot determine whether the technique has been applied or not. The UK considers: low sulphur RFO as fuel with <0.5% S.
100	UK	5	9	613	35	This comment relates to BAT conclusion 35 and the application of BATAELs for dust from combustion units. The BATAELs given in table 5.12 for dust emissions from combustion are described for combustion units, whereas the table associated with BAT4 requires continuous monitoring to be carried out at stack level, so compliance with a unit based limit could not be validated for shared stacks.	Set combustion BATAELs on the same basis as the monitoring requirements. i.e. Set both at combustion plant (i.e. stack) not combustion unit level. Amend tables 5.9, 5.10 and 5.11 to include a footnote which reads, 'BATAELs apply at the stack where the emission occurs not at the individual combustion units'	BATAELs should be applied at combustion plant not combustion unit level, this would be consistent with the monitoring requirements in BAT4, which are set for each stack not each combustion unit; and would also be consistent with the approach to application of ELVs in Article 30 of IED.
101	EEB			613	35	two footnotes have been inserted without text. Same comments as for dust in FCC (comment 25)	remove footnotes. Same comment as for dust in FCC => change to 5-20 mg/NM ³ on a DAILY basis	drafting error,

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102	Slovakia	5	9		613	35	Clear definition of BAT AELs validity in Table 5.12.	Table 5.12: BAT associated emission levels for dust emissions from the combustion units with exception of gas turbines and gas firing combustion units.	Clear definition that BAT AELs are not set up for gas firing combustion units
103	Greece	5	9	35	613	35	Higher values must be proposed for BAT-associated emission levels for dust from the combustion units.	The <u>upper</u> emission levels for dust emissions from the combustion units with the exception of gas turbines should be 80 mg/Nm3 for existing units and 50 mg/Nm3 for new units.	BAT-AEL for existing unit in general too low. It is a critical point for the operation of many existing multi-fuel firing installations, with respect to cost-effectiveness approach.
104	UK	5	9		614	36	This comment relates to low sulphur refinery fuel oil. Low sulphur refinery fuel oil is specified as a primary technique in BAT36 but an interpretation of 'low' is not provided.	Following inclusion of a definition of low sulphur refinery fuel oil in section 5.19.3; In BAT36 Amend the description of primary or process related technique iii to read : " Use of low sulphur refinery fuel oil (RFO). See description in section 5.19.3 e.g. by RFO selection or by hydrotreatment of RFO."	Without a definition of 'low' the regulator cannot determine whether the technique has been applied or not. The UK considers low sulphur RFO as fuel with <0.5% S.
105	UK				614	36	This comment relates to the availability of sulphur recovery capacity as an applicability criteria, associated with regenerative scrubbing in BAT36. Sulphur recovery is an SO2 emissions reduction technique in its own right and where implemented in combination with other techniques, should be designed to have sufficient capacity to deliver the BAT associated performance standards.	The applicability criteria associated with regenerative scrubbing in BAT36 should read: "The applicability is limited to the case where regenerated by-products can be sold. The applicability of the technique may require significant space availability."	The commission's implementing decision, of 10 February 2012, makes provision for consideration of plant size or capacity in determining applicability. The UK believes that this relates to the size or capacity of the plant producing the pollution (i.e. the combustion unit), not the capacity of other provisions for abating emissions, such as the existing sulphur recovery unit. It is not therefore appropriate to consider the capacity of the SRU in determining the applicability of an upstream technique. If it is found that an upgrade to the SRU is needed to meet BAT standards and the operator considers this investment disproportionate, then a derogation should be sought.
106	UK	5	9		615	36	This comment relates to BAT conclusion 36 and the application of the SO2 emission limit for multi fuel firing in combustion units. The footnote (*) to the BATAEL range 35-600 in Table 5.14 says 'refers to the weighted average emissions from multi-fuel firing in combustion units, with the exception of gas turbines and stationary gas engines'. Clarification is needed on the meaning of this footnote. In the IED there are emission limit values set for solid, liquid and gas fuels. Article 40 provides rules on determining multifuel firing emission limit values, with article 40(2) relating to the use distillation and conversion residues from the refining of crude oil. It is not clear whether it is upon this liq:gas fuel ratio basis that the weighted average should be calculated and then assessed.	Clearly define the basis of the BATAEL range for multi fuel firing and clarify whether it varies dependant upon the ratio of gas to liquid firing. Amend the footnote to clarify whether the weighted average should be calculated on an individual stack, or an overall installation basis.	The UK believes the intention from the final TWG was that the weighted average would be applied across all multi fuel firing stacks at the installation. The UK believes that the BATAEL range should be determined based on the fuel weighted ratio of gas to liquid firing, which is consistent with article 40 of the IED.
107	Greece	5	9	36	615	36	Higher values must be proposed for BAT-associated emission levels for SOx emissions from multi-fuel firing in combustion units. These values should be in accordance with the ELV for NOx (table 5.12)	Specifically open for a bubble approach to ensure cost effectiveness, especially for the case of multi-fuel (gas-liquid) firing. The upper limit for existing units should be 850 mg/Nm3.	BAT-AEL for existing unit in general too low. It is a critical point for the operation of many existing multi-fuel firing installations, with respect to cost-effectiveness approach. The proposed BAT-AELs should not be lower than the ELVs set at Directive 2010/75/EE for the large combustion plants. Existing environmental permits allows a bubble limit >1000mg/Nm3 for existing LCP. In addition the SO2 ELV of 600 mg/Nm3 practically prohibits the use of liquid firing >50%, while the NOx ELV of 450 mg/Nm3 (table 5.12) allows liquid firing >50%. In order to raise this incompatibility the SO2 ELV upper limit should be changed to 850 mg/Nm3.
108	Poland	5	10		616	38	BAT 38. Routing process off-gases to the refinery fuel gas system is one of the method of treatment but not the only way.	38. In order to reduce emissions to air from the etherification process, BAT is to ensure the appropriate treatment of process off-gases	Method of treatment of process off-gases depends on nature, scale and complexity of the installation and should not be restricted to only one method. Small amount of such off-gases results in unproportional costs of routing them to the refinery fuel gas system and leads to additional energy use, and thus, additional emission.
109	CONCAWE	5	13		617	46	The applicability restriction that follows BAT 46 also applies to BAT 45 and the current formulation does not address this.	We suggest either to replicate the applicability statement (Generally applicable for crude and vacuum distillation units. May not be applicable for standalone lubricant and bitumen refineries with emissions of less than 1 t/d of sulphur compounds. In specific refinery configurations, applicability may be restricted, due to the need of e.g. large piping, compressors or additional amine treating capacity) under BAT 46 in the BAT 45 or to extend the "Applicability of BAT 46" to "Applicability of BAT 45 and 46".	Small specialised refineries will generate small quantities of sour water streams as a result of their operations but in insufficient quantities to justify installing a sour water stripping unit. This was recognised in the TWG meeting and the final BAT conclusion 54 and in BAT 46 but internal consistency between BAT needs to be ensured.
110	EEB	5	17		620	54	Table 5.17: Efficiency values of existing Sulphur Recovery Units (SRUs) are not associated with the use of BAT and are not based on data provided in the document in chapter 4.23.5.5 (page 504). EEB has expressed its split view accordingly.	Repeat BATAEL Conclusions discussion determining minimum efficiency of 99.5% as associated with BAT in existing installations.	Revised REF BREF should contribute to prevention and minimisation of emissions. Sulphur emissions from SRU are of very high relevance when evaluating the refinery sector as a whole. Progress has been made and reported and documented since the last BREF data collection (2003) which defined an efficiency of 99.5% when using BAT (just one Member State opposing, proposing 98.5% efficiency for existing installations). Some refineries have upgraded existing installations and achieve high SRU efficiencies in existing plants. The revised REF BREF should take this development into account and should contribute to making progress in environmental protection.

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Overall Comment Number	Comment from (Forum Member)	Chapter / section No.		Page # (PDF of July'13 Final Draft)	BATC#	Comment description	Proposal for modification	Rationale	
111	Czech Republic, Poland			620	54	Original text in the document BREF D2 REV 1 (before final TWG meeting) "BAT is to use one or a combination of the following sulphur removal techniques" should be maintained. Requirement to use all techniques including TGTU unit is excessive, particularly in case of existing units and when existing Claus unit efficiency meets the BAT-AEL criteria for sulphur recovery efficiency (≥ 98.5%) required in Table 5-17. Retrofitting of existing Claus unit by installation of TGTU unit would result in very massive inadequate investment costs. (PL) Obligatory requirement to use all techniques mentioned in BAT 54 seems to be not in line with art. 15.2 of IED and the general rule being applied for every BREF saying that "techniques listed and described in these BAT conclusions are neither prescriptive nor exhaustive. Other techniques may be used that ensure at least an equivalent level of environmental protection". Therefore, we propose to replace "all techniques" by: "one or a combination of the following techniques (or techniques given below)"	54. In order to reduce sulphur emissions to air from off-gases containing hydrogen sulphides (H ₂ S), BAT is to use one or a combination of the techniques given below:	Requirement to use all techniques including TGTU unit is excessive, particularly in case of existing units and when existing Claus unit efficiency meets the BAT-AEL criteria for sulphur recovery efficiency (≥ 98.5%) required in Table 5-17. Retrofitting of existing Claus unit by installation of TGTU unit would result in very massive inadequate investment costs with only minor improvement in sulphur emission. Expected cost for TGTU installation is 40 - 60 mln. EURO (based on real documentation prepared in CESKA RAFINERSKA company several years ago).	
112	The Netherlands	5	17	620	54	The BAT conclusions on waste gas sulphur treatment are not ambitious enough and weaker than the 2003 conclusions, which is a disadvantage for those plants that have taken the appropriate measures in the last ten years.	The BAT associated environmental performance level range for the sulphur recovery efficiency of sulphur recovery units should be 99.5-99.9% for both new and existing installations	In the Netherlands, the BAT AEL's of the 2003 BREF for SRU's (99,5-99,9 % for new and existing plants) are met by 4 of the 5 refineries. One refinery has an efficiency of 98,9-99,0 % with the obligation in the permit for higher efficiency. This means that a SRU configuration with sufficient capacity for the H ₂ S feed to the unit must be installed, also during scheduled maintenance processes.	
113	Czech Republic			621	56	New added text "Flare gas recovery system may be retrofitted in existing units" should be taken out. This would result in high investment costs, particularly in case where due to refinery configuration several flares are in operation.	To delete the following text: "Flare gas recovery system may be retrofitted in existing units"	High investment costs, only minor improvement in emission to the air.	
114	UK	5	19	2	623	34	This comment relates to the definition of low nitrogen refinery fuel oil. There is no definition provided for low nitrogen refinery fuel oil, which is described as a technique in BAT34.	Include a description of low nitrogen refinery fuel oil (RFO) for combustion in the glossary in section 5.19.2.	Without a definition of 'low' the regulator cannot determine whether the technique has been applied or not. The UK considers: low sulphur RFO as fuel with less than 0.5% S low nitrogen RFO as fuel with <0.5% N low sulphur feedstock as feedstock with <0.5% S.
115	UK	5	19	3	624	-	This comment relates to the definition of low sulphur refinery fuel oil and low sulphur feedstock for catalytic cracking. There is no definition provided for low sulphur/nitrogen fuel or low sulphur feedstock, which are described as techniques in BAT25, BAT26, BAT35 and BAT36.	Include a description of low sulphur refinery fuel oil (RFO) for combustion and low sulphur feedstock for catalytic cracking in the glossary in section 5.19.3.	Without a definition of 'low' the regulator cannot determine whether the technique has been applied or not. The UK considers: low sulphur RFO as fuel with less than 0.5% S low nitrogen RFO as fuel with <0.5% N low sulphur feedstock as feedstock with <0.5% S.
116	Greece	5	21	629	-	A link must be provided between Chapter 5 - BAT Conclusions and Chapter 4 - Techniques regarding sludge treatment	The text in the first line of the Table must be revised as shown below: "Prior to final treatment, techniques as described in 4.25.2, 4.25.5 and any combination of them, (e.g. in a fluidised bed incinerator), the sludge are dewatered and/or de-oiled (by e.g. centrifugal decanters or steam dryers) to reduce their volume"	A clear statement is required in Chapter 5 - BAT Conclusions - about techniques available for the treatment of sludge produced in refineries.	
117	Germany	7		644	-	The BAT AELs in the second draft were reported as daily averages, which were commented by the TWG members. Before the final meeting, BAT-AELs were changed to monthly averages. The data base for this major change was not transparent. We are aware of the fact that in some special cases where high fluctuations of emissions (daily average) occur an additional long-term average value may be beneficial but environmental protection must be ensured also on a short-term basis (e.g. daily).	Present in the BAT conclusions BAT AELs based on daily / short-term averages and if considered beneficial add monthly averages in a technical equivalent relation. We recommend to re-open the discussion on TWG level.	The whole review process was mainly based on daily averages, especially the proposed and commented BAT-AELs in the second draft. Sufficient data for BAT-AELs on a short-term basis should be available, because both the permitting decision and the monitoring is based on short-term values. In the following, only a few examples are given in order to show where the level of ambition were lowered considerably by maintaining the levels while extending the reference period from a day to a month. 1) D2 table 5.4: FCC process NOx <30-200 mg/Nm3 daily (full combustion mode). Final draft table 5.4: NOx <100 – 300 mg/Nm3 monthly (full combustion mode) 2) D2 table 5.4 FCC process NOx <30-300 mg/Nm3 daily (partial combustion mode). Final draft table 5.4: NOx 100 – 400 mg/Nm3 monthly (partial combustion mode) 3) D2 table 5.5 FCC process Dust <5-25 mg/Nm3 daily. Final draft table 5.5: Dust 10-25 mg/Nm3 monthly for new units, 10-50 mg/Nm3 for existing units 4) D2 table 5.8 coking process Dust 5-50 mg/Nm3 daily. Final draft table 5.8: Dust 10-50 mg/Nm3 monthly We think that the daily averages from D2 could have been kept as the examples show. At least in Germany, the operating units meet these daily averages.	

Annex B - Comments on the draft REF BREF representing the view of certain members of the forum

Overall Comment Number	Comment from (Forum Member)	Chapter / section No.	Page # (PDF of July'13 Final Draft)	BATC#	Comment description	Proposal for modification	Rationale
118	CONCAWE	7	644	-	In the REF BREF Draft 2 Rev.1 released on 26.02.2013, economic elements to assess the applicability of certain techniques in existing units were mentioned in BAT conclusions 24, 25, 28, 30bis, 34 and 60 and were supported by information available in chapter 4 (Those BAT numbers refer to the Final Draft released in July 2013 - previously these referred to: 24, 25, 28, 30 bis, 34 and 60 – now 25, 26, 29, 32, 36 and 54). At the Final TWG meeting in March 2013 it was decided to remove any reference to economic considerations as part of applicability restrictions for the application of those specific techniques in existing units because of the terms "economic viability" that were deemed inappropriate. CONCAWE expressed a dissenting view with regard to this decision. The EIPPC Bureau rightly pointed out in their assessment of this dissenting view the necessary information was available but did not re-instate the part of the text that was undisputable.	Economic information should be considered in the formulation of applicability constraints for BAT 25, 26, 29, 32, 36 and 54. For BAT 25 (II.i) and 32 (i): "For existing units, the applicability may be limited by space availability. For existing units equipped with a 3-fields ESP, the applicability of upgrading to a 4-fields ESP may be limited by the high investment and marginal abatement costs". For BAT 26 (II. i) and ii) and 36 (II. I) and ii): "For existing units, the applicability of the technique may be limited by the high investment and operational costs and may require significant space availability". For BAT 29 (iv): "For existing units, the applicability of the techniques may be limited by the high investment and operational costs and by space availability". For BAT 54: the footnote should read as follows: For retrofitting existing SRUs, the applicability of technique may be limited by the SRU size and configuration of the units and the high investment costs related to upgrading the type of sulphur recovery process already in place.	The BREF Guidance Decision (section 2.3.7.2.7) refers to the assessment of the economic viability of a given technique for the sector concerned. It clearly states the economics sub-section under chapter 4 includes cost elements that serve two purposes: a) allowing the TWG to decide (through an assessment made on the basis of the ECM REF) on whether the technique at stake is economically viable and can therefore be BAT for the sector as a whole and b) when this is the case (the technique is BAT), allowing the TWG to decide which of the economic limitations to its applicability will be recorded in the BAT conclusions chapter. The EIPPCB has deemed as admissible the industry dissenting view aiming to re-instate the applicability restrictions for existing units due to economic considerations in the BAT conclusions "Economic viability" should not be part of the formulation of applicability constraints for BAT. However the decision made at the final TWG meeting to remove all elements used to assess the applicability of those BAT referred to above was not justified. The EU refining industry therefore urges the article 13 Forum to reconsider the conclusion drawn at the final TWG meeting and therefore adequately apply the rules described in the Guidance (Section 3.2.3 Information to assess the applicability of techniques) like they have been applied when Decisions on BAT conclusions have been adopted for other BREFs (glass - BAT 2, 42, 63 - and iron and steel - BAT 22, 23, 32, 36, 73 - in particular).
119	Poland	7	644	-	Split view No. 4. In our opinion, in the sections on the applicability of specific techniques, the provisions of the limitations associated with the economics should be restored.	As stated in the original text of the document BREF D2 REV 1 (before final TWG meeting)	Provisions concerning limitations associated with the economics seem to be consistent with the definition of BAT in the IED and with the provisions of Sections 2 and 3 of the Commission Implementing Decision of 10 February 2012 laying down rules concerning guidance on the collection of data and on the drawing up of BAT reference documents and on their quality assurance referred to in Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions.
120	Sweden	7	644	-	Split view 1 includes Split view from Sweden on the need for load based BAT-AELs for discharges to water	Sweden do not support the spit view regarding the opinion about short term values (daily values). Sweden has raised the dissenting view regarding discharges to water that load based BAT-AEL should be included in the BAT 10 complementary to the concentration based BAT-AEL. We propose for COD: 10-50 gram/tonne crude (yearly average) and for total-N: 2-15 gram/ton of crude (yearly average)	Sweden generally prefer long term BAT-AEL. According to Commission Decision 2012/119/EU, The guiding document, 5.4.7.3. "Yearly averages generally give a good image of the environmental performance related to process/technique, independently of local disturbances or short term variations as they include emissions at installation levels from all sources and conditions throughout the year. Art.15.3a in the directive gives the opportunity for member states to use daily values. Regarding our split view on loads BAT-AEL we are of the opinion that environmental effects in general relates to load rather than concentration in the effluent point. The existing BREF do have load BAT-AELs. We do not support a weakening of the document. By regulating only concentrations and not the load (or the total flow of waste water) there will not be an incentive to reduce the use of water. On the contrary this might lead to high level flows of waste water in order to keep low concentrations. Chapter 3 and 4 of the draft contains necessary data to decide on load based BAT-AEL. According to Commission decision 2012/119/EU "In certain cases, Specific loads are a better indicator of performance than concentration, for example when concentrations are increased as a result of measures to reduce effluent volumes and to conserve energy, e.g. closing water circuits." This is in line with the Swedish split view.
121	Sweden	7	644	-	Split view 3	Sweden do not support the spit view in terms of changing the BAT-AEL but support the split view in such a way that the text should be changed so it made clear that by using a cyclone alone does not guarantee that BAT-AEL is achieved	The BAT-AEL is at the same level of other dust emitting installations. There are techniques which makes it possible to achieve BAT-AEL and these techniques are used at a large number of refineries
122	Sweden	7	644	-	Split View 7 includes split view from Sweden	Sweden shares the view of NL, BE and BBE that the BAT-AEPL should be stricter. We agree with Belgium that a BAT-AEPL shall be > 99 %	By using TGTU an efficiency over 99 % will be reached. By raising the level from 98,5 to 99 % will make a very small difference regarding the number of plant achieving this level. The data in fig. 3.36 represents average values which probably also includes NOT NORMAL CONDITIONS. 50th percentile is not strict enough to be BAT. We are not in favour of weakening the document compared to existing BREF but can accept 99 %
123	Sweden	7	644	-	Split View 9	Sweden can to some degree support EEB but have no suggestion for a BAT-AEL	There should be a BAT-AEL for emissions from these units
124	Sweden	7	644	-	Split View 10		
125	Croatia		654	-	supporting all CONCAWE remarks listed under chapter 7, table 7.2, 4th remark where it is highlighted the importance of economic consideration when BAT applicability is considered;		
126	The Netherlands		685	-	Annex 9.[6]: detailed comments on this annex were given earlier in the process. (draft 2). These comments still hold.	Appendix A: The sources that will be part of a bubble (combustion installations and process installations) must be identified by the results of emission monitoring. (following annex V, IED, BAT conclusions for individual sources and additional national legislation. Appendix B: The Netherlands do not agree with standard flue gas factors; (see comment on Ref Draft 2 rev1.(February 2013). The flue gas calculations must be made based on the actual fuel composition . The SRU must be incorporated in the bubble based on the designed capacity and the BAT AEL from BAT 60. (efficiency factor).	Under the right conditions and premises a bubble can be more practicable and can have environmental as well as economic advantages; the resulting emission must be equal or lower than the total emission levels that would be achieved based on application of individual BAT AELs. Another important condition is that the emission ceilings per refinery that are already agreed on in existing permits must not be exceeded, e.g. due to application of too many BAT AEL's that are in the upper part of the AEL range.