

When the measurement technology cannot validate new low BATAELs, what to do?

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- I. EPPSA
- II. Industrial Emission Directive (IED) and LCP
BREF Revision
- III. Measurement requirements and influence
on ELV setting
- IV. Conclusions

- I. **EPPSA**
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The European Power Plant Suppliers Association

EPPSA is the voice, at European level, of companies supplying power plants, its components and related services.

EPPSA members, located throughout Europe, represent a leading sector of technology with more than 100 000 highly-skilled employees.

Virtually all thermal power plants in the EU are built by members of EPPSA or equipped with their components, and provide around 50% of Europe's electricity.

EPPSA members provide the most advanced thermal power technologies in the world.

I. EPPSA

Our Members

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formerly Ansaldo Caldale



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BWE



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I. EPPSA

Objectives

- **Promote state-of-the-art, flexible and efficient thermal power generation technologies** and their crucial contribution to a clean and dispatchable energy supply.
- **Strive to increase investments in research, development and demonstration (RD&D)** as a key factor in driving EU competitiveness as well as ensuring an affordable low emission power supply.
- **Ensure that the added value of thermal power generation is appropriately recognised** in a fair and balanced legislative framework for a secured, environmentally friendly and affordable electricity supply

EPPSA supports

In the EU

>40% GHG reduction by 2030

At global level

40–70% GHG reduction by 2050

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II. The Industrial Emissions Directive

Industrial Emissions Directive (2010/75/EC)

- IED is the frame regulating maximum allowed air emissions, independently of the technology
- IED influences plant design and helps determine what Power Plant or Cooling technology will be pushed

Acronyms:

- BAT: **B**est **A**vailable **T**echnique
- BREF: **B**AT **R**eference Document (published by Commission)
- ICS (**I**ndustrial **C**ooling **S**ystems) BREF
- LCP (**L**arge **C**ombustion **P**lants) BREF



II. The Industrial Emissions Directive

What does the IED mean for the existing BREFs?

BREFs need to be revised according to the IED

BREFs, BAT conclusions and BAT-AELs are now explicitly defined in the IED

Strengthened link to permitting – the reference for permit conditions, in particular for setting emission limit values (Art. 15) and updating existing permits (Art. 21)

ALL BREFs need to be rewritten according to the IED requirements, going from “informative” to “mandatory” BREFs

II. Strengthened BREFs under the IED

Role of Binding BAT Conclusions under the IED

Article 14

Permit conditions

3. BAT conclusions shall be the reference for setting the permit conditions.

- The emission limit values defined in the BREFs (BAT Conclusions) must be met
- The Member States' competent authorities must ensure that emissions do not exceed the values set in the 'BAT Conclusions' when setting their permit conditions to ensure that operators fulfil their basic obligations (Art. 15)

Article 15

Emission limit values, equivalent parameters and technical measures

[...]

3. The competent authority shall set emission limit values that ensure that, under normal operating conditions, emissions do not exceed the emission levels associated with the best available techniques as laid down in the decisions on BAT conclusions referred to in Article 13(5) through either of the following:

- (a) setting emission limit values that do not exceed the emission levels associated with the best available techniques. Those emission limit values shall be expressed for the same or shorter periods of time and under the same reference conditions as those emission levels associated with the best available techniques; or
- (b) setting different emission limit values than those referred to under point (a) in terms of values, periods of time and reference conditions.

Where point (b) is applied, the competent authority shall, at least annually, assess the results of emission monitoring in order to ensure that emissions under normal operating conditions have not exceeded the emission levels associated with the best available techniques.

II. Strengthened BREFs under the IED

Updating of permits

Once new BAT Conclusions have been adopted for a specific industrial activity (e.g. ‘Large Combustion Plants’), the Member States’ competent authorities have **four years** to ensure that:

- All permit conditions have been updated to reflect the new BAT Conclusions
- All installations comply with the new permit conditions

Article 21

Reconsideration and updating of permit conditions by the competent authority

[...]

3. Within 4 years of publication of decisions on BAT conclusions in accordance with Article 13(5) relating to the main activity of an installation, the competent authority shall ensure that:
 - (a) all the permit conditions for the installation concerned are reconsidered and, if necessary, updated to ensure compliance with this Directive, in particular, with Article 15(3) and (4), where applicable;
 - (b) the installation complies with those permit conditions.

The reconsideration shall take into account all the new or updated BAT conclusions applicable to the installation and adopted in accordance with Article 13(5) since the permit was granted or last reconsidered.

II. Why are BREFs important?

BREFs beyond Europe

- BREFs are interesting for many countries, especially emerging ones
- The ongoing discussion on the LCP BREF is followed in many countries
- Many BREFs were translated, e.g. to Korean.
Official request to the European Commission to translate it into Chinese
- Good depiction of European technologies in the BREF is a plus in those markets also applying the BREF requirements

II. Typical BREF Structure

Preface / scope

1. General information on the sector
2. Applied processes & techniques
3. Current emission and consumption levels
4. Techniques to consider in the determination of BAT
5. **BAT conclusions, including:**
 - BAT techniques – description, applicability
 - BAT emission levels (BAT-AEL) & monitoring
 - BAT consumption levels & monitoring
6. Emerging techniques
7. Concluding remarks and recommendations for future work



Adoption via
implementing act

II. How did the BREF Review proceed?

Technical Working Group (TWG)

- To assist the permitting authorities and companies to determine BAT, the Commission organised an exchange of information between experts from the EU Member States, industry and environmental organisations
- ONLY EU-level industry organisations (like EPPSA) were invited to represent their sectors
- This work is co-ordinated by the [European IPPC Bureau](#) of the Institute for Prospective Technology Studies at the EU Joint Research Centre in Seville (Spain)
- Usually, a Kick-off Meeting and a final TWG Meeting are organised, with continuous exchange in the meantime, providing information for the EIPPCB to produce 1-2 Draft BREFs.
The (final) Draft BREF is sent to the Article 13 Forum where EU-level industry organisations (like EPPSA) are also present



EPPSA is a Member of the LCP BREF TWG

II. LCP BREF BATAELs

Elaboration and current values

- Data collection:
 - Based on questionnaires filled by LCPs across Europe.
 - Not all data were assessed equally by Member States
 - Not sure how the different measurement techniques were taken into account when deriving BATAELs
- Result:
 - A set of detailed, supposedly–implementable BATAELs according to plant size, fuel, age, etc.
 - On many pollutants, the values of the BATAELs are realistic and can be reached by most, but not all, plants using BAT
 - **But...**



II. LCP BREF BATAELs

Elaboration and current values: example of Mercury

- How reliable are the Mercury BATAELs derived from operational data?
- Was the **mercury contents of the fuel** checked?
 - 75 well-performing coal/lignite plants (out of 148) provided a mercury emission level in their questionnaire
 - But only **17 out of 75** checked for mercury in their fuel
- Was **geographical representativeness** checked?
 - Although **29 plants in Germany** reported a mercury emission level, **only 1** had checked the mercury contents in its fuel
- Are **data gathering techniques** comparable?
 - Only **12 out of 75** plants had a continuous mercury monitoring, and only 1 plant with continuous monitoring reported emitting on average $<1 \mu\text{g}/\text{Nm}^3$ (the lower end of every mercury BATAEL)
- ...are the Mercury BATAELs representative?
- Data from US plants was used in the argumentation. But are lignites comparable?

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III. Measurement Requirements

Mercury BATAELs

- Mercury figures: obtained from a sample of plants whose sufficient representativeness can be questioned. Data sets are not complete enough to be assessed
- Measurement standards matter
- BATAELs all have $<1 \mu\text{g}/\text{Nm}^3$ as their lower ends.
 - This hints at Competent Authorities that a $1 \mu\text{g}/\text{Nm}^3$ ELV is possible
 - Even for existing plants, a footnote says that: *“The lower end of the BATAEL range can be achieved with specific mercury abatement techniques.”*
- Unclear how the EIPPCB turned the reported values, which were not necessarily thoroughly checked by Member States, into BATAEL ranges
- BATAELs are based on average values, while ELVs must not be exceeded
- Plants at or above 300 MW must in general do continuous monitoring
- Tables 10.8 and 10.9 (combined here) give mercury BATAELs:

Combustion Plant total rated thermal input (MWth)	BAT-AELs ($\mu\text{g}/\text{Nm}^3$)		Averaging period
	New plants	Existing plants	
< 300 Coal	<1-3	<1-9	Average of samples obtained during one year
< 300 Lignite	<1-5	<1-10	
\geq 300 Coal	<1-2	<1-4	Yearly average
\geq 300 Lignite	<1-4	<1-7	

III. Measurement Requirements

Mercury BATAELs

BATAELs were proposed by the EIPPCB in Draft 1, and then submitted to TWG members for analysis.

- Already, the EIPPCB figures could be questioned because they did not say how they derived them from reported operating data
- During “compromise-making”, Green NGOs try reducing the figure, arguing that other countries have tighter requirements

BUT, the BATAELs are values to be used and not exceeded when setting ELVs. And ELVs have specific measurement requirements attached to them

- As long as plants are allowed to check ELV compliance through continuous sampling, OK
- But if continuous measurement is asked at very low ELVs (e.g. $<4 \mu\text{g}/\text{Nm}^3$), alternative procedures such as known removal efficiency (e.g. 95% abatement, based on known coal properties) could help guaranteeing environmental protection



III. Measurement Requirements

EN Standards for ELVs compliance check

- Currently, the instrument for continuous monitoring with the lowest measurement range only enables compliance with an ELV as low as $4 \mu\text{g}/\text{Nm}^3$, while complying with the measurement standard
- There are prospects that the measurement standard could be improved and that valid measurements could be established down to $2 \mu\text{g}/\text{Nm}^3$
- Should the BREF be about currently-available BAT, which would limit ELVs to $4 \mu\text{g}/\text{Nm}^3$ (which already is an environmental improvement compared to the previous lack of EU-wide mercury requirements)?
- Or should the BREF hope for development of measurement techniques, or borrowing of foreign ones, hoping to further decrease emissions?



III. Measurement Requirements

BATAELs leading to incompliant ELVs

- The measurement standard's requirements and associated measurement instrument performance do not mean that plants are unable to emit less than 4 µg/Nm³ on daily averages
- EPPSA members are able to supply efficient flue gas cleaning systems with very low recorded emissions. See our [Mercury Removal Paper](#)
- Issue of measurement remains unsolved, but should not hinder investments into efficient mercury removal technologies
- Agreements with local authorities based on available measurement techniques can be found

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IV. Conclusions

- Improving Air Quality thanks to advanced Flue Gas Cleaning is one of the core competences that EPPSA members can provide for a cleaner environment
- The new mercury BATAELs are good for the environment and can be fulfilled with technology from the EPPSA members
- Doubts remain on the possibility of guaranteeing continuous emissions monitoring at very low concentrations under $4 \mu\text{g}/\text{Nm}^3$, but agreements can be proposed to local authorities with help of EPPSA expertise

Thank you for your attention!

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