February 2018

Note to warn stakeholders on the applicability for industrial permits of Waste Incineration BREF Draft BAT-AEL values.

This note is made in order to warn stakeholders that BATAEL values in the Waste Incineration BREF Draft (in particular lower ends) are not final values and need contextual information. Indeed, it may happen/has happened that they are already considered as requested limit values in future permits or in calls for tenders from either consultants or local authorities.

The BREF process is actually still ongoing and the current draft has been commented by the members of the Technical Working Group, in particular because the proposed values do not consider major issues as integrated approach and measurement uncertainty. Moreover, the BREF's BAT conclusions do not mention pieces of information provided in legislation, in JRC-EIPPCB background papers or during exchanges within the WI BREF Technical Working Group, that are of the utmost importance to avoid misunderstanding these BAT conclusions.

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Today a Waste-to-Energy (incineration with energy recovery) plant, for which the operating permit sets, for example, a daily threshold of 10mg/Nm^3 for dust emissions, will typically ensure emissions of less than 5mg/Nm^3 under normal operation. This allows the operator to comply with the daily limit of 10mg/Nm^3, even if occasionally and for short periods of time, one can observe slight variations in emission levels, or slightly increased measurements because not all the uncertainties of the measuring

instruments are taken into account by the Confidence Interval of 95% (CI95%) given in Part 6, Annex VI of the IED, Industrial Emissions Directive.

However, this situation risks to change if future ELVs (Emission Limit Values) are derived from the BAT-AELs (Best Available Techniques Associated Emission Levels) proposed by the JRC-EIPPCB in the first draft (D1) of the revised Waste Incineration BREF (published in May 2017) without taking into account what these BATAELs represent and to what they correspond. The purpose of this note is therefore to inform and raise awareness on points very important for the implementation of these BATAELs.

The main points addressed in the note are:

- D1 is a working document. BAT-AEL ranges may be different in the final document.
- BAT-AELs are defined under NOC (Normal Operating Conditions) and therefore ELVs derived from BAT-AELs should only apply in NOC.
- When deriving BAT-AELs in D1 measurement uncertainties have not sufficiently been taken into account. ELVs have to be set considering the need of a margin for operating contingencies and uncertainty.
- BATAELs in D1 are given with very little information on cross effects. Fulfilling the lower end of all BAT-AELs and higher end of BAT-AEEL will not be possible.
- The costs to lower ELVs may outweigh the benefits.

1. Background information

On 24th May 2017, the JRC-EIPPCB (Joint Research Centre – European Integrated Pollution Prevention Control Bureau in Seville) released its first draft ('Draft 1' or D1) of the future revised Waste Incineration BREF (Best Available Techniques Reference Document) to the Technical Working Group (TWG) taking part in its elaboration. The members of this TWG were asked to provide their comments on the 955 pages of D1 by 8th of September 2017.

Chapter 5 of this D1 presents the BATs (*Best Available Techniques)* Conclusions, in other words the available techniques identified by the JRC-EIPPCB as being the most efficient to avoid or minimize the plant's impact to the environment. BAT-AELs are associated with some of these BATs. These BAT-AELs, nearly always expressed as ranges are derived from waste incineration lines that use the BATs. Within four years from the publication of the BAT-conclusions of the Waste Incineration BREF, the operating permits of all European incinerators should be revised in order to make compulsory the use of the BATs and set ELVs (Emission Limit Values) ensuring that the emissions do not exceed the BAT-AELs.

As requested, CEWEP, ESWET, FEAD, Eurits, HWE, Euroheat and Power and Cefic provided a total of around 1700 comments (out of a total of 2900) on the draft document, related in part to the form, but mainly on the method used to derive BAT-AELs from operational values and on the applicability of the proposed BAT-AELs.

D1 is only a working document prepared by the JRC-EIPPCB for the TWG. The values of BAT-AELs ranges proposed in this D1 will be reviewed (and probably, at least partially, modified[1]) before the

[1] In order to derive BAT-AELs, the JRC-EIPPCB first skimmed some of the values provided by waste incineration lines if they were considered to be non-representative for various, often arbitrary, reasons. In particular if, according to JRC-EIPPCB, they correspond to OTNOC situations (Other Than Normal Operating Conditions). Then, the remaining values are put on a graph. BAT-AELs ranges are then set for the various substances controlled in 'D1 from the low values of the graphs, in a way that is – to our knowledge – unidentified (and this raised many questions from TWG members for different BREFs).
What needs to be acknowledged is that the JRC-EIPPCB has never explained how these ranges were set. The data provided by some lines are higher than the BAT-AEL values, while data provided by others are lower (which is good because some

final draft, expected for mid-2018, and perhaps again before adoption of the final document, expected for publication by end of 2019 – beginning of 2020 Indeed, two rounds of official validation are needed before the final adoption: through the IED Art.13 Forum and the IED Art.75 Committee).

It is undoubtedly good practice to seek and anticipate regulatory changes in order to avoid, as far as possible, to have to repeat compliance work soon after having completed refurbishment.

As a result of the publication of D1, demands that aim to comply with the requirements of the future BREF have already appeared in calls for tenders for works contracts or renewals of operation contracts for Waste-To-Energy plants. Moreover, as a precaution, the performances required these calls for tenders are the most demanding of the BREF and **for the ELVs in particular, some of them already require the lower limit of BAT-AEL ranges.**

It is important to understand that such a laudable intention can be the source of many problems. This is why it is advisable to have certain crucial points in mind before referring to the lower ends of the BATAEL ranges.

2. NOC – EOT

In accordance with the IED (Art. 3.13 and 15.3), **BAT-AELs are defined under NOC (Normal Operating Conditions) and future ELVs, that must be set to ensure that emissions do not exceed BAT-AELs, should as well be established under NOC.**

Existing ELVs for waste incineration, as laid down in Annex VI of the IED, will remain valid. But, while ELVs for periodically measured substances apply under the general IED regime, only in NOC, there is a difference for continuously measured substances. The incineration sector is the only industrial sector for which compliance with existing ELVs (the ones laid down in Annex VI) of the continuously measured emissions is required during EOT (Effective Operating Time), as soon as and as long as waste is burning.

The IED does not define NOCs, but there are some examples of OTNOC situations in both the IED and the BREF Guidelines[2]. **Therefore, if one refers to BAT-AELs in order to define future ELVs, it should be made clear that their scope is only in NOC.** Member States such as France, already said in the national WI BREF shadow working groups that they will apply BATAEL-based ELVs in NOC.

NB: BAT-AEL ranges proposed in D1 for continuously measured air pollutants only relate to daily averages under NOC. There are no BAT-AELs for ½-hour and 10-minutes average values. Only the ELVs in IED Annex VI are applicable for these periods (½-hour and 10-minutes) and therefore, it is within the EOT (Effective Operating Time). Similarly, the daily ELVs of IED Annex VI remain valid for OTNOC periods within the EOT (excluding start-up and shutdown if no waste is burnt).

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lines reported values of zero). This pushes to believe that the decision of the JRC-EIPPCB is more political than based on technical data and evidence. While some Member States, operators and suppliers argue that these values are too low given the actual performances of the BAT concluding that these BAT-AELs cannot become ELVs, other Member States and environmental associations demand to lower the BAT-AELs to the grounds. The former is based on the idea that if one or a few lines achieved such low values (the values observed for one year 2014), all the plants could do it forever.

[2] A non-exhaustive list of OTNOC is given:
- in IED, Article 14.1.f. : (OTNOC "such as start-up and shut-down operations, leaks, malfunctions, momentary stoppages and definitive cessation of operations")
- in IED, Article 47 ("In the case of a breakdown, the operator shall reduce or close down operations as soon as practicable until (NOC) can be restored").
- in the Guidelines (Decision 2012/119/EU) in § 4.6.2.2.3.ii ("bypassing of abatement systems") and in § 5.4.7.2.6 ("regular maintenance, exceptional conditions").

3. Measurement uncertainty

Daily BAT-AEL ranges were set by the JRC-EIPPCB from operating values of one year (about 17,520 half-hourly average values per pollutant per line) provided by more than 300 incineration lines selected by Member States and considered as *well performing plants*. After filtering values they considered as obtained in OTNOC, the JRC-EIPPCB set - pollutant by pollutant (i.e. without really checking cross-media or cross-pollutant effects) - daily BAT-AELs from the lowest maximum operating values received.

In accordance with the decision taken at the TWG Kick-off meeting[3] in January 2015, **the operators provided data without taking into account the uncertainties, so BAT-AELs as well do not take into account uncertainty of measurement.**

As they did for Large Combustion Plant BREF, the JRC-EIPPCB likely verified in the ROM (Reference Report on Monitoring, draft document on measurement by JRC-EIPPCB, publication expected in 2018) the LoQ (Limit of Quantification) for online instruments. However, what was explicitly stated is that, when defining the BAT-AELs, the JRC-EIPPCB did not take into account the overall uncertainty of measurements and in particular the part, although important, resulting from online calibration of instruments (QAL2).

BAT-AELs are therefore expressed without uncertainty information. Moreover, the JRC-EIPPCB stated that the implementation of BATAELs as ELVs and the compliance check is a responsibility of Member States, which allegedly allows to completely disregard monitoring uncertainty requirements during the BREF review. Indeed, how can Member States set ELVs based on BAT-AEL values whose levels of compliance have not been checked with standards regarding uncertainty?

A study (http://www.cewep.eu/2017/12/01/ineris-report-on-monitoring-of-air-emissions/) made by INERIS[4] on request of the professional associations CEWEP, ESWET and FEAD within the context of the WI-BREF revision shows that the performances of the monitoring techniques available on the market do not meet the requirements of the standards on monitoring made compulsory by the IED in respect of the maximum levels of uncertainty:

1. already for most of the controlled substances at the level of the ELVs of Annex VI of the IED;
2. and *a fortiori* for the BAT-AEL ranges proposed in Waste Incineration BREF D1, all of which are equal or below IED's ELVs.

Annex I summarizes the main conclusions of this study, which was shared with the JRC-EIPPCB and TWG members already.

This situation can be tolerated for the ELVs derived from the IED since operating values are in practice significantly lower than the ELVs. The margin between the two compensates for the fact that uncertainty is greater than required by the standards. However, for most pollutants, if the ELVs are set below the BAT-AEL high ends, there will be no margin, or it will be insufficient to compensate, should uncertainties be higher than required. See Figure 1:

[3] Meeting for the launch of the BREF review.

[4] INERIS (Institut National de l'Environnement Industriel et des Risques) is a public institution of an industrial and commercial nature, placed under the aegis of the French ministry in charge of the environment. It is the regular advisor of the Ministry of the Environment on these issues (monitoring, uncertainties, compliance with ELVs). The authors of the INERIS report for the Waste incineration BREF are members of the CEN (*European Committee for Standardisation)* and in particular, they are active in the working groups on standards on the monitoring of substances which are controlled for incineration (dust, HCl, HF, SO_2, NOx, NH_3, etc.).

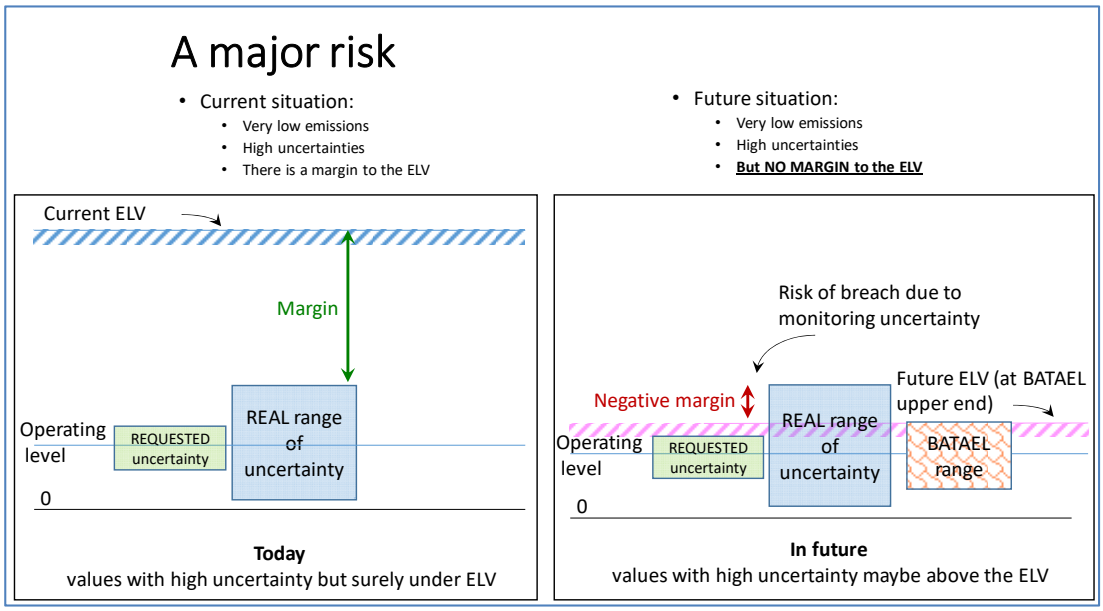

Figure 1: The actual uncertainty is significantly higher than the uncertainty required by the standards. As the concentrations obtained today are much lower than the ELVs, and due to the margin, the operator and the regulator are certain that the values – even though not exact – are below the ELV (as shown on the left). If the ELVs are lowered in the future at lower BAT-AEL levels, due to the actual uncertainty, it will be impossible to know if the emissions are below the ELVs (as shown on the right).

The extreme difficulty to perform QAL2 and AST calibration tests (defined for the first time by EN 14181 standards) when concentrations are very low and not changing is well known. It will be nearly impossible to calibrate the instruments if ELVs are lowered. The use of calibration gas will not help since it should be done close to daily ELV level which is most often already impossible[5] today at Annex VI ELVs. Member States such as France, already said in the national WI BREF shadow working groups that they will refer to the upper end of the BATAEL ranges to check the compliance of emissions in NOC.

In any case, when ELVs different than the ones from Annex VI are set, the IC95 relative uncertainties of IED Annex VI as well as the maximum uncertainties required by the monitoring standards for each substance will need to be modified (allowed uncertainties should be significantly increased). This means that both IED and the standards need to be revised before the new BAT-AEL based ELVs are made compulsory. However this is unlikely.

4. Integrated approach

BAT-AEL ranges have been developed substance by substance independently from each other. The same is true for the other BAT-AEPLs *(BAT Associated Environmental Performance Levels[6])* and in particular those related to energy efficiency, the BAT-AEELs *(BAT Associated Energy Efficiency Levels)*.

[5] Calibration gases at very low concentration with good accuracy are not available. Dilution introduces uncertainties. Reference material are not available for some pollutants such as dust. Artificially high concentration in one pollutant (the calibration gas) will mask the interferences occurring between the different substances in the real flue gas.

[6] The BAT-AEPLs include BAT-AELs (emissions) and BAT-AEELs (energy efficiency). Eventually, they may include other performance levels such as consumption. Nevertheless, D1 of the Waste Incineration BREF only treats the BAT-AELs and the BAT-AEELs.

However, **none of the reference lines reaches in operation all the maximum performance of the draft BAT conclusions draft (lower end of the BAT-AEL ranges, higher ends of the BAT-AEEL ranges).**

This is *a fortiori* the case in respect of setting guarantees at levels of all the maximum performances of BAT-AELs and BAT-AEELs. Imposing all low BAT-AEL ranges and all high BAT-AEEL ranges on a single plant would amount to demand a level of performance that does not currently exist in any plant in Europe.

5. Important costs for municipalities

Finally, where it is technically possible, the lowering of an emission threshold often requires substantial investment (for example additional equipment to the flue gas treatment), and/or more important reagent consumption. **This extra cost needs to be measured in relation to the actual gain obtained by the potential reduction of the pollutants emissions.**

The waste incineration sector is by far the industry sector with the lowest emission levels and it has minimized the effect on the environment and our health. Therefore, it is important to put these low gains into perspective and in relation to those, much higher, that could be obtained cheaply when dealing with other sources of pollution than the Waste-to-Energy sector in the same local context.

In Annex II you will find an example of dust measurements which show a very high cost for each kg of the pollutant avoided: more than 1million€ per ton.

6. Administrative risks

If an operator were prosecuted for exceeding limits within the given uncertainties, he would create a legal challenge for this prosecution because of the fact that these values cannot be proven (as seen in the INERIS report).

7. Conclusion

In conclusion, for the aforementioned reasons, it is advisable to be extremely cautious in the use of BAT-AELs as described in the D1 of the Waste Incineration BREF, especially in the case where one deviates from the higher values of the BAT-AEL ranges.

Annex I: Measurement uncertainty and lower emissions levels – INERIS report

The question of measurement uncertainty at low concentration levels and of compliance with IED and standards requirement in this field has been raised in the framework of the revision of the Waste Incineration BREF and of the derivation of BAT-AEL ranges (and the Emission Limit Values related to the Best Available Techniques). In most cases, these values, and in particular the lower part of the ranges, are significantly lower than the ELVs currently set in the IED. This problem needs to be addressed, especially due to its close connection with the validation of in situ calibrations, the QAL2 (Quality Assurance Level 2) and the AST (Annual Surveillance Test).

The validation or quality of QAL2 and AST, which depends on daily ELVs, can no longer be ensured if the daily ELVs are significantly lowered. The correction curves obtained during QAL2 tests are already often unrealistic for the daily ELVs indicated in IED Annex VI for certain pollutants. Most of the time, this is due to the impossibility to vary emission concentrations as well as to the high uncertainty of the existing reference methods (SRM) used for QAL2 at these emission levels t. Examples of QAL2 calibration curves are given in the INERIS report (see pp. 101-116, annex C), from WtE plants from several EU Member States.

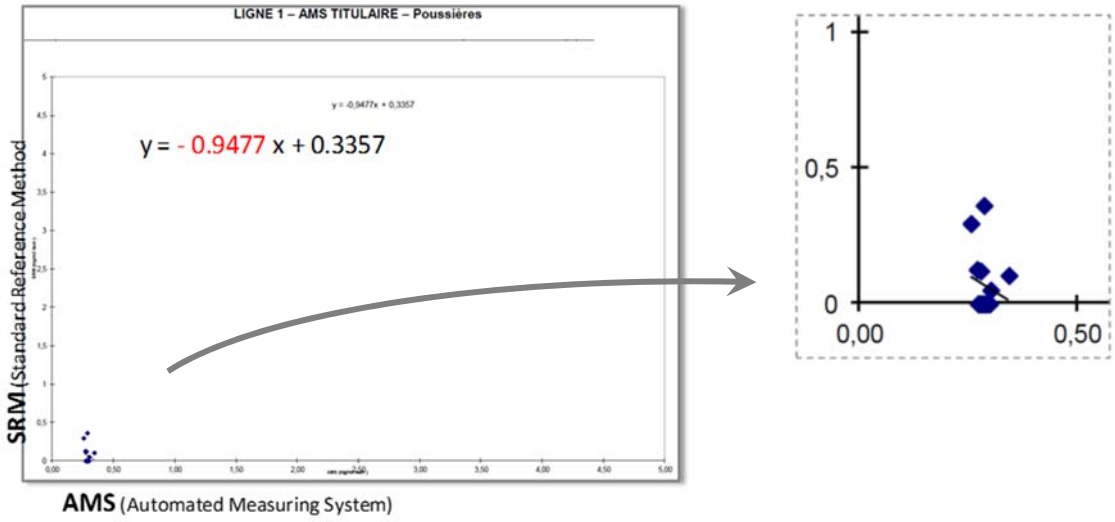

Figure 2: Example of QAL2 correction curve obtained for dust. The dots shown are very close to each other and at very low concentration. It does not allow raising satisfactory conclusions. Here, the obtained straight line keeps a negative slope, meaning that, if it were to be used, the higher the value read by the online instrument, the lower the corrected value.

The study (link: http://www.cewep.eu/2017/12/01/ineris-report-on-monitoring-of-air-emissions/) made by INERIS[7] in the context of the Waste Incineration BREF revision – given to both the JRC-EIPPCB and TWG members – shows that the performances of the monitoring chains available in the market

[7] INERIS (Institut National de l'Environnement Industriel et des Risques) is a public institution of an industrial and commercial nature, placed under the aegis of the French ministry in charge of the environment. It is the regular advisor of the Ministry of the Environment on these issues (monitoring, uncertainties, compliance with ELVs). The authors of the INERIS report for the Waste incineration BREF are members of the CEN (European Committee for Standardisation) and in particular, they are active in the working groups on standards on the monitoring of substances which are controlled for incineration (dust, HCl, HF, SO_2, NOx, NH_3, etc.).

do not meet the requirements of the standards on monitoring made compulsory by the IED in respect of maximum uncertainty:

1. already for most of the controlled substances at the level of the ELVs of Annex VI of the IED;
2. and *a fortiori* for the BAT-AEL ranges proposed in the D1 of the Waste Incineration BREF, all of which are equal or below IED's ELVs.

The lower the concentration, the greater will be the relative measurement uncertainty. The corresponding curve is exponential. This can be seen in the graphs showing the results of the Inter-Laboratory Comparison (ILCs) made by INERIS after having organised certification confirmation tests for the laboratories that calibrate online devices (QAL2 and AST).

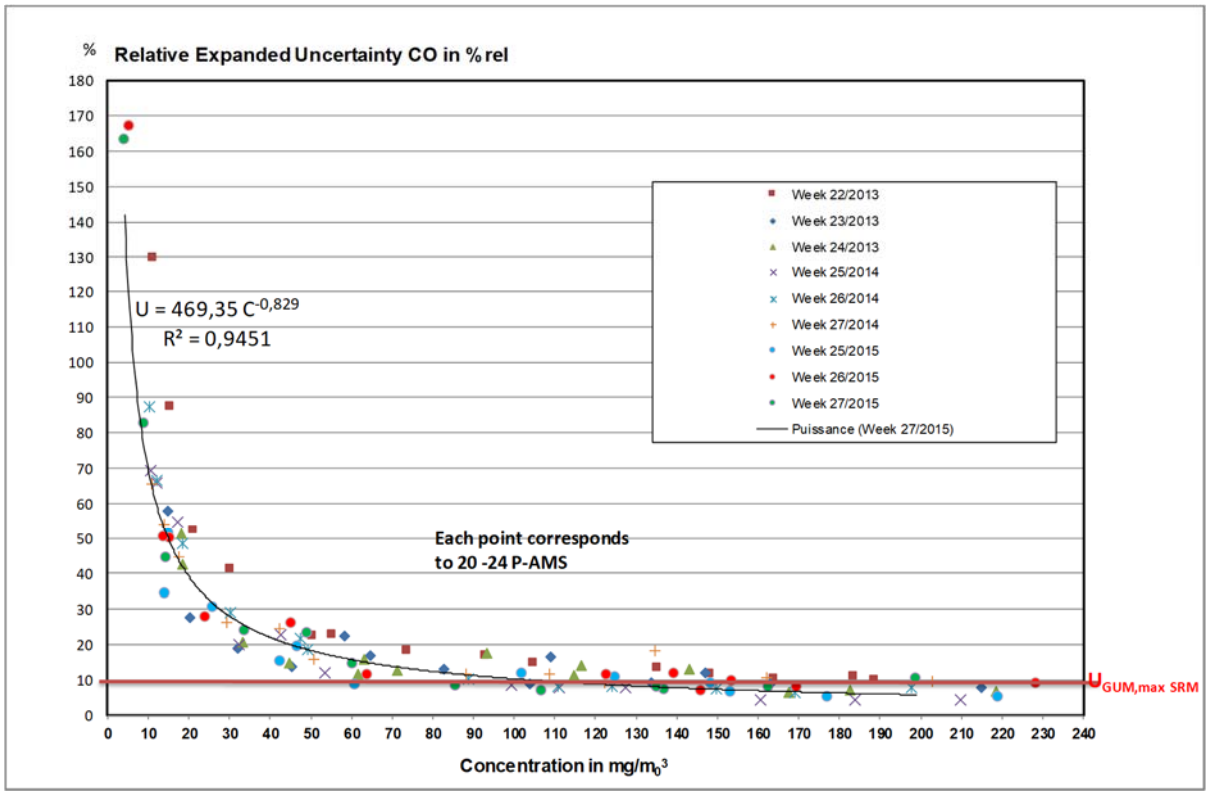

Figure 3: Example of the relative expanded uncertainty for CO (see INERIS report 2017, pp. 40 and 50): the curve showing the relative uncertainty depending on concentration is established from inter-laboratory comparison tests during 9 different sessions (weeks). Each time, 10 to 12 laboratories were working in parallel, each one implementing 2 reference monitoring systems i.e. 9 times 20 to 24 devices in parallel. The red line shows the maximum uncertainty required by the standard for Standard Reference Methods (SRM).

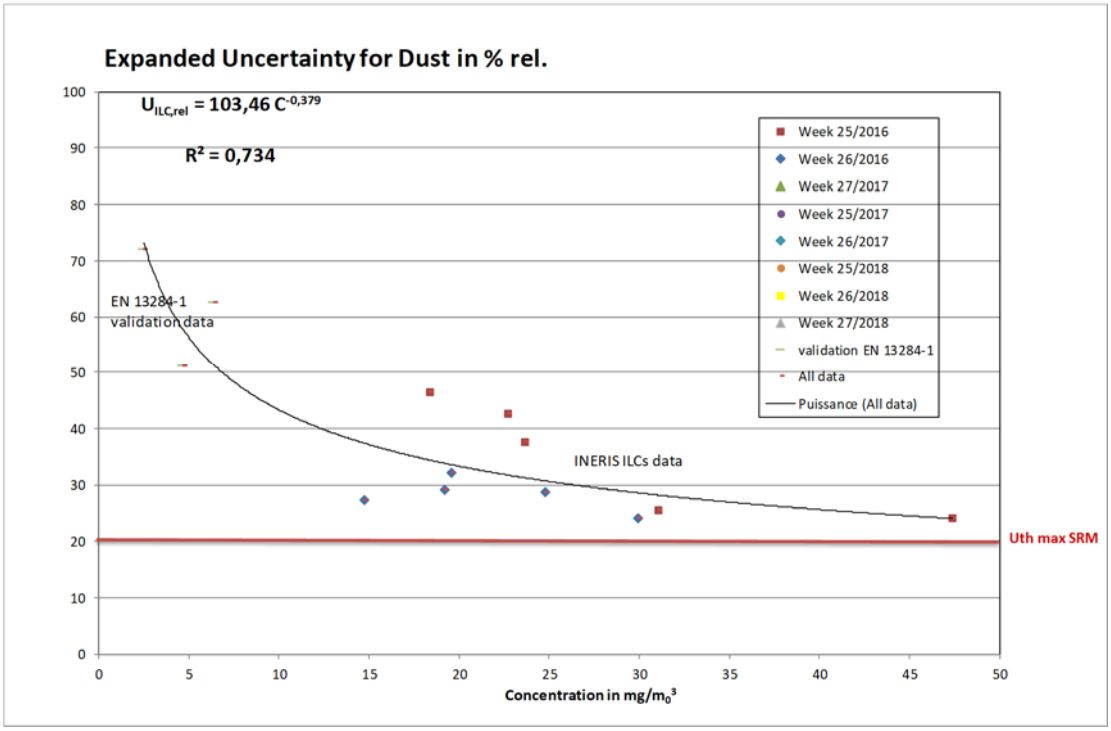

Figure 4: Example of Inter Laboratory comparison for expanded uncertainty for dust (see INERIS report, p.62)

The conclusions of the study are summarised in a table (see INERIS report, pp. 17-18), which indicates the minimum ELVs that would be compatible with the requirements of SRM standards.

Sub-stance	Current (IED) Daily ELV [1]	Min ELV (5 x LoQ) (5*LoQmin - 5*LoQmed) [4]	Target $U_{th,SRM}$ [5]	Target $U_{th,AMS}$ [6]	$U_{pr,SRM}$ at Current ELV [8]	$U_{pr,SRM}$<< $U_{certif,AMS}$ [9]	Min ELV to comply with $U_{th,SRM}$ [10]
CO	**50** mg/Nm³	0.35 - 4.0 mg/Nm³	6%	7.5%	12%	No	**120** mg/Nm³
NO_x	**200** mgNO_2/Nm³	0.2 - 4.0 mg/Nm³	10%	15%	6%	Yes for C > 75 mg/Nm³	**75** mg/Nm³
TOC	**10** mgC/Nm³	0.065 - 0.2 mgC/Nm³	15%	23%	30%	No	**50** mgC/Nm³
Dust	**10** mg/Nm³	0.035 - 0.3 mg/Nm³	20%	23%	60%	No	**50** mg/Nm³
SO_2	**50** mg/Nm³	0.95 - 3.0 mg/Nm³	20%	15%	16%	No	**150** mg/Nm³
HCl	**10** mg/Nm³	0.095 - 0.9 mg/Nm³	30%	30%	100%	No	**50** mg/Nm³
O_2	-	0.02 - 0.15 % vol	6%	-	2.3%		
HF	**1** mg/Nm³	0.125 - 0.48 mg/Nm³	20% desirable	30%	100%	No	
NH_3	No IED ELV. **10** mg/Nm³ often found. In France: **30** mg/Nm³	0.185 - 1.05 mg/Nm³	20% desirable	30%	300%	No	**50** mg/Nm³
Hg	50 µg/Nm³ (periodic)	0.5 - 0.7 µg/Nm³	-	-	50%	No	-

(4): Minimum ELV for LoQ_{min} and LoQ_{med}, according to the EIPPCB's rule, that BATAEL should not be under 5 times the AMS's LoQ (cf. § 2.3.2).
(5): SRM's relative expanded uncertainty target, as defined in the Standard describing the SRM or in the draft revised Standard for Dust (cf. § 2.3.3), or desirable in the cases of HF and NH_3, substances for which the measurement method Standard does not set a threshold.
(6): AMS's relative expanded uncertainty target from EN 15267 Standard, corresponding to 75% of the confidence interval set by the IED (cf. § 2.3.3).
(8): Expanded uncertainty coming from ILCs (Inter-Laboratory Comparisons) organised by INERIS of for Standards validation (cf. summary sheets in Annex E and in § 4), therefore when various laboratories implement the method on site.
(9): Fulfilment of the condition that the SRM's uncertainty must be significantly lower than that of the AMS (cf. § 2.3.3).
(10): Minimum ELV fulfilling the SRM's uncertainty target set in the Standard describing the SRM.

Table 1: Minimum ELVs that would be compatible with the requirements of SRM standards (Excerpt of table, pp. 17-18 of INERIS 2017 report).

More detailed conclusions are given in chapter 4 of the INERIS 2017 report:

- Conclusion for **NOx** (see p. 56)

"It is hence not advisable to lower the NO_x Daily ELV under 75 mg/Nm³, to maintain an acceptable risk when declaring whether an AMS is compliant or non-compliant."

- Conclusion for **CO** (see p.51)

"(…) **even** for a **Daily ELV of 50 mg/Nm³**, the measurement uncertainty **is too high:** 18 relative % for a target of 6%. **A Daily ELV of 120 mg/Nm³ would provide a minimised risk** when declaring whether an AMS is compliant or non-compliant.**"**
"Lowering the ELV under the current value of 50 mg/Nm³ therefore risks leading to biased ELV compliance/incompliance declarations, because of measurements with an uncertainty higher than the IED's 10% confidence interval."

- Conclusion for **TOC** (see p. 59)

"Currently, the **required uncertainty** for the SRM is **only reached** for concentrations **above50 mgC/Nm³**, and the measurement uncertainty exceeds 20% at the current Daily ELV level of 10 mgC/Nm³. "
"A Daily ELV of 50 mg/Nm³ would enable a minimized risk when declaring whether an AMS is compliant or non-compliant. **It is hence strongly recommended not to lower the Daily ELV under the current value of 10 mg/Nm³."**

- Conclusion for **Dust** (see p. 62)

"Analysing QAL2 test reports confirms the impossibility of establishing a calibration function for concentrations under 5 mg/Nm³."
"A Daily ELV of 50 mg/Nm³ would provide a minimal risk when declaring whether an AMS is compliant or non-compliant. It is hence strongly recommended not to lower the Daily ELV under the current value of 10 mg/Nm³."

- Conclusion for **SO^2** (see pp.65-66)

"The $U_{max\ SRM} << U_{max\ AMS}$ condition necessary for a robust QAL2 calibration at the level of the current Daily ELV of 50 mg/Nm³ for Waste Incineration is hence not fulfilled, this weakens the reliability of this calibration and therefore the accuracy of the results given by the AMS."
"**In the current SRM** implementation configuration, it is hence **not desirable to lower the Daily ELV under 50 mg/Nm³** to maintain a minimal risk when declaring whether an AMS is compliant or non-compliant."
"The **possible improvement** routes are the following: (…) Use some certified GFCIR analysers as an alternative method to the SRM, which would enable fulfilling uncertainty levels under 8% at 50 mg/Nm³ and would approach about 13% at **30 mg/Nm³**."

- Conclusion for **HCl** (see p. 70)

The $U_{max\ SRM} << U_{max\ AMS}$ condition necessary for a reliable QAL2 calibration at the level of the current Daily ELV of 10 mg/Nm³ for Waste Incineration is hence not fulfilled, this weakens the reliability of this calibration and therefore the accuracy of the results given by the AMS."
In the current SRM implementation configuration, a Daily ELV of 50 mg/Nm³ is necessary to declare whether an AMS is compliant or non-compliant. It would be desirable not to decrease ELV below 50 mg/Nm³.

- Conclusion for **HF** (see p. 73)

"(…) the QAL2 calibration is inoperable at the current Daily ELV level for Waste Incineration for HF. A Daily ELV much higher than the current one will certainly be necessary to declare whether an AMS is compliant or non-compliant

- Conclusion for **NH_3** (see p. 76)

"The $U_{max\ SRM}$ << $U_{max\ AMS}$**condition** necessary for a reliable QAL2 calibration at the **level of 10 mg/Nm³ is hence not fulfilled,** this weakens the reliability of this calibration and therefore the accuracy of the results given by the AMS."
"A Daily ELV higher than the current one in France (30 mg/Nm^3) will certainly be necessary to declare with a minimal risk whether an AMS is compliant or non-compliant."

- Conclusion for **Hg** (see p.77)

The $U_{max\ SRM}$ << $U_{max\ AMS}$ condition necessary for a reliable QAL2 calibration **at the level of the current Daily ELV of 50 µg/Nm³** for Hg for Waste Incineration is hence **not fulfilled,** this weakens the reliability of this calibration and therefore the accuracy of the results given by the AMS.
With the SRM, a Daily ELV above 50 µg/Nm³ would be necessary to declare with a minimal risk whether an AMS is compliant or non-compliant.
Alternative methods to the SRM were tested in Germany, based on mercury adsorption on solid adsorbing traps enabling to differentiate oxidised and elementary mercury in the gas stack. The possibility of increasing the sampling time, by hours, days or weeks, enables much more reliable QAL2 calibrations than the current SRM.

Annex 2 – Example of the extra costs caused by the lowering of ELVs

DUST

Daily E LV changed from 10 to 5 mg/Nm^3 in a plant of 100,000 tpa, 2 lines with dry Flue Gas Cleaning process

Setting up a double filtration: on each line, addition of a baghouse filter + modification or addition of an induced draught fan

Capital expense	4000 k€
Annual repayment (2% on 10 years)	**446 k€ per year**
Operation expenses	
Insurance, electricity overconsumption, minor and major maintenance	160 k€ per year
Additional production of solid residues, to be treated	0.1k€ per year
OPEX	**160 k€ per year**
Total CAPEX + OPEX	606 k€ per year
Cost per ton of waste	**6.1 €/t incinerated**
Benefit in dust emissions (yearly average drops from 1.4 to 0.7 mg/Nm^3	368 kg per year
Cost per kg of dust avoided	**1649.7 €/kg**