



Session 2: Comparability of data

**The European Integrated Pollution
Prevention and Control Bureau (EIPPCB)
within the framework of the implementation of the EU
legislation on Industrial Emissions (2010/75/EU)**

European IPPC Bureau

The Integrated Pollution Prevention and Control (IPPC) regulatory framework in Europe

- *Key instrument for minimising emissions and consumptions from industrial and agro-industrial activities in Europe*
- *General framework:*
 - **prevent** and, if not feasible, reduce pollution
 - high level of **protection for the environment as a whole**
 - **Permit based on Best Available Techniques (BAT)**

**BAT are determined by the JRC (EIPPCB)
and documented in **BREFs****

'BAT conclusions' are secondary legislation

Activities subject to the IED

➤ Wide range of industrial activities listed:

- Energy industries – LCP, refineries
- Production and processing of metals
- Mineral industries
 - *Cement, lime, glass, ceramics*
- Production of chemicals
- Waste management industries
 - *Incineration*
 - *Some recovery or disposal operations*
- 'Other' industries:
 - *Pulp and paper, textile processing*
 - *Tanning of hides and skins*
 - *Intensive farming of pigs and poultry, slaughterhouses and animal by-product processing, food drink and milk processing, surface treatment using solvents*



~ 50 000 IPPC installations in Europe

IPPC operating scheme

**Prevention and control of
pollution arising from
industrial installations**

**Industrial Emissions (Integrated Pollution
Prevention and Control – IPPC) Directive
2010/75/EU – IED**

1 legislation

**Application of the best available techniques (BAT)
described in BAT reference documents (BREFs)**

35 BREFs



**BAT-based permit and emission limit
values (ELVs)**

~50 000 installations



Environmental scope of the IED

**emissions
to air**

**emissions
to water**

**emissions
to land**

**prevention
and control
of accidents**

**waste prevention
and recovery**

**energy &
water use**

noise

vibration

heat

odour

Definition of BAT in the IED

- Best*** Most effective in achieving a **high general level** of protection of the environment **as a whole**
- Available*** Developed on a scale which allows implementation in the relevant industrial sector, under **economically and technically viable conditions**
- Techniques*** **Both** the technology used and the way in which the installation is **designed, built, maintained, operated and decommissioned**

Note: in determining BAT, special consideration should be given to the criteria listed in Annex III of the IED

The basis to determine best available techniques (BAT)

➤ **Article 13(1) of the Industrial Emissions Directive 2010/75/EC:**

- *'In order to draw up, review and, where necessary, update BAT reference documents, **the Commission shall organise an exchange of information** between Member States, the industries concerned, non-governmental organisations promoting environmental protection and the Commission'*

➤ **The exchange of information should address:**

- the **performance of installations and techniques** in terms of emissions and consumptions, etc.
- the techniques used, **associated monitoring**, **economic and technical viability**, etc.
- best available techniques and emerging techniques identified after considering all the issues concerned

'BAT reference documents' (BREFs)

- ***Include '**BAT conclusions**' which shall be the reference for setting permit conditions***
- ***Structured and prepared on the basis of established guidelines:***
 - Commission implementing decision of 10/02/2012 laying down rules concerning guidance on the collection of data and on the drawing up of BAT reference documents
- ***Based on an intensive exchange of information on:***
 - the performance of installations and techniques in terms of emissions and consumptions, etc.
 - the techniques used, **associated monitoring**, economic and technical viability, etc.
 - best available techniques and emerging techniques identified after considering all the issues concerned

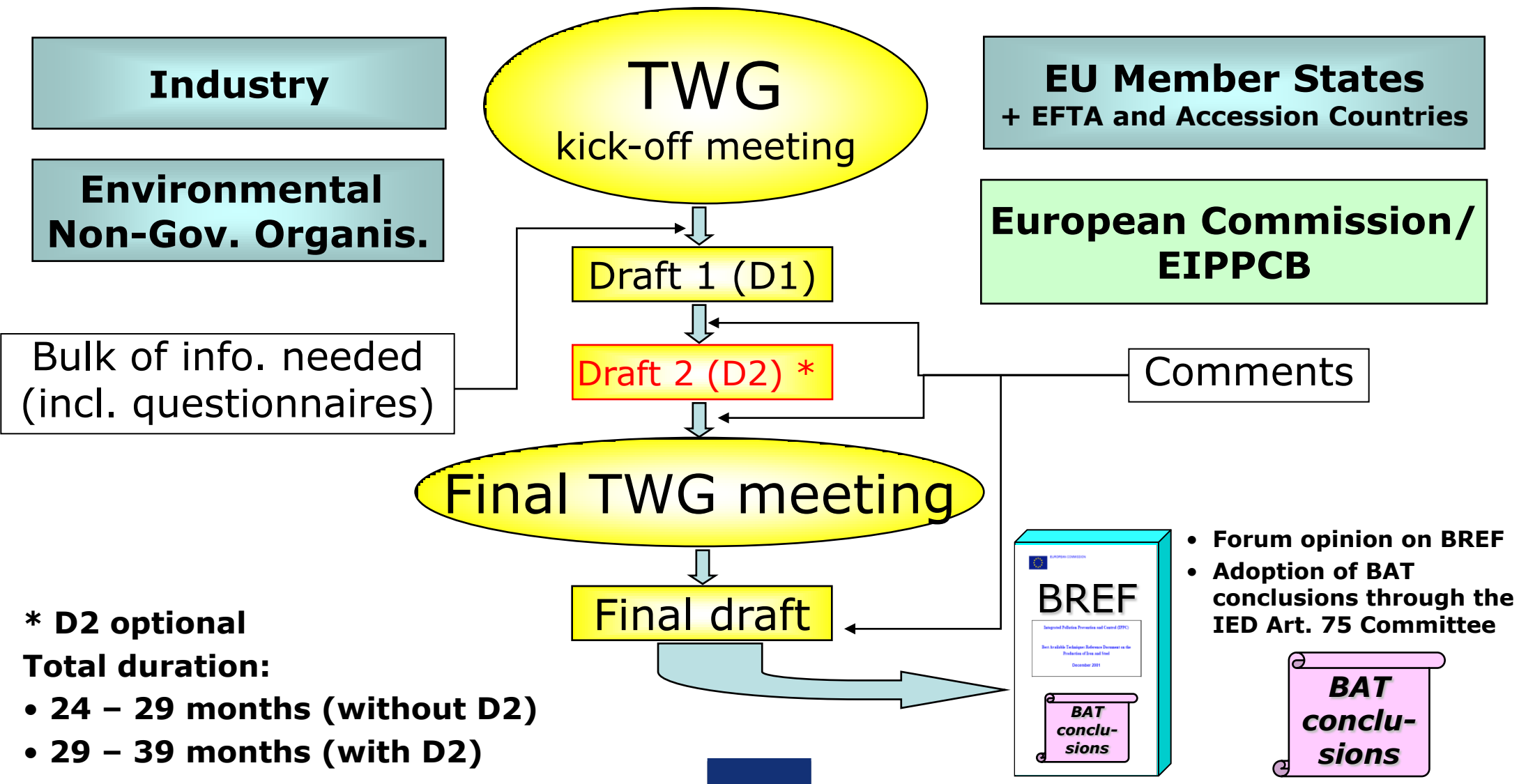
'BAT conclusions'

➤ Article 13(1) of the Industrial Emissions Directive 2010/75/EC:

According to Article 3(12), BAT conclusions means a document containing the parts of a BAT reference document laying down the conclusions on best available techniques, their description, information to assess their applicability, the emission levels associated with the best available techniques, *associated monitoring*, associated consumption levels and, where appropriate, relevant site remediation measures



The 'Sevilla process'



12 (B)REFs are currently being worked upon

Started under IPPC

- *Production of Chlor-alkali (CAK)*
- *Refining of mineral oil and gas (REF)*
- *Production of Pulp, Paper and Board (PP)*

**3 being
finalised**

- *Common Waste Water and Waste Gas (CWW)*
- *Non-Ferrous Metals (NFM)*
- *Intensive Rearing of Poultry and Pigs (IRPP)*

**7 being
drafted**

Started under IED

- *Large Combustion Plants (LCP)*
- *Wood Based Panels (WBP)*
- *Large Volume Organic Chemicals (LVOC)*

• *General Principles of Monitoring (ROM)* → **JRC Reference Report**

- *Waste treatment (WT)* **1 wake call/reactivation ongoing**
- *Ferrous Metal Processing (FMP)* **1 that has started**

Data collection step is crucial for determining BAT

➡ The information on key environmental issues are obtained through **plant-specific questionnaires**:

- emissions to air and water
- by-product, residues and wastes
- efficient energy use
- techniques potentially candidates for BAT

➡ **Importance of contextual information:**

- details on the techniques used
- other than normal operating conditions
- link between fuel characteristics and pollutants
- consumptions (e.g. raw water, energy, chemicals)



JOINT RESEARCH CENTRE
Institute for Prospective Technological Studies (Seville)
Sustainable Production and Consumption Unit
European IPPC Bureau

Seville, 15 March 2012

QUESTIONNAIRE FOR COLLECTING PLANT-SPECIFIC DATA FOR THE REVIEW OF THE BAT REFERENCE DOCUMENT (BREF) ON LARGE COMBUSTION PLANTS (LCP)

INFORMATION ABOUT THIS QUESTIONNAIRE

Industrial Emissions Directive and BREFs

The new Industrial Emissions Directive (IED), 2010/75/EU of 24 November 2010 is progressively replacing the Integrated Pollution Prevention and Control (IPPC) Directive (2008/1/EC) and related legislation on industrial emissions. According to the IPPC and now the IED, a Best Available Techniques (BAT) Reference document (BREF) is the vehicle through which BAT and emerging techniques are determined in a transparent manner, based on sound techno-economic information. A BREF gives predictability to the process of determining conclusions on BAT and provides confidence in the quality of the end result. The key elements of BREFs (i.e. 'BAT conclusions') are adopted through committee procedure and are the reference for setting permit conditions to installations covered by the IED. The BREFs inform the relevant decision makers about what may be technically and economically available to industry in order to improve their environmental performance and consequently improve the whole environment. Each BREF is the outcome of a two to three year process involving numerous experts.

Information exchange under IED for the review of the Large Combustion Plants BREF

The European IPPC Bureau (EIPPCB), established in Seville (Spain) in 1997 within the Institute for Prospective Technological Studies (IPTS) of the Joint Research Centre of the European Commission, organises the exchange of information between Member States, the representatives of the industries concerned, environmental NGOs and the Commission, on the best available techniques (BAT) under Article 13(1) of the IED. The objective of the information exchange exercise is to assist in the efficient implementation of the Directive across the European Union. Due to the dynamic nature of BAT (e.g. new measures and techniques may emerge, science and technologies are continuously developing, new or emerging processes are being successfully introduced into the industrial sector), BREFs have to be periodically reviewed.

The work on the review of the existing LCP BREF, formally adopted by the European Commission in 2006, officially started with the kick-off meeting (KOM) of the Technical Working Group (TWG) formed especially for this purpose, held in Seville from 25 to 28 October 2011 (the existing LCP BREF and the KOM report are available on the EIPPCB website at <http://eippcb.jrc.es>). The TWG includes representatives of European countries (AT, BE, BG, CY, CZ, DK, EE, FI, FR, DE, EL, HU, IE, IT, MT, NL, NO, PL, PT, RO, SK, SI, ES, SE, TK, UK), industry NGOs (CEFIC, COGEN EUROPE, CONCAWE, EPPSA, EURACOAL, EURELECTRIC, EURITS, EUROFER, EUROGYPSUM, EUROMOT, EUROPIA, EU TURBINE, MARCOGAZ, EUROHEAT) and an environmental NGO (EENB). Considering the need to fill in gaps and to update the content of the current BREF, information and data on environmental performances have to be collected. Different ways of providing such information will be used: a plant-specific questionnaire, case studies, reports, etc.

Purpose of the questionnaire

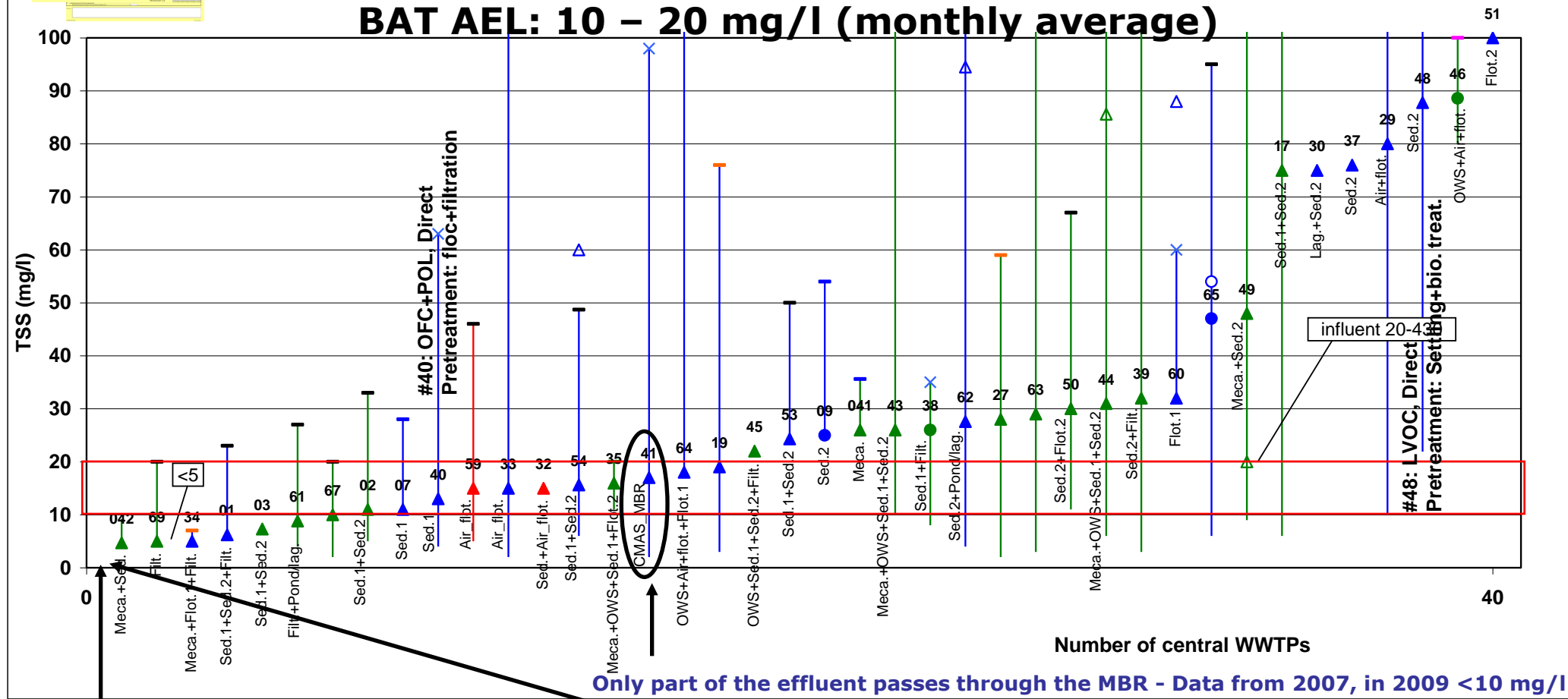
The purpose of this questionnaire is to obtain plant-specific information and data regarding the environmental performance of existing combustion plants/installations with a rated thermal input of ≥ 50 MW_{th} and a rated thermal input of ≥ 15 MW_{th} when aggregated into the combustion plant/installation with a total rated thermal input of ≥ 50 MW_{th}. This questionnaire is one of the sources of information for the LCP BREF review process. Your plant has been chosen by TWG members as representing a well performing combustion plant. To clarify or to further investigate certain aspects, TWG members (Member States or industry NGOs) may ask you to gather additional data or information. These TWG members can also be contacted to provide you all the support needed to properly complete this questionnaire. Member States are responsible, with the support from the industry NGOs, for collecting and checking the questionnaires so that the EIPPCB can have them all gathered by mid-June 2012.

The quality of the data provided being fundamental for deriving sound conclusions, this questionnaire should be filled in very carefully. In case of doubt, please contact the EIPPCB (see email below) to know which TWG member(s) can give you support.

Introduction 1/2

BAT is about real plant performance

TSS concentration in the influent and effluent of central WWTPs (detail)
BAT AEL: 10 – 20 mg/l (monthly average)



#36: MBR: <detection limit for TSS

#08: MBR: 1.1 mg/l (average of 150 measurements)

Monitoring in BAT conclusions: an essential role to guarantee data comparability

- ➡ **IED mandates to include the associated monitoring in BAT conclusions**
- ➡ **Efforts are being made to enhance harmonisation (i.e. ROM)**
- ➡ **Flexibility needed to adapt to the specificities of each of the sectors covered by IED**

Examples of monitoring in BAT conclusions: Glass (Decision 2012/134/EU)

7. BAT is to carry out monitoring of emissions and/or other relevant process parameters on a regular basis, including the following:

Technique	Applicability
(i) Continuous monitoring of critical process parameters to ensure process stability, e.g. temperature, fuel feed and airflow	The techniques are generally applicable
(ii) Regular monitoring of process parameters to prevent/reduce pollution, e.g. O ₂ content of the combustion gases to control the fuel/air ratio.	
(iii) Continuous measurements of dust, NO _x and SO ₂ emissions or discontinuous measurements at least twice per year, associated with the control of surrogate parameters to ensure that the treatment system is working properly between measurements	
(iv) Continuous or regular periodic measurements of NH ₃ emissions, when selective catalytic reduction (SCR) or selective non-catalytic reduction (SNCR) techniques are applied	The techniques are generally applicable
(v) Continuous or regular periodic measurements of CO emissions when primary techniques or chemical reduction by fuel techniques are applied for NO _x emissions reductions or partial combustion may occur.	
(vi) Regular periodic measurements of emissions of HCl, HF, CO and metals, in particular when raw materials containing such substances are used or partial combustion may occur	The techniques are generally applicable
(vii) Continuous monitoring of surrogate parameters to ensure that the waste gas treatment system is working properly and that the emission levels are maintained between discontinuous measurements. The monitoring of surrogate parameters includes: reagent feed, temperature, water feed, voltage, dust removal, fan speed, etc.	

Examples of monitoring in BAT conclusions: Tanneries (Decision 2013/84/EU)

3. BAT is to carry out monitoring of emissions and/or other relevant process parameters on a regular basis, including the following:

Parameter		Frequency	Applicability
a	Measurement of water consumption in the two process stages: up to tanning and post-tanning, and recording of production in the same period.	At least monthly.	Applicable to plants carrying out wet processing.
b	Recording of the quantities of process chemicals used in each process step and recording of production in the same period.	At least yearly.	Generally applicable.
c	Monitoring of the total chromium concentration in the final effluent after treatment for direct discharge to receiving water, by using flow proportional 24-hour composite samples. Monitoring of the total chromium concentration after chromium precipitation for indirect discharge, by using flow proportional 24-hour composite samples.	On a weekly or monthly basis.	Applicable to on-site or off-site plants which undertake chromium precipitation.
d	Monitoring of chemical oxygen demand (COD), biochemical oxygen demand (BOD) and ammoniacal nitrogen after on-site or off-site effluent treatment for direct discharges to receiving water, by using flow-proportional 24-hour composite samples. Monitoring of total suspended solids after effluent treatment after on-site or off-site effluent treatment for direct discharges to receiving water.	On a weekly or monthly basis. More frequent measurements in case process changes are needed.	Applicable to plants carrying out some part of effluent treatment on site or off site for treating waste waters from tanneries.
e	Monitoring of halogenated organic compounds after on-site or off-site effluent treatment for direct discharges to receiving water.	On a regular basis.	Applicable to plants where halogenated organic compounds are used in the production process and are susceptible to being released into receiving water.

Examples of monitoring in BAT conclusions: Tanneries (Decision 2013/84/EU)

Parameter		Frequency	Applicability
f	Measurement of pH or redox potential at the liquid outlet of wet scrubbers.	Continuously.	Applicable to plants using wet scrubbing to abate hydrogen sulphide or ammonia emissions to the air.
g	The keeping of a solvent inventory on an annual basis, and recording of production in the same period.	On an annual basis.	Applicable to plants carrying out finishing using solvents and using water-borne coatings or similar materials to limit the solvent input.
h	Monitoring of volatile organic compound emissions at the outlet of abatement equipment, and recording of production.	Continuously or periodically.	Applicable to plants carrying out finishing using solvents and employing abatement.
i	Indicative monitoring of the pressure drop across bag filters.	On a regular basis.	Applicable to plants using bag filters to abate particulate matter emissions, where there is a direct discharge to the atmosphere.
j	Testing of the capture efficiency of wet scrubbing systems.	Annually.	Applicable to plants using wet scrubbing to abate particulate matter emissions, where there is a direct discharge to the atmosphere.
k	Recording of the quantities of process residues sent for recovery, reuse, recycling, and disposal.	On a regular basis.	Generally applicable.
l	Recording of all forms of energy use and of production in the same period.	On a regular basis.	Generally applicable.

Examples of monitoring in BAT conclusions: Production of Chlor-Alkali (Final Draft in EIPPCB website on 04.2013)

7. BAT is to monitor emissions to air and water by using the monitoring techniques with at least the minimum frequency given below and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.

Environmental medium	Sampling point	Substance (s)	Monitoring method	Standard (s)	Minimum monitoring frequency	Monitoring associated with
Air	Outlet of chlorine absorption unit	Chlorine and chlorine dioxide ^{(1) (2)}	Electrochemical cells	No EN or ISO standard available	Continuous	----
			Absorption in a solution, with subsequent analysis	No EN or ISO standard available	Yearly (at least three consecutive hourly measurements)	BAT 8
Water	Where the emission leaves the installation	Chlorate	Ion chromatography	EN ISO 10304-4	Monthly	BAT 14
	Brine purge	Chloride	Ion chromatography or flow analysis	EN ISO 10304-1 or EN ISO 15682	Monthly	BAT 12

⁽¹⁾ Measured together expressed as Cl₂

⁽²⁾ Monitoring encompasses both continuous and periodic monitoring as indicated.

⁽³⁾ Applicable to plants where mercury is present.

Examples of monitoring in BAT conclusions: Production of Chlor-Alkali (Final Draft in EIPPCB website on 04.2013)

Environ- mental medium	Sampling point	Substance (s)	Monitoring method	Standard (s)	Minimum monitoring frequency	Monitoring associated with
Water	Close to the source	Free chlorine ⁽²⁾	Reduction potential	No EN or ISO standard available	Continuous	----
	Where the emission leaves the installation		Free chlorine	EN ISO 7393-1 or -2	Monthly	BAT 13
	Brine purge	Halogenated organic compounds	Adsorbable organically-bound halogens (AOX)	Annex A to EN ISO 9562	Yearly	BAT 15
	Outlet of the mercury treatment plant	Mercury ⁽³⁾	Atomic absorption spectrometry or atomic fluorescence spectrometry	EN ISO 12846 or EN ISO 17852	Daily	BAT 3
	Brine purge	Sulphate	Ion chromatography	EN ISO 10304-1	Yearly	----
	Brine purge	Relevant heavy metals (e.g. nickel, copper)	Inductively-coupled plasma optical emission spectrometry or inductively- coupled plasma mass spectrometry	EN ISO 11885 or EN ISO 17294-2	Yearly	----

⁽¹⁾ Measured together expressed as Cl₂














⁽²⁾ Monitoring encompasses both continuous and periodic monitoring as indicated.

⁽³⁾ Applicable to plants where mercury is present.

BREF and E-PRTR

**The establishment of stronger links
between E-PRTR and the data collection
for the BREFs would be highly desirable,
and would benefit all stakeholders
involved**

BREFs are available to the world

	<u>Large Combustion Plants</u>	BREF (07.2006)		MR (10.2011)	
	Large Volume Inorganic Chemicals – Ammonia, Acids and Fertilisers Industries	BREF (08.2007)			
	Large Volume Inorganic Chemicals – Solids and Others Industry	BREF (08.2007)			
	Large Volume Organic Chemicals	http://eippcb.jrc.es/reference/			
	Management of Tailings and Waste-rock in Mining Activities	BREF (01.2009)			
	Manufacture of Glass	BATC (03.2012) BREF (03.2012)			
	Manufacture of Organic Fine Chemicals	BREF (08.2006)			
	Non-ferrous Metals Industries	BREF (12.2001)	D3 (02.2013)	MR (09.2007)	
	Production of Chlor-alkali	BREF (12.2001)	D1 (12.2011)	MR (09.2009)	
	Production of Polymers	BREF (08.2007)			
	Production of Speciality Inorganic Chemicals	BREF (08.2007)			
	Pulp and Paper Industry	BREF (12.2001)	D2 is currently unavailable due to data confidentiality concerns	MR (11.2006)	
	Refining of Mineral Oil and Gas	BREF (02.2003)	D2 (03.2012)	MR (09.2008)	

For further clarifications:

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