The ‘Sevilla process’ and BAT reference documents (BREFs) within the framework of the implementation of the EU legislation on Industrial Emissions (2010/75/EU)

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Head of the European Integrated Pollution Prevention and Control Bureau (EIPPCB)
**IPTS in the context of the Joint Research Centre (JRC)**

European IPPC Bureau (EIPPCB)
- ~22 staff within the Sustainable Production and Consumption (SPC) Unit of the Institute for Prospective Technological Studies (IPTS)
The Integrated Pollution Prevention and Control (IPPC) regulatory framework in Europe

The Industrial Emissions Directive (IED, 2010/75/ EU)

- **Key instrument for minimising emissions and consumptions from industrial and agricultural 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


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

BAT-based permit and emission limit values (ELVs)

1 legislation
35 BREFs
~50,000 installations
Environmental scope of the IED

- emissions to air
- emissions to water
- emissions to land
- waste prevention and recovery
- energy & water use
- vibration
- noise
- heat
- odour
- prevention and control of accidents
- emissions to water
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 Sevilla Process has been enshrined into law

The main concepts and processes developed by the EIPPCB since 1997 have been embedded into the text of the Industrial Emissions Directive (2010/75/EU) and have been detailed in the Commission Implementing Decision 2012/119/EU
Actors of the exchange of information on BAT

EU Member States **Committee** (IED Article 75)

‘**Forum**’ (IED Article 13)
Industry, Member States, Non-Gov. Orga., Commission

**European IPPC Bureau (EIPPCB)**

**GLS** (Glass)
- Industry
- Member States
- Env. NGOs
- Commission

**I&S** (Iron and Steel)
- Industry
- Member States
- Env. NGOs
- Commission

**REF** (Refineries)
- Industry
- Member States
- Env. NGOs
- Commission

**35 Technical Working Groups (TWGs)**

**Members of the Committee**
- vote the BAT conclusions

**Forum members**
- Guidance to COM
- Nominate experts in TWGs
- Give formal opinion on BREFs

**BREF authors**
- lead TWGs
- validate/check information
- draft BREFs
- present BREF to Forum

**TWG members**
- research information
- peer review draft BREFs
The ‘Sevilla process’

Industry

Environmental Non-Gov. Organis.

Bulk of info. needed (incl. questionnaires)

TWG kick-off meeting

Draft 1 (D1)

Draft 2 (D2) *

Final TWG meeting

Final draft

Comments

EU Member States + EFTA and Accession Countries

European Commission/ EIPPCB

• Forum opinion on BREF
• Adoption of BAT conclusions through the IED Art. 75 Committee

* D2 optional

Total duration:
• 24 – 29 months (without D2)
• 29 – 39 months (with D2)
Exchange of information on BAT: BREFs

Standard BREF structure:

- Preface
- General information
- Process/techniques used
- Consumption and emission levels
- Candidate BAT
- BAT Conclusions
- Emerging techniques
- Concluding remarks and recommendation for future works (including suggestions for R&D)

Chapter 1
Chapter 2
Chapter 3
Chapter 4
Chapter 5
Chapter 6

200 to 1300 pages
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)

Only part of the effluent passes through the MBR - Data from 2007, in 2009 <10 mg/l

#36: MBR: <detection limit for TSS
#08: MBR: 1.1 mg/l (average of 150 measurements)
Information exchange tool: BATIS

- TWG scattered around Europe => infrequent face-to-face interactions
- Electronic tool: BAT Information System (BATIS)

~ 1000 EU experts
<table>
<thead>
<tr>
<th>Industry Type</th>
<th>BREF Date</th>
<th>MR Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large Combustion Plants</td>
<td>BREF (07.2006)</td>
<td>MR (10.2011)</td>
</tr>
<tr>
<td>Large Volume Inorganic Chemicals - Ammonia, Acids and Fertilisers Industries</td>
<td>BREF (08.2007)</td>
<td></td>
</tr>
<tr>
<td>Large Volume Inorganic Chemicals - Solids and Others Industry</td>
<td>BREF (08.2007)</td>
<td></td>
</tr>
<tr>
<td>Large Volume Other</td>
<td>BREF (08.2007)</td>
<td></td>
</tr>
<tr>
<td>Management of Tailings and Waste-rock in Mining Activities</td>
<td>BREF (01.2009)</td>
<td></td>
</tr>
<tr>
<td>Manufacture of Glass</td>
<td>BREF (08.2006)</td>
<td></td>
</tr>
<tr>
<td>Manufacture of Organic Fine Chemicals</td>
<td>BREF (08.2006)</td>
<td></td>
</tr>
<tr>
<td>Production of Polymers</td>
<td>BREF (08.2007)</td>
<td></td>
</tr>
<tr>
<td>Production of Speciality Inorganic Chemicals</td>
<td>BREF (08.2007)</td>
<td></td>
</tr>
</tbody>
</table>

42. In order to reduce VOC emissions from process AA, BAT is to use one or a combination of the techniques given below.

<table>
<thead>
<tr>
<th>Technique</th>
<th>Description</th>
<th>Applicability</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>aa</td>
<td>[description]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>new plants</td>
</tr>
<tr>
<td>b</td>
<td>bb</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>existing plants</td>
</tr>
<tr>
<td>c</td>
<td>cc</td>
<td></td>
</tr>
</tbody>
</table>

The BAT-AELs for VOC are:
- For new installations: 10 – 20 mg C/Nm$^3$ as a daily average under reference conditions xx, yy, …
- For existing installations: 20 – 30 mg C/Nm$^3$ as a daily average under reference conditions xx, yy, …
24. In order to reduce dust and metals emissions to air from the catalytic cracking process (regenerator), BAT is to use one or a combination of the techniques given below:

I. Primary or process related techniques, such as:

<table>
<thead>
<tr>
<th>Technique</th>
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<th>Applicability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Use of an attrition-resistant catalyst</td>
<td>Selection of catalyst substance which is able to resist abrasion and fragmentation in order to reduce dust emissions</td>
<td>Generally applicable, provided the activity and selectivity of the catalyst are sufficient</td>
</tr>
</tbody>
</table>
Example of BATC: FCC/Dust and metals emissions to air from refineries (2/5)

<table>
<thead>
<tr>
<th>Technique</th>
<th>Description</th>
<th>Applicability</th>
</tr>
</thead>
<tbody>
<tr>
<td>ii. Use of low sulphur feedstock (e.g. by feedstock selection or by hydrotreatment of the feed)</td>
<td>Feedstock selection favours low sulphur feedstocks among the possible sources to be processed at the unit. Based on hydrogenation reactions, hydrotreatment aims at reducing the sulphur, nitrogen and metal contents of the feed when upgrading the refinery fractions for compliance with products specifications. See Section 5.21.3</td>
<td>Requires sufficient availability of low sulphur feedstocks, hydrogen production and hydrogen sulphide (H₂S) treatment capacity (e.g. amine and Claus units).</td>
</tr>
</tbody>
</table>
Example of BATC: FCC/Dust and metals emissions to air from refineries (3/5)

II. Secondary or end-of-pipe techniques, such as:

<table>
<thead>
<tr>
<th>Technique</th>
<th>Description</th>
<th>Applicability</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Electrostatic precipitator (ESP)</td>
<td>See Section 5.21.1</td>
<td>Generally applicable. The implementation of the technique may require significant space availability</td>
</tr>
<tr>
<td>ii. Multistage cyclone separator</td>
<td>See Section 5.21.1</td>
<td>Generally applicable</td>
</tr>
<tr>
<td>iii. Third stage blowback filter</td>
<td>See Section 5.21.1</td>
<td>Applicability may be restricted due to limited full scale examples</td>
</tr>
</tbody>
</table>
### Example of BATC: FCC/Dust and metals emissions to air from refineries (4/5)

II. Secondary or end-of-pipe techniques, such as:

<table>
<thead>
<tr>
<th>Technique</th>
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<th>Applicability</th>
</tr>
</thead>
<tbody>
<tr>
<td>iv. Wet scrubbing</td>
<td>See Section 5.21.1</td>
<td>The applicability may be limited in arid areas and in the case where the by-products from treatment (including, e.g. waste water with high level of salts) cannot be reused or appropriately disposed of. The applicability of the technique may require significant space availability</td>
</tr>
</tbody>
</table>
### Example of BATC: FCC/Dust and metals emissions to air from refineries (5/5)

#### Table 5-5: BAT-associated emission levels for dust and metals emissions from the catalytic cracking process (regenerator)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type of unit</th>
<th>BAT-AEL (monthly average)(^{(1)}) (mg/Nm(^3))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dust</td>
<td>New units</td>
<td>10 – 25</td>
</tr>
<tr>
<td></td>
<td>Existing units</td>
<td>10 – 50 (^{(2)})</td>
</tr>
</tbody>
</table>

\(^{(1)}\) Soot blowing in the CO boiler and through the gas cooler are excluded as other-than-normal operating conditions

\(^{(2)}\) The lower end of the range can be achieved with a 4-fields ESP
The European Integrated Pollution Prevention and Control (IPPC) Bureau – EIPPCB

16 years of continuous support to the implementation of the main policy instrument to prevent, reduce and as far as possible eliminate pollution arising from industrial activities in Europe

- Created in 1997
- **22 staff** as of June 2013
- Part of the Sustainable Production and Consumption Unit (SPC) – ~60 staff
- Indispensable support to the implementation of the European industrial emissions legislation
- Main output: **BAT reference documents**, the BREFs, and their key parts, the ‘BAT conclusions’
Conclusions

**EU legislation on industrial emissions**

- Evidence-based policy making
- Involving those subject to the policy decisions
- Leading to consensual decisions
- Raising international interest
Thank you for your attention

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