

# The European Commission's science and knowledge service

Joint Research Centre



# Cross-media effects and monitoring in BAT reference documents (BREFs)

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Workshop to Promote the Ratification of Technical Protocols of the UNECE Air Convention  
with Focus on Countries in the EECCA Region – 14 to 16 May 2019, Berlin, Germany

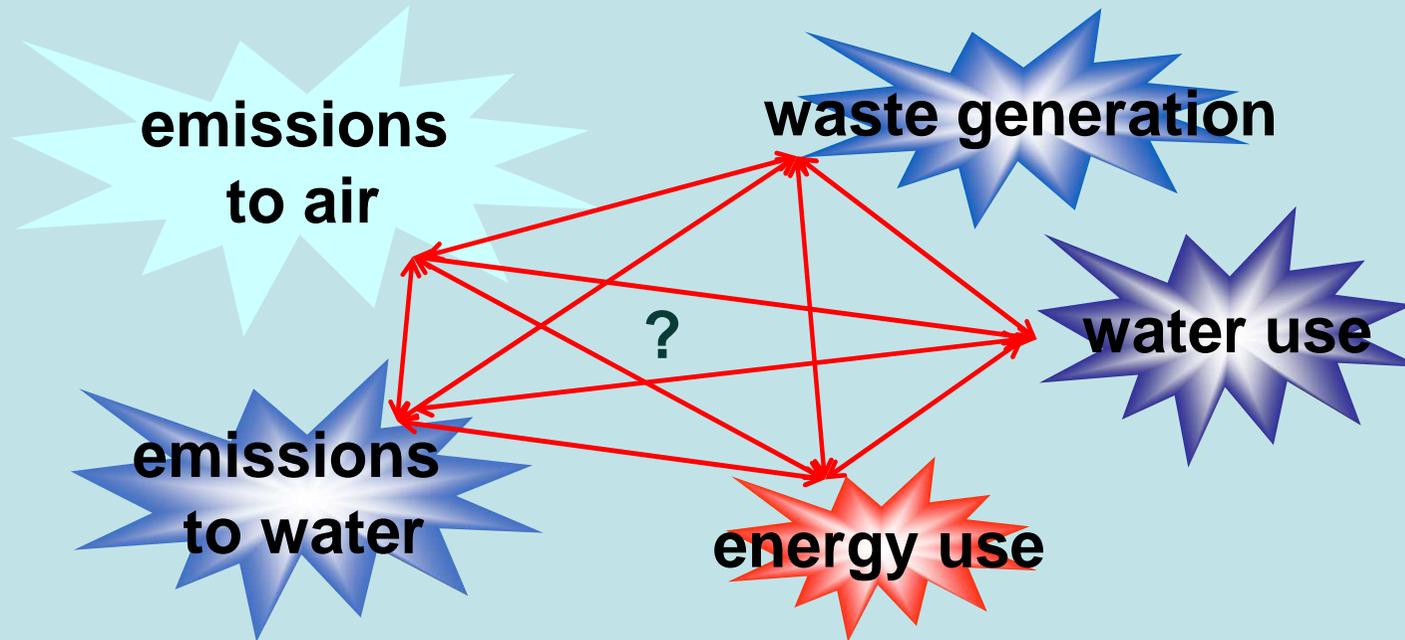
# Outline

**1 – Cross-media effects**

**2 – Monitoring**

# Why?

## Frequent trade-offs of techniques



# Integrated approach in the IED (1/2)

- **IED Article 1: Directive lays down rules on **integrated prevention and control of pollution** arising from industrial activities**
- **IED Article 3(10): BAT means most effective and advanced stage in the development of activities and their methods of operation ... **to reduce emissions and the impact on the environment as a whole** ...**  
(c) 'best' means most effective in achieving a high general level of protection of the **environment as a whole**

# Integrated approach in the IED (2/2)

- **IED Article 5 (2): Member States shall guarantee an effective integrated approach by all authorities competent for the granting of permits**
- **IED Article 13(2)(b): Information exchange on BAT shall *inter alia* address cross-media effects**
- **IED Article 17(1): Member States shall ensure an integrated approach, and a high level of environmental protection when adopting general binding rules**

# Cross-media effects in the 'BREF guidance' (1/2)

## **Commission Implementing Decision 2012/119/EU:**

- **Section 2.3.7.2: BAT candidate techniques described in BREFs should include information on cross-media effects**
- **Section 2.3.7.2.5: Cross-media effects are negative environmental effects of a technique such as:**
  - **consumption of raw materials, energy and water;**
  - **emissions to air, water and land;**
  - **generation of residues or waste; ...**

# Cross-media effects in the 'BREF guidance' (2/2)

- ...
- **use of hazardous substances;**
- **noise and odour;**
- **risk of accidents.**
- **Section 2.3.7.2.6: Animal welfare mentioned under technical considerations relevant to applicability**
- **Section 3.2.2: Cross-media effects will only be mentioned in the BAT conclusions if they result in restrictions on applicability**

# Cross-media effects in BAT conclusions (1/3)

- **Cross-media effects** of BAT are usually minor and thus not mentioned in BAT conclusions
- Major cross-media effects can result in:
  - applicability restrictions;
  - technique not being BAT.

# Cross-media effects in BAT conclusions (2/3)

## Example of a BAT in the LVOC BREF with an applicability restriction (BAT 17d):

| <b>Technique</b>                    | <b>Description</b>   | <b>Applicability</b>   |
|-------------------------------------|--|--|
| Catalyst and adsorbent regeneration | Regeneration of catalysts and adsorbents, e.g. using thermal or chemical treatment | Applicability may be restricted where regeneration results in significant cross-media effects. |

# Cross-media effects in BAT conclusions (3/3)

**Example of a technique in the LCP BREF that was not considered BAT due to cross-media effects (i.e. high energy consumption) (BAT 11c in Draft 1):**

| <b>Technique</b>            | <b>Description</b>                                     | <b>Applicability</b>   |
|-----------------------------|--|--|
| Zero liquid discharge (ZLD) | Precipitation, softening, crystallisation, evaporation | Applicable only to plants discharging to very sensitive receiving waters, where techniques (a) and (b) do not enable meeting the environmental quality Standards |

# Reference document on economics and cross-media effects (ECM REF) (1/3)

## The ECM REF, published in 2006:

- was developed primarily to assist in the determination of BAT;
- provides a method to assess cross-media effects through a truncated version of a life-cycle assessment that is restricted to the installation boundaries;
- provides methods to assess the economic viability of techniques.



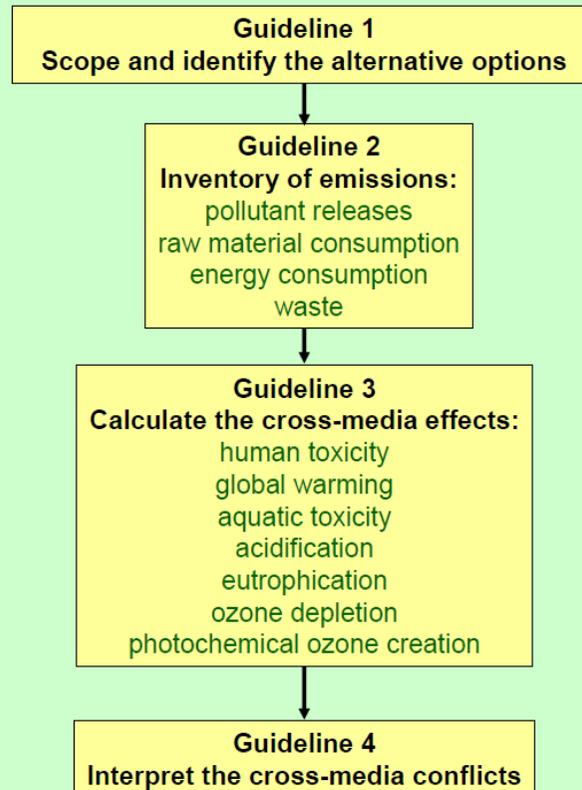
Integrated Pollution Prevention and Control

Reference Document on

Economics and Cross-Media  
Effects

July 2006

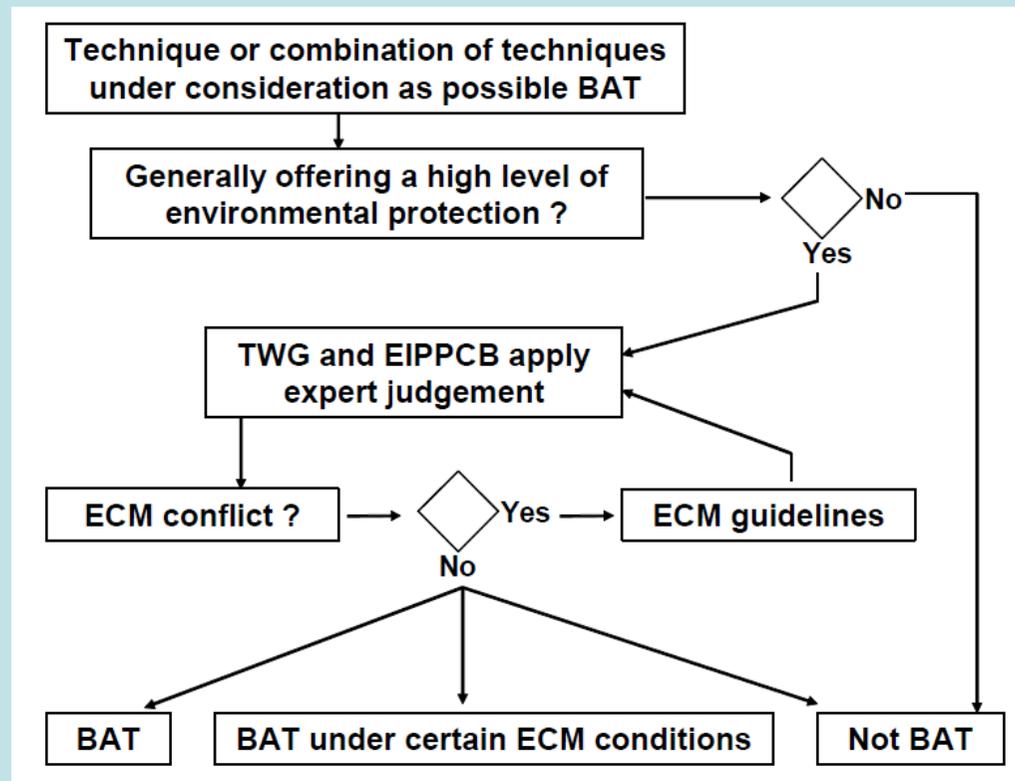
# Reference document on economics and cross-media effects (ECM REF) (2/3)



Cross-media guidelines  
Chapter 2

# Reference document on economics and cross-media effects (ECM REF) (3/3)

**In practice, the ECM REF is very rarely used to determine BAT, as there is usually a broad agreement within the TWGs.**



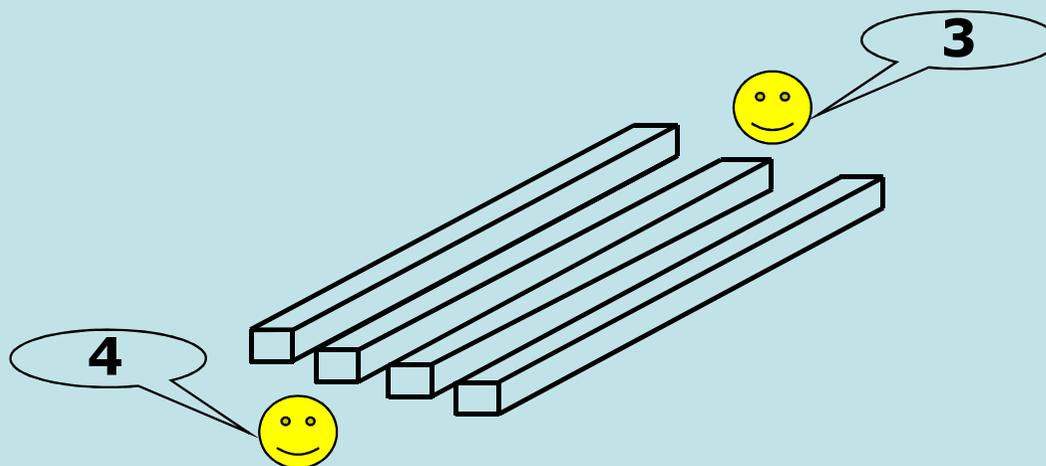
# Outline

**1 – Cross-media effects**

**2 – Monitoring**

# Why?

## Monitoring data without context are meaningless



# Monitoring in the IED (1/2)

- **IED Article 3(12): BAT conclusions contain BAT-AELs and the associated monitoring**
- **IED Article 13(2)(b): The exchange of information shall *inter alia* address the associated monitoring**
- **IED Article 14(1)(c) and (d): Permits shall contain suitable emission monitoring requirements**
- **IED Article 16(1): Monitoring requirements in permits shall be based on BAT conclusions, where applicable**

## Monitoring in the IED (2/2)

- **IED Article 24(3)(b): Results of emission monitoring under the permit conditions and held by the competent authority shall be made publicly available**
- **IED annexes contain specific monitoring requirements, i.e. Annex V (large combustion plants), VI (waste (co-)incineration plants), VII (use of organic solvents) and VIII titanium dioxide production)**

# Monitoring in BAT conclusions (1/3)

**BAT conclusions address the associated monitoring in:**

- **Definitions: e.g. parameters, sources, emission type (channelled/fugitive)**
- **General considerations: e.g. reference conditions, averaging periods, sampling**
- **Specific BAT on process monitoring**
- **Specific BAT on monitoring of emissions to air and water**
- **BAT-AEL tables**

## Monitoring in BAT conclusions (2/3)

Example from the BAT conclusions for waste treatment:

**BAT 8. BAT is to monitor channelled emissions to air with at least the 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.**

# Monitoring in BAT conclusions (3/3)

| Substance/<br>Parameter | Standard<br>(s) | Waste treatment<br>process  | Minimum<br>monitoring<br>Frequency<br>( <sup>1</sup> ) | Monitoring<br>associated<br>with |
|-------------------------|-----------------|---|--|----------------------------------|
| HCl                     | EN 1911         | Thermal treatment of spent activated carbon, waste catalysts and excavated contaminated soil ( <sup>2</sup> ) | Once every six months                                  | BAT49                            |
|                         |                 | Treatment of water-based liquid waste ( <sup>2</sup> )  |  | BAT 53                           |

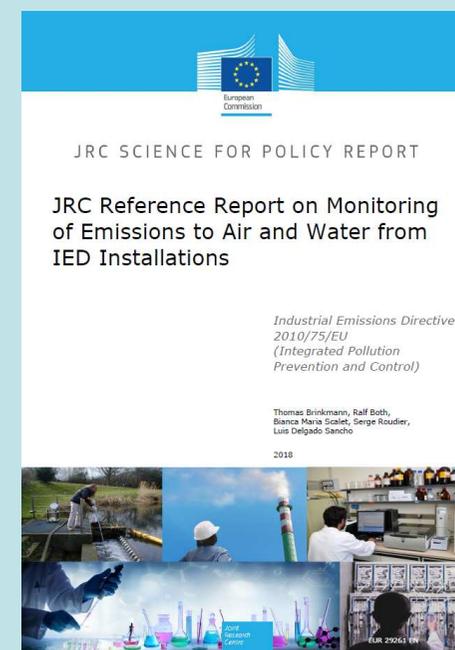
(<sup>1</sup>) Monitoring frequencies may be reduced if the emission levels are proven to be sufficiently stable.

(<sup>2</sup>) The monitoring only applies when the substance concerned is identified as relevant in the waste gas stream based on the inventory mentioned in BAT 3.

# Reference report on monitoring (ROM) (1/3)

## The ROM, published in 2018:

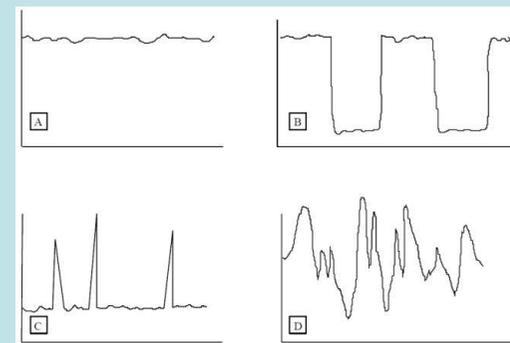
- informs competent authorities and operators on the monitoring of emissions from IED installations;
- informs Technical Working Groups (TWGs) on the monitoring of emissions for the development of BREFs and their BAT conclusions;
- is a non-binding document;
- summarises the main relevant European standards and puts them into a structure.



# Reference report on monitoring (ROM) (2/3)

The ROM covers **general aspects of monitoring**, e.g.:

- monitoring objectives;
- monitoring approaches including the choice of pollutants and parameters to monitor;
- quality assurance including personnel and laboratory qualifications, use of EN, ISO and other standards, as well as measurement uncertainty;
- monitoring approaches for other than normal operating conditions.



# Reference report on monitoring (ROM) (3/3)

The ROM covers **monitoring of emissions to air and water** including:

- measurement planning;
- monitoring frequency;
- measurement, expression, and documentation of peripheral parameters/reference quantities (e.g. temperature, pressure);
- indirect methods;
- data treatment and reporting;
- costs of monitoring.



# Key messages

- **The IED and the BREFs follow an integrated approach to achieve a high general level of protection of the environment as a whole**
- **Decisions on cross-media effects in BAT conclusions are primarily based on expert judgement**
- **Monitoring is a key element in the IED, the BREFs and the BAT conclusions**
- **Clearly defined monitoring provisions are essential for a successful development and implementation of the BREFs and the BAT conclusions**

# Further information

- Industrial Emissions Directive 2010/75/EU: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32010L0075>
- BREFs, draft BREFs, BAT conclusions and TWG kick-off meeting reports: <http://eippcb.jrc.ec.europa.eu/reference/>
- Reference Document on Economics and Cross-Media Effects: [http://eippcb.jrc.ec.europa.eu/reference/BREF/ecm\\_bref\\_0706.pdf](http://eippcb.jrc.ec.europa.eu/reference/BREF/ecm_bref_0706.pdf)
- JRC Reference Report on Monitoring of Emissions to Air and Water from IED Installations: [http://eippcb.jrc.ec.europa.eu/reference/BREF/ROM/ROM\\_2018\\_08\\_20.pdf](http://eippcb.jrc.ec.europa.eu/reference/BREF/ROM/ROM_2018_08_20.pdf)



# Any questions?

You can contact us at [jrc-b5-eippcb@ec.europa.eu](mailto:jrc-b5-eippcb@ec.europa.eu)