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BAT reference documents: what are they and what are they not

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1 Introduction

Council Directive 96/61/EC on integrated pollution prevention and control requires Member States to regulate certain industrial activities, as laid down in Annex 1 to the Directive, by means of operating permits with conditions therein based upon best available techniques (BAT). Article 2(11) provides the definition of BAT and Article 16(2) requires the Commission to organise an exchange of information between Member States and the industries concerned on BAT, associated monitoring and developments in them. Every three years the Commission shall publish the results of the exchanges of information. Information published pursuant to Article 16(2) shall be taken into account when determining BAT in specific cases. The Commission established the Information Exchange Forum (IEF) and the European IPPC Bureau (EIPPCB). The IEF conceived the concept of BAT reference documents to reflect the information exchange and continue to review progress of the work. This paper looks at the series of BREFs foreseen within the work program of the EIPPCB and seeks to enhance understanding of them.

2 What BREFs are not

- BREFs are not prescriptive. They do not set nor propose emission limit values either at sector, national, regional, local or site specific level.
- They do not provide any legal interpretation of the Directive itself.
- They do not remove the obligation on Member States to fully implement the provisions of the Directive and ensure, through their permitting system, a high level of protection for the environment as whole.
- They cannot be exhaustive nor can they fully take account of all local conditions in determining BAT.
- Thus they cannot determine BAT at specific (national, regional, local) levels.

3 What BREFS are

“BREF” stands for BAT reference document. This phrase does not come from the Directive but was created by the IEF. BAT in a BREF is, of course, BAT according to the IPPC Directive.

The series of BREFs consists of “vertical” sector specific BREFs addressing one or more industrial activities listed in Annex 1 to the directive and “horizontal” subject BREFs addressing IPPC issues across industry sectors. These horizontal BREFs do not stem from named activities in Annex 1 but from the general approach of IPPC within the Directive itself.

They represent a collection of information for the guidance of decision makers involved in implementation of the IPPC Directive.

They are addressed at a very wide audience such as :

- Industry operators needing to apply for a permit
- Permit writers in the competent authorities of Member States (and other States).
- Policy makers involved generally in environmental regulation and IPPC in particular.
- Society at large

In each of these categories there are varying levels of expertise. Thus in order to inform the breadth of such an audience and be effective in assisting the implementation of the IPPC Directive, the BREFs include more information than any individual reader should need.

Vertical BREFs are structured according to a general outline which will be tailored to fit the specific industry sector under discussion but will include the following elements:

- A (standard) preface describes the structure of the document, the legislative context, the way in which the document was generated (e.g. how information was collected and assessed) and how it can be used.
- General information is given about the industry addressed by the BREF in terms of numbers of installations, size, geographical distribution, production capacity and economics. An overview of the structure and nature of the sector and the key environmental issues for the sector.
- A section entitled applied processes and techniques briefly describes the production processes and techniques currently applied in the sector(s) covered by the BREF. Not a text book but enough information to give the reader a good appreciation of the steps involved in the industrial process from raw material receipt to products.
- The current emission and consumption levels are reported as far as possible for the overall process and for sub-processes. As far as possible reporting the actual situation covering consumption of raw materials and energy; emissions to all environmental media – land, air and water – but including some quantification of input and output streams for sub-processes within the overall process to highlight the environmental significance of parts of the overall process and to open the discussion on options for recycling and re-use of certain residues, by-products, heat, water etc..
- Techniques to consider in the determination of BAT. A structured section presenting, technique by technique, options to obtain good environmental

performance in the carrying out of the activities involved. Not presenting any technique as de facto economically or technically viable for all installations but discussing each technique in advance of determining BAT.

- A brief description of the **technique**. Noting that a technique may be an additional piece of equipment or the way the process is designed or operated. A technique can be the way the equipment is maintained or simply an operating procedure.
- Some assessment of the **environmental benefits** to be gained through implementing the technique. Usually expressed in terms of a potential reduction in emissions but including any of the considerations listed in Annex IV to the Directive.
- Any **cross media issues** to note such as increased use of energy or reduction in waste generation. Including here information on possible whole environment effects, local, regional, global etc. Strictly not always cross media but including different effects within the same medium such as balancing NO_x and CO both to air where, often, the reduction of one parameter must result in the increase of the other.
- An important qualification in terms of the **applicability** of the technique. Can it be readily retro-fitted to any installation or is it really only feasible to install on a new plant. Is it only relevant for certain cases ?
- **Economic** information on costs, savings, both capital and running costs, and other ways in which the technique may impact upon the economy of the process. Necessarily only an indication of the economics of a technique due to the site specific nature of most precise cost data.
- **Reference plants** and more additional information giving some idea of how widespread the technique is in use.
- An important step before trying to determine BAT in a BREF is to understand the **driving force** behind historical implementation of each technique. Some techniques have been implemented because of a special lack of water, for example or are in response to a special financial regime at the plant in question.
- The BAT conclusions stem from the information presented earlier and here is the crucial element, all inherent to the IPPC definition of BAT, of balancing any cross media effects and taking account of costs, benefits, technical and economic viability. Annex IV to the Directive lists a number of considerations to be taken into account when determining BAT and this provides a decision framework in this respect. Recognising that a BREF cannot take account of all local circumstances, the document can only conclude on BAT in a general sense for the sector as a whole as a reference point to assist the

determination of BAT in specific cases, such as in national rules or individual permits. Usually expressed as a range of emission and consumption levels associated with the use of BAT where BAT is a combination of techniques considered as a package to represent the concept under IPPC. The range reflects a benchmark level of environmental performance. The very best performers could be expected to lie within the better part of the range, with exceptional performers already driven by special reasons to do even better. Those not achieving within the range associated with this general BAT could normally improve their performance towards the range but the amount of improvement required and the rate at which improvement is required is a matter for the Member States and their authorities.

- A section on emerging techniques is meant to offer some information on novel developments in the sector and act as a flag to future work looking to review any BREF. It may also act to stimulate research in these areas as may the section on conclusions and recommendations which serves to sum up the information exchange exercise and highlight strengths and weaknesses which could be improved at some later date. The phrase of emerging techniques does not stem from the Directive but relates to possible developments in BAT.
- An executive summary will serve a special purpose in the procedure for adoption and publication by the Commission. It cannot summarise the whole BREF in a way which all the useful information is included therefore by its very nature it has to summarise the BREF and encourage the reader to go into the bulk of the BREF to read the whole story.

With such a framework for all BREFs it is intended to provide information consistent with the aims and objectives of IPPC but focussed on the subject matter of each BREF. The horizontal BREFs still try to follow the elements of the normal outline which are relevant to their subject and some are able to use far more of the vertical framework than others. The concept of BAT in a general sense may fit far better, for example when addressing the subject of storage of chemicals than that of monitoring.

The series of vertical and horizontal BREFs could be seen to make up a matrix of information to reduce the amount of duplication between BREFs. In the same way it is important to note that vertical BREFs can have pragmatic boundaries drawn between them when there is risk of overlap between two TWGs and their BREFs.

An example of this is how the Large Volume Organic Chemical manufacturing and Refineries BREFs resolve the situation. A refinery by definition will carry out the separation of crude oil into fractions. Then it is quite common to use some products of the separation processes as feedstock in manufacturing organic chemicals in similar processes to those at a chemicals manufacturing plant not associated with

a refinery. For the purposes of the BREFs an imaginary boundary is created where upstream of the steam cracker is handled by one BREF – Refineries - with the steam cracker and downstream processes by another – L.V. Organic Chemicals. It must be stressed that in no way should this be seen to create a real boundary in a refinery where none exists. It is merely an efficient way to develop the BREFs as part of a series with different BREFs standing quite properly side by side.

Another aspect to stress is that a BREF covers both the core Annex 1 activities and the directly associated activities which commonly would be expected to be included in a IPPC permit. The fact that these directly associated activities are described in a BREF and BAT conclusions may be drawn referring to them does not mean that the directly associated activity itself is somehow brought under IPPC where it is carried on elsewhere not associated with an Annex 1 activity.

It is worth highlighting why a BREF can only address BAT in some general sense. The setting of BAT-based permit conditions must, according to the IPPC Directive take account of the technical characteristics of the installation and the local environmental conditions. Additionally the setting of any permit conditions would normally be done bearing in mind the consequences of non-compliance and the likely enforcement of conditions in law. These elements are not harmonised across the Community and therefore must be respected in offering information to guide those setting conditions within their own permit framework. The Directive provides much flexibility for Member States to implement IPPC in their own way and the work of TWGs and the BREFs must not interfere with this principle of subsidiarity.

Annex IV to the Directive, which refers to determining BAT generally or in specific cases, includes the consideration of the length of time needed to introduce BAT. This seems to underline the determination of BAT in specific cases, on the basis of BAT in a general sense and the technical characteristics of the installation which may dictate technical and economic viability of upgrading an installation. This time to introduce BAT is not related to the implementation of the Directive which requires that by October 2007 at the latest all Annex 1 activities are covered by a permit. Often these two aspects are confused. In many BREFs the TWG has identified as BAT a technique which for technical and economic reasons can only be fitted at a time of major rebuild of plant. With some processes operating continuously for 10 or more years it then follows that, in this case, BAT in the general sense is introducing the particular technique at the first opportunity afforded by the rebuilding cycle. On the other hand, of course there are techniques identified as BAT which can be technically and economically fitted very quickly once the regulatory driver of the permit requires it.

BREFs are large and complex documents and it is impossible to present them in detail here. However, by way of real world examples the following presentations from BREF authors are intended to present how some of the more common issues are dealt with. In this way we hope to show how the BREFs as a series are

technically sound and a good foundation to assist the efficient implementation of the IPPC Directive. The individual papers and presentations to follow this will address a number of issues such as :

- How BAT in a general sense has been determined;
- How BREFs are structured to reflect the industry sector;
- Where there are or are not true alternative process options for the production of the same products from the same raw materials;
- How BAT can be expressed sometimes as associated emission and consumption levels and sometimes as good practice;
- How the economic elements of BAT have been handled and how the environment has been considered as a whole;
- How a BREF can inform about a range of installations with various technical characteristics such as size or age;
- The various interfaces between vertical and horizontal BREFs; and
- How varying degrees of consensus in TWGs are dealt with.

4 Conclusion

BREFs are the results of the information exchange carried out under Article 16(2) of Directive 96/61/EC. They are structured within one framework for BREFs but each is focussed upon a specific industry sector or horizontal topic. They are compiled as technical reference documents from information submitted by Member States and Industry as verified by the EIPPCB and the respective TWG. They neither prescribe standards nor techniques which must be used but they offer quality information for the guidance of those who have to make specific decisions on BAT in implementing the IPPC Directive.