

## European IPPC BAT Reference Documents

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### 1. INTRODUCTION: THE IPPC DIRECTIVE

In 1996, the EU Council of Ministers adopted Council Directive 96/61/EC on Integrated Pollution Prevention and Control, commonly known as the 'IPPC Directive'. Its purpose is to achieve integrated prevention and control of pollution arising from the activities listed in its Annex.

The Directive sets general principles governing the basic obligations of the operators of industrial installations. First and foremost among these is the obligation to take 'all the appropriate preventive measures against pollution', which is defined as

'the direct or indirect introduction as a result of human activity, of substances, vibrations, heat or noise into the air, water or land which may be harmful to human health or the quality of the environment, result in damage to material property, or impair or interfere with amenities and other legitimate uses of the environment.'

The other obligations of the operator involved waste management (prevention, recovery and disposal), efficient use of energy, accident prevention and the return of the site of operation to a satisfactory state upon definitive cessation of activities. Measures to

prevent pollution must in particular involve 'application of the best available techniques' (BAT).

Fulfillment of these obligations is ensured by means of an integrated permitting procedure, in which permit applications must include information on the installation and its activities, the substances and energy used or generated, emission sources, conditions of the site, the nature and quantities of the foreseeable emissions as well as the likely environmental impact, proposed abatement techniques, measures taken for the prevention and recovery of waste, and the measures planned to monitor emissions. Likewise, the permit issued by the competent authority must contain conditions, and in particular emission limit values based on BAT. Member States must ensure that the competent authority follows or is informed of developments in BAT.

Although the IPPC Directive does not itself set uniform Community-wide emission limit values for any substances, it leaves in force emission limit values provided for by existing Directives and provides for new emission limit values to be set in the future where a need for such action is identified.

## **2. BAT INFORMATION EXCHANGE: DESCRIPTION OF THE ACTIVITIES**

### **2.1. Objectives, timeframe and legal status**

In addition to the permitting procedure, the Directive requires the European Commission to organize 'an exchange of information between Member States and the industries concerned on best available techniques, associated monitoring, and developments in them', and to published the results of the exchanges of information.

The primary objective of such an exercise is to support the competent authorities in their implementation of the Directive, and in particular in their obligation to follow developments in BAT. In addition, the participation of industry and the general availability of the published results should in itself stimulate the uptake by industry of cleaner production techniques.

The information exchange will be a continuous operation, with the Commission required

by the Directive to publish the results of the exchange of information every three years. The multi-annual work program drawn up by the Commission foresees coverage of all sectors included in Annex I of the Directive by the year 2001.

Although the information exchange process is a legal obligation, the published results will not themselves be legally binding, although it is expected that they will have a considerable influence on permitting practice. However, the Directive does specify that the future Community-wide emission limit values mentioned above must be set on the basis of the information exchange.

## **2.2. Scope**

The information exchange will include all industrial activities covered by the IPPC Directive. The list of such activities, given in Annex 1 of Directive, comprises a total of 33 industrial sectors in seven groups: energy industries, production and processing of metals, mineral industry, chemical industry, waste management, and "other activities".

## **2.3. Organization**

The approach taken is sector-by-sector, and mostly follows the structure of Annex 1, with some minor regrouping. The result is that documents containing the results of the information exchange - called BAT Reference Documents or BREF's - will be published for each of 30 sectors. In addition, a number of cross-sectoral issues have been identified as worthy of particular attention and will result in 'horizontal BREF's'. These are vacuum and cooling systems, monitoring techniques, and emissions from storage.

The Commission unit responsible is XI.E.1 'Industrial installations and emissions', within the Directorate-General for Environment, Nuclear Safety and Civil Protection (DG XI). Nevertheless, much of the technical work, including initial drafting of the BREF's, will be carried out by the European IPPC Bureau, which has recently been established at the Institute for Prospective Technological Studies (IPTS) in Seville, Spain. IPTS is an institute of the European Commission's Joint Research Centre.

The parties to the information exchange - EU Member States and industry, and also environmental NGO's - participate on two levels. At a 'technical' level, Technical Working Groups (TWG's) consisting of expert representatives will be set up for each

sector covered. At a 'political' level, an Information Exchange Forum consisting of official representatives meets two or three times a year. Its role is to oversee the information exchange process and to provide official comments on the draft BREF's. Final responsibility for publication of the BREF's rests with the Commission.

#### **2.4. Definition of BAT**

The term 'best available techniques' is defined in some detail in the Directive, and it is worth citing the full definition here:

" 'best available techniques' shall mean the most effective and advanced stage in the development of activities and their methods of operation which indicate the practical suitability of particular techniques for providing in principle the basis for emission limit values designed to prevent and, where that is not practicable, generally to reduce emissions and the impact on the environment as a whole:

- 'techniques' shall include both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned,
- 'available' techniques shall mean those developed on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions, taking into consideration the costs and advantages, whether or not the techniques are used or produced inside the Member State in question, as long as they are reasonably accessible to the operator,
- 'best' shall mean most effective in achieving a high general level of protection of the environment as a whole."

Of particular note is relatively wide definition of 'techniques' to include such aspects as operation and maintenance, the integrated nature of the concept ('protection of the environment as a whole'), and the need to take into consideration costs and advantages. In addition to the above definition, the Directive contains a list of 12 items to be considered when determining BAT, one of which is the published results of the information exchange and also information published by international organizations. The list also includes the consumption and nature of raw materials (including water) and the length of time needed to introduce the best available technique, as well as other items that follow more directly from the BAT definition or from the basic obligations of the

operator.

The definition can perhaps be seen as the result of two influences: firstly, the desire to take a genuinely integrated approach and therefore to include all relevant factors, environmental, economic and practical; secondly, the need for political compromise between Member States having more or less advanced industrial practices. Although the resulting definition is coherent, rational and widely accepted, it may well be argued that the different interpretations will be possible when it comes to concrete applications. Such differences will presumably reveal themselves during the course of the information exchange.

### **3. ISSUES TO BE ADDRESSED**

#### **3.1. Contents of the BREF's**

The contents of the BREF's will be determined to a large extent by the definition of BAT described above. Thus, BREF's should not only contain information on technologies to be used but also cover design, construction, maintenance, operation and decommissioning. In particular, practical experience shows that the quality of operation and maintenance of an installation is frequently more important than, for example, the process route. Also, the need to take costs and advantages into consideration when determining BAT implies that the economic performance, as well as the environmental performance, of a given technique should be addressed during the information exchange, and that information about this should be included in the published results. The extent to which the focus is more on end-of-pipe technologies or on integrated solutions will presumably depend on the nature of the sector to be treated.

The financial and human resources available and the vastness of the scope of the exercise will not permit the drafting of handbooks containing an in-depth study of each sector; nor will it be possible for local authorities to apply directly the results without first taking into account local economic and environmental conditions. The BREF's will not stipulate a list of best available techniques to be prescribed as the only permissible techniques throughout Europe. Instead, the idea is to draw up a list of reference

techniques to define the environmental performance that is achievable in the sector. These reference techniques are agreed on the basis of an evaluation of various 'candidate BAT's', identified at an early stage of the process.

An outline for the BREF's has been discussed in the Information Exchange Forum. This outline involves the following elements: general information about the sector, a description of the currently applied processes and techniques, present consumption and emission levels, a selection of 'candidate BAT's' together with an evaluation of their environmental and economic performance, a selection of BAT's, and finally a description of emerging techniques.

### **3.2. A vertical or a horizontal approach?**

It has already been mentioned that the approach taken will be a sectoral one, supplemented by three BREF's on horizontal themes. It seems fairly clear that neither a purely vertical nor a purely horizontal approach is ideal. The advantages of a sectoral approach are that different sectors have distinctive characteristics requiring a different approach, and that existing information and expertise is often organized sectorally. On the other hand, certain issues such as the three identified - vacuum and cooling systems, monitoring techniques and emissions from storage - are essentially of a cross-sectoral nature and are therefore best treated as such.

It is important to note that the information exchange process will be a dynamic and evolving one, and in particular that more issues requiring a horizontal approach may come to light as more experience is gained. The vertical/horizontal question is one of many issues which will require a continuous learning process.

### **3.3. The integrated approach and environmental trade-offs**

Another such issue is the question of how to address environmental trade-offs. One of the major reasons for an integrated approach is to address the problem of abatement techniques merely shifting pollution from one environmental medium to another. A genuinely integrated BAT will be one achieves 'a high general level of protection of the environment as a whole': in other words, it needs to be optimized for the overall environmental impact rather than for a specific environmental effect (e.g. air pollution).

This cannot be done without some method for deciding on environmental trade-offs.

Broadly speaking, three approaches can be identified. The first would be to refrain from addressing environmental trade-offs in the BREF's, except to mention that they exist. The idea would be to give information on the performance of candidate BATs concerning all the relevant environmental impacts, while leaving permitting authorities free to make trade-off decisions on the basis of local conditions and sensitivities. Although permitting authorities are in any case free to take local conditions into account when determining BAT, this approach would seem to be too limited.

A second approach would be to try to develop fully quantitative weightings for the different environmental criteria. This would be a much more ambitious plan and has considerable appeal as a truly rational approach. However there seems to be a general consensus amongst parties to the information exchange that it is unrealistic to adopt such an approach since the weightings would contain a large amount of subjectivity and are too dependent on local conditions.

The third option, and the one most likely to be taken, is therefore to adopt a qualitative approach, refraining from establishing quantitative weightings but nevertheless giving some guidance at least on which of the environmental effects are more important. In any case such a judgement will be implicit in the selection of reference techniques.

### **3.4. Economic considerations**

As mentioned above, economic considerations are included in the legal definition of BAT, and will therefore need to be taken into account explicitly in the selection of reference techniques. An evaluation of the economic performance of candidate BAT's is included in the BREF outline. It should cover both the investment costs and the operating costs of a particular abatement technique, and also take account of economic savings due to increased efficiency. A distinction is to be made between new and existing installations.

### **3.5. Interaction between organizations**

The European Commission is not alone in conducting activities concerning best available techniques or related concepts. Much information is available, whether from industry,

Member States and other nations, or international organizations. UN-ECE and Parcom are examples of fora involved with similar activities. It will be important to ensure that the information exchange process is well-coordinated with such activities and benefits from all relevant information.

There are no obvious obstacles in principle to the sharing of information - on the contrary, countries and regions with more developed environmental legislation and practices generally have an interest in encouraging similar practices elsewhere. The greatest obstacles are therefore likely to be operational: lack of awareness of related activities, or lack of time and resources to co-ordinate adequately. There is therefore much to be gained from a comparative discussion on the different activities that exist, and on possible modalities of co-operation.

#### **4. CONCLUSIONS**

The BAT information exchange being organized by the Commission is a legal obligation of Council Directive 96/61/EC on integrated pollution prevention and control (IPPC). Its main objective is to provide guidance for the permitting authorities within the EU when determining BAT as required by the Directive. It may also prepare the ground for future Directives setting EU-wide emission limit values.

The information exchange will cover a wide range of industrial sectors - all those covered by the Directive - as well as some horizontal issues, and will be an ongoing process lasting several years. Within the Commission, DG XI is responsible for the exercise but will be assisted by a European IPPC Bureau, Technical Working Groups and an Information Exchange Forum.

The published results - called BREF's - will contain list of reference techniques that can be considered BAT, but which are not to be seen as exclusive lists. The definition of BAT to be used is given in the Directive.

An outline for the contents of BREF's has been established, and much thinking has already been done on questions such as the amount of detail to be included, the usefulness of making separate BREF's for horizontal issues, how to deal with

environmental trade-offs and how to include economic considerations. The issues are complex, however, and it will require flexibility and a continuous learning process.

Interaction between different organizations carry out similar activities is important, and the sharing of information between them will need to be well-coordinated.