

# The refinery BAT reference document

## *An important document with a potential for misuse*

**T**he Integrated Pollution Prevention and Control (IPPC) Directive, adopted in September 1996, requires Member States to issue permits for major industrial installations (such as oil refineries) to promote the use of Best Available Techniques (BAT) for reducing emissions of specified pollutants. The Directive is already in force for new installations as well as for significant revamps or upgrades but does not apply to existing installations until 2007. 'Integrated' in the title of the Directive means that the permit must consider emissions to all environmental media as well as the use of raw materials and energy.

Article 16 of the Directive calls for the production of a so-called BREF (Best Available Technique reference document) for each major industrial sector via a process of information exchange between the main stakeholders. The BREFs are intended to give guidance to regulators on an industrial sector and its emissions, what can be considered as BAT, the levels of pollution abatement achievable, the cross-media implications, energy use, etc. The BREFs are publicly available documents.

Although the Directive calls for mandatory application of BAT, what constitutes BAT has to be determined on a case-by-case basis and the BREF only offers guidance in this respect. In particular none of the emission levels quoted are intended to be translated into permit levels. Nevertheless, local regulators will use them as a starting point for discussions with installations such as refineries.

For the purpose of producing the BREFs, the European Commission established the European IPPC Bureau (EIPPCB) based in Seville. For each BREF, a Technical Working Group (TWG) was formed with membership from Member State experts, industry and environmental organizations. Each TWG has its own EIPPCB staff member to manage the process, collate all the information and draft the documents. However TWG members are expected to provide the majority of the information

and to actively participate in the development and update of the BREF.

### **The refinery BREF**

CONCAWE has been involved with the refinery BREF from its inception and even before. Work started some two years before the first meeting of the TWG when two CONCAWE Task Forces were established to gather the necessary information, eventually producing CONCAWE Document 99/01. This was tabled at the first meeting of the TWG and has been one of the most important sources of data for the TWG, indeed, almost the only source of information on costs. Participation in the TWG has entailed a massive workload both for the CONCAWE Secretariat and for representatives of Member Companies. A small core group attended all TWG meetings and provided the main input. They have been supported, particularly in providing additional information and reviewing the drafts of the BREF, by a large number of experts in Member Companies and the National Oil Industry Associations (NOIAs).

The preparation of the BREF was a difficult exercise because of the complexity and diversity of refinery processes as well as different levels of integration of refineries in Europe. Against the advice of both CONCAWE and a number of Member States, who felt that refinery emissions should be tackled using a pollutant/media approach, the EIPPCB opted for a process-by-process approach. This made the whole matter even more fraught with difficulties.

To the end, CONCAWE as well as some other stakeholders considered that the document had many deficiencies. Unfortunately not all issues could be resolved and the document contains many 'split views' where either industry or Member States disagreed with the EIPPCB. Although previous BREFs developed for other sectors also include some split views, their number in the refinery

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BREF is much higher than previously experienced. In spite of still strong reservations on some aspects of the document, the oil industry decided to support the publication of the document. In the event, the Commission (DG Environment) approved the document, despite objections from a large number of Member States who wanted a further period of work and an extra meeting of the TWG to try to resolve the differences.

### Areas of discussion and concern

One of the main areas of disagreement was the setting of the various emission levels quoted in the document. These fall into three categories: BAT associated levels, achievable emission levels and emission limit values.

**BAT associated levels** are meant to represent the environmental performance that could be anticipated as a result of the application of the BAT in the sector. In some cases it may be technically possible to achieve better emission or consumption levels but due to the costs involved or cross-media considerations, such schemes are not considered to be appropriate as BAT for the sector as a whole. The definition does include the statement that 'such levels may be considered to be justified in more specific cases where there are special driving forces'.

**Achievable emissions values** are defined as the level that may be expected to be achieved over a substantial period of time in a well maintained and operated installation or process using the relevant techniques.

It is important to realize that neither of these levels is meant to represent an **emissions limit value** (ELV), i.e. a regulatory control value, nor is it intended to be used as such. ELVs are only mentioned in the BREF as examples from Member State legislation.

The BAT Associated Levels and Achievable Emissions Values have been derived from information originating partly from equipment suppliers, but mainly from refineries operating the relevant processes. In most cases, this has resulted in a range of values. The EIPPCB (supported by some Member States) has maintained that only the best performers in this range should be

taken to indicate achievable levels. CONCAWE's position has been that 'best' performance may be due to special circumstances such as low throughput, favourable crude type, etc. that do not apply to all refineries. To avoid over-optimistic expectations, the whole range should be taken as the achievable level, except perhaps where the 'poor' end of the range clearly results from bad operational practices.

### Cross-media effects and implementation costs

While cross-media effects are noted in the BREF, there is very little information on their scale and relevance. In a number of cases, the choice of what is BAT for a certain pollutant has been made with only a very superficial analysis of the implications for emissions of other pollutants, uses of resources, and energy usage. These implications are mostly site-specific. Energy is of particular relevance in the context of CO<sub>2</sub> emissions.

The BREF also contains only very limited information on costs. Costs are generally very site-specific, as are related issues such as availability of plot space for new equipment. In CONCAWE's opinion, the document does not sufficiently recognize the fact that investments have implications beyond purely financial matters. Capital is mainly spent on new equipment, the construction of which has its own environmental impact, which should be set against benefits from its use using a life cycle analysis approach. Cost is therefore one aspect of cross-media effects.

### Structure of the BREF document

The BREF includes a so-called BAT chapter where all BATs are briefly described, in many cases with a single line of text, without any indication of possible limitations. In the refinery BREF this chapter included more than 200 BATs, in sharp contrast with those previously written for other industrial sectors, which included a much smaller number.

Although many of CONCAWE's concerns were accepted, they are often only recorded in separate technical chapters giving details of the candidate BAT processes and

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not in the all-important BAT chapter. It is therefore essential that the document should be consulted as a whole and the BAT chapter not taken in isolation. CONCAWE objected to a proposal to include the whole BAT chapter in the Summary (the only part of the document to be translated into all EU languages) on the ground that this could lead to Member States' regulators using this section without looking at the whole document. The proposal was abandoned but the Commission decided to exceptionally produce separate translations of the BAT chapter, potentially creating the same situation.

### The emission 'bubble concept'

Refinery emissions, particularly those of sulphur compounds, are controlled in many Member States by what is known as the 'bubble concept', in which a limit is set on the emissions of the refinery as a whole rather than imposing limits on individual units/emission sources. The refiner then has the freedom to reduce emissions in the most cost-effective way.

From the start, CONCAWE had proposed that this method should be discussed in the BREF. EIPPCB however insisted that this method was irrelevant to a BAT-driven concept, in which each individual unit must strive to achieve BAT, resulting in minimum emissions for all. In our view this philosophy is inconsistent with the definition of a BAT, which is meant to include costs, local factors and the different environmental needs in different locations. In the real world of integrated refineries, the bubble concept provides a mechanism for forcing down emissions while allowing site-specific factors to be considered for the refinery as a whole.

Under pressure of a number of Member States limited information on the bubble concept together with some benchmarking data has been included, not however as a BAT, but as a useful tool.

### Implications for European refineries

Much of the document (particularly the technical chapters) is a useful description of current day practices in Europe and guidance to refineries on measures they should consider when planning to improve their environmental performance. Many of the 200-plus BATs were proposed by CONCAWE, and the majority are relevant provided that they are considered in the light of local circumstances.

There is, however, serious concern that the BREF will be misconstrued as a blue print for all refineries that would have to exclusively use the techniques described and be able to achieve the best of the emissions levels quoted. This is of course in accordance with neither the letter nor the spirit of the IPPC Directive, but Member Companies and refinery management will have to be prepared to respond to such claims.

To assist them in understanding this massive document of more than 500 pages, CONCAWE plans to produce a guidance report. This will cover the IPPC Directive and what it requires refineries to do, the role of the BREF in the permitting process, and the factors that need to be considered to establish which of the techniques described are appropriate in the local circumstances of a particular refinery. In particular, each of the 'split views' will be discussed and the reasons for CONCAWE's reservations explained.