
The legislative maze

In how many different ways are refineries to be controlled?

A previous article (CONCAWE *Review* Vol. 8, No. 1) has described CONCAWE's involvement in the development of the BAT (Best Available Techniques) Reference Document (BREF) for refineries under the Integrated Pollution Prevention and Control Directive (IPPC). The first 'kick-off' meeting of the Technical Working Group (TWG) was held in Seville in May 1999. The European IPPC Bureau (EIPPCB) then collected information from members of the working group, and the initial draft of the BREF was produced. Refineries will also be affected by a number of so-called horizontal BREFs. These are for processes which are common to a number of industries and include monitoring, storage, cooling, waste water and gas treatment, and large combustion plants.

The outcome of the refinery study in particular will be of great importance to the European refining industry. As its title implies, it is intended to be a reference document for local regulators to use in granting permits to operate refineries when the IPPC Directive has to be applied by Member States to existing installations by 2007. The BREF will include information on the available technologies and achievable performance levels. It is likely that many refineries will have to upgrade their treatment processes to comply with the requirements for BAT.

The setting of BAT for refineries is a complicated process. Refineries are rather different from most other industrial sectors in that they manufacture a whole range of different products, with the range and relative quantities varying not only from refinery to refinery but also over time depending on product demand, type of crude processed, etc. Most processes produce mixtures of hydrocarbons which have to be separated before reblending with streams from other processes to produce the final sales products. The feed and products of these processes are integrated, as are energy saving measures and treatment of most of their emissions streams. There are also many common components such as furnaces.

For these reasons, CONCAWE is of the opinion that refineries should be treated as a whole, rather than process by process. Its submission to the TWG was structured on a media basis considering emissions to air, water and ground separately for the whole refinery. Cross media aspects were taken into account. The direct emissions from individual plants, notably emissions to air from the cat-cracker were considered separately. The EIPPCB, however, wish to cover refineries process by process. In CONCAWE's view, this will make the BREF unnecessarily repetitive and time consuming whilst adding little to the understanding of the issue.

The IPPC Directive is not the only European environmental legislation that impacts refinery operations. Perhaps the most fundamental is the directive controlling the quality of gasoline and diesel fuel. This will require new processes and changes in the way refinery processes are operated. Another directive limits the sulphur content of liquid fuels. Other directives that have an impact on refinery operations are regulating/controlling issues such as safety (Seveso Directive), the emissions from large combustion plants, VOC emissions, waste disposal and incineration, protection of groundwater, etc. There is also a decision by the Oslo and Paris Commissions (OSPARCOM), the body responsible for the protection of the North Sea and Eastern Atlantic,

controlling emissions from refineries directly to these seas and also to the rivers flowing into them. Similar bodies are responsible for the Baltic, Mediterranean and Black Seas.

An important set of directives covers the control of air quality, particularly the Air Quality Framework Directive and its daughter directives. These so far cover SO₂, NO_x, particulates, lead, CO and benzene with others such as ozone, PAHs and nickel still to follow. These directives set air quality standards (AQS) which have indirect impacts on refineries which are significant emitters of a number of these atmospheric pollutants. Their emissions have to be regulated together with the emissions from all other sources in the area, and even transboundary emissions, in order not to breach the overall AQS in that area. There is a mechanism through the IPPC Directive to tie AQS to specific industrial plants. Such sites have to use BAT (taking into account economic viability and local factors) to control their emissions. However, the AQS (and other environmental quality standards) must be complied with. If they are not, then more stringent measures must be taken.

Most of the above pieces of legislation involved at least some form of risk assessment (RA) in the development of their standards. However, a completely separate programme of risk assessments is being carried out as part of the EU programme for control of chemicals. Experts from one of the Member States carry out each RA. So far, progress has been slow and there has been no RA on any petroleum substance, although they are in progress for a number of chemical compounds contained in petroleum products such as benzene, toluene and MTBE.

CONCAWE is firmly committed to the principles of RA, indeed, the scientific assessment of environmental and health problems associated with oil and its use have been the cornerstone of its activities since it was founded more than thirty-five years ago. In this time, CONCAWE has collected a considerable quantity of information and scientific facts covering both the health effects of oil products and the exposure of workers and the public to the various products involved. Both aspects are fundamental parts of any RA. We are now reassessing these data to see what is missing and to fill the gaps. Thus when RA for petroleum substances is required, we will be in a position to cooperate effectively.

There are a number of problems associated with RA particularly where it impinges on existing legislation. RA is based largely on laboratory testing of individual substances on a variety of organisms followed by the application of generous margins of safety. It could well be that the RA of a substance which is present in refinery emissions could call for strenuous risk reduction measures based on inadequate and theoretical data, even though the refinery in question is already applying BAT and is situated in an area where the EQS are complied with.

For many years, the European oil refineries have taken a practical approach to assessing their emissions by monitoring the environmental impact on their surroundings. Some refineries (often in association with their regulatory bodies) have been doing this for more than thirty years. The results have generally shown very limited impacts. For example, in 1979 CONCAWE documented the environmental impact of refinery effluent water (Report 8/79). Since then, further CONCAWE reports have detailed the rapidly decreasing oil releases in refinery effluents. It is therefore difficult to see why extra measures for individual substances in such water should be called for when it has been demonstrated that the aggregated effect of the whole is minimal.

To conclude, refinery operators increasingly have to manage their compliance with all the environmental legislation, not just ensuring that their sites comply with the specific legislation controlling their activities (the IPPC Directive). They truly have a maze of legislation to contend with.