



Health

Understanding the health concerns behind environmental regulatory initiatives

CONCAWE has been working on health issues virtually since its inception. In the early years the focus was on occupational health in relation to oil industry workers. Over the years, and particularly in the past decade, broader human health issues have become progressively more central to the environmental debate, with 'health' increasingly the driver behind environmental improvement initiatives. The focus of CONCAWE's activities has shifted to deal with the new issues being raised.

Health issues are complex and need to be addressed by experts in several different areas. Through its member companies, CONCAWE has been able to maintain, as its 'Health Management Group', a strong team of occupational physicians, toxicologists, industrial hygienists and product stewards with particular expertise in oil industry related issues. As appropriate, academics are also called upon to carry out specialist work, such as detailed reviews of scientific literature.

In the April 2001 issue of the *Review* we reviewed CONCAWE's most important achievements in the area of health, in the form of toxicological studies and industry-wide surveys of hazardous occupational exposures. We spoke also of CONCAWE's continuing cooperation with key international organisations under the United Nations and in the European institutions on environmental and occupational health aspects of oil products and operations.

In this article we specifically review CONCAWE's involvement in three important EU programmes addressing health effects from air pollution, the safety of chemicals and a global environment and health strategy with a special focus on children.

The CAFE programme

As the work towards an EU strategy for air quality management unfolds under the Clean Air For Europe programme, it becomes clear that the principal driver for

additional measures will be the protection of human health which is viewed as being at particular risk from exposure to fine particles and to ozone. Traditional forms of pollution, in particular acidifying pollutants such as sulphur dioxide, appear to be retreating into the background, as agreed management controls take effect and prove to be effective.

Thus far, the valuation of human health effects of airborne pollutants relies mostly on observational epidemiology investigations rather than on data from controlled clinical and toxicological studies. CONCAWE has reviewed the methodologies used and the reported findings from a number of epidemiological investigations and found a number of serious shortcomings. The authoritative Health Effects Institute in the USA, sponsor of a large body of research in the field of public health effects from air pollution, recently revised the conclusions of one of its main studies following the detection of methodological errors. Other studies have also been criticised, for example with regard to the accuracy with which personal exposures are estimated; the ability to quantify life expectancy effects of air pollution changes; and possible double-counting of pollutant effects. This leads to the conclusion that air pollution epidemiology is still an immature field of science. Such valuations intrinsically carry a high degree of uncertainty and this should be fully realised when using such results as the basis for legislative policies. Representatives from CONCAWE have voiced these concerns within the CAFE programme and the UNECE's work programme on Long-Range Transboundary Air Pollution.

Chemicals legislation

The desire to inform the public better about the health and environmental hazards of chemicals, including oil products, and to devise more comprehensive controls has led the European Commission to issue its consultation paper on a new European chemicals control policy based on the REACH (Registration, Evaluation and Authorisation

of Chemicals) system. (See also article on Petroleum Products.) Although the exact requirements are still under discussion, it appears that information on human exposures, in the form of both descriptions and measured data, will be necessary for the risk assessment of all chemicals concerned. These include most petroleum products for which exposure data was so far not required. In support of its risk assessment programme CONCAWE has initiated an ambitious programme to acquire this information.

The exposure information for gasoline is essentially complete, following exposure data reviews and measuring campaigns in 2000 and 2002. Current efforts focus on exposure information in relation to production and use of gas oils and kerosenes. In preparation for further risk assessments, the methodologies for monitoring airborne levels of LPG and bitumen fumes have been updated.

The chemical risk assessments under REACH also require experimental toxicological information on health effects other than those traditionally included in hazard profiles, such as test data for effects on reproductive organs. CONCAWE conducted a test programme on gasoline vapour which indicated there are no such effects. Similar studies are now being planned for other product groups. This work is partly carried out in cooperation with other oil industry organisations, notably the American Petroleum Institute. Issues to resolve include identification of test samples that meet the different European and US product specifications and development of study designs which satisfy the different test requirements in the EU and in the USA.

The SCALE initiative

During the summer of this year the Commission's Directorates-General for Health and Consumer Affairs, Research, and Environment, in cooperation with the Joint Research Centre at Ispra in Italy, announced the launch of a new environment and health strategic programme, called SCALE (Science-based, Children-focused, Awareness-raising, using Legal instruments, and constantly Evaluated). The announcement made reference to 'growing' health problems related to environmental degradation, of which particularly children are the victims.

The SCALE programme will start with the establishment of a work plan to be implemented during the period 2004–10. Indications are that 'stakeholders' can participate in this activity and nominations have been made for the 'consultative forum' and some of the working groups.

Much progress has already been made in improving European environmental quality, and further improvements will result from the full implementation of already agreed measures. The oil industry has contributed to this by phasing out lead, reducing sulphur and lowering the benzene content in gasoline, and by reducing VOC emissions.

Although the goals of the SCALE initiative are laudable, the methodologies that may be used give cause for concern. One of the probable new initiatives is the introduction of large-scale bio-monitoring or studies of environmental contaminants in the human body in the general population. Modern analytical techniques are increasingly sensitive and capable of detecting very low levels of pollutants in test samples. New test methods are constantly being developed which can detect minute biological changes of unknown medical relevance and often associated with multiple stimuli such as tobacco smoking, drinking of alcohol and consumption of spicy food.

The mere presence of a pollutant, be it in food, air, water or the body, does not necessarily imply that environmental or health effects will ensue. Any scientific evaluation of bio-monitoring results should therefore be based on established and specific cause-effect relationships and include a reference value to determine the significance of detected changes.

Conclusion

The three initiatives described above emphasise the need for thorough technical and scientific understanding and analysis in the cost-effective management of health risk. CONCAWE remains committed to this principle in its health science activities, as in all the other areas of its remit.