

action, even though its monitoring is a long-term action. Key organisms, products or compartments will be selected to monitor their dioxin and PCB concentration. This will be done in close co-operation with the Joint Research Centre, the European Environment Agency and the WHO.

C) Risk Management

Prevention measures

Priority will be given to specific actions preventing the formation and release of dioxins and PCB : the Commission will promote the development and use of substitute or modified materials, products and processes to prevent the formation and release of dioxins and PCBs taking into consideration the general guidance on prevention and release reduction measures in Annex C of the UNEP POPs⁹ Convention. This will be done by funding research in this field and by co-ordinating the exchange of information and experiences between Member States.

Control of emissions

To reduce the total releases derived from anthropogenic sources of dioxins and PCBs with the goal of their continuing minimization and, where feasible, ultimate elimination the Commission shall take the following measures according to the obligations of the UNEP POPs Convention :

Promote the exchange of information and experiences between Member States as concerns the current application of available, feasible and practical measures that can expeditiously achieve a realistic and meaningful level of release reduction or source elimination.

Promote the use of BAT and technology transfer in sectors with dioxin and PCB emission potential : the Commission has organised an exchange of information between experts, industry and environmental organisations, co-ordinated by the European IPPC Bureau. In this framework the Commission will encourage the Member States to phase in existing IPPC installations well before the deadline of October 2007. The Commission will also encourage the representatives of Member States and the industries concerned to continue to fully participate in the ongoing information exchange on BAT, and pay special attention to the sectors with dioxin/PCB emission potential thereby ensuring that the final BREFs will contain progressive BAT conclusions regarding dioxins/PCBs. The Commission will encourage organisations representing the industries concerned as well as public authorities to continue to raise awareness within the industries concerned of the obligations under the IPPC Directive, so that operators are well prepared to implement BAT at the latest by October 2007.

Support voluntary measures for the prevention of accidents : commercial enterprises can voluntarily participate in an environmental management system according to Council Regulation (EEC) No 1836/93 (EMAS) or according to ISO 14000. This action is an additional effort to reduce emissions from accidents in spite of existing legal regulations which are laid down in the Council Directive 96/82/EC on the control of major-accident hazards involving dangerous substances. Therefore the

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Commission will encourage the development of codes of "best risk management practices" to prevent accidents in the relevant industries.

Clean Air for Europe programme (CAFE) : an important goal for CAFE, as far as dioxin emissions to air are concerned, is to ensure that the various inventories (EIONET, CORINAIR, EPER, EMEP) are harmonised. The identification of measures to reduce dioxin emissions to the air is another area in which links with CAFE are foreseen. The sectoral co-ordination group to be set up under CAFE will foster information exchange between CAFE, the sectoral integration dossiers and specific sectoral emission reduction policies (such as IPPC). Dioxins will be one of the files to be represented on this group.

Control of the quality of the environment

In order to address the problem of fraudulent dumping of PCBs in the environment the Commission will initiate a debate within the Community to assess the suitability of public or private subsidies for the disposal granted to the holders of PCB-containing equipment to prevent any illegal dumping.

The Commission will take all necessary steps to control dioxins and PCBs in all the environmental compartments :

Water : The Commission supports two studies on priority substances, including dioxins and PCBs, in the field of water policy with regards to emissions, discharges and losses, source identification, proposals for measures, and quality standards. The "Marine Global Strategy" will include monitoring of micropollutants such as dioxins and PCBs in water, sediment and ecosystem.

Soil : The Commission will establish the cartography of highly polluted soils and sediments. A complete map with accurate results can be only foreseen within 5-10 years. Since the dioxin/PCB contamination of feed and food is highly dependent on the soil and sediment contamination this will provide competent authorities with an important tool to limit the contamination of the feed and food chain as much as possible.

Waste : in order to ensure that stockpiles consisting of or containing PCBs and wastes, including products and articles upon becoming wastes, consisting of, containing or contaminated with dioxins and PCBs are managed in a manner protective of human health and the environment, the Commission shall take the following measures according to the obligations of the Stockholm Convention :

- Support the development of appropriate strategies for identifying a) stockpiles consisting of or containing PCBs and b) products and articles in use and wastes consisting of, containing or contaminated with dioxins and PCBs;
- Support the identification, to the extent practicable, of stockpiles consisting of or containing PCBs on the basis of the above-mentioned strategies;
- Endeavour to develop appropriate strategies for identifying sites contaminated by dioxins and PCBs.

The Commission will promote the exchange of information between inspectorates of the different Member States on the subject of PCB waste and compliance with current EU regulations. In the context of the BAT Reference document on waste recovery and disposal activities, to be prepared in 2002 to 2004, special attention will be given to determining BAT for the treatment of waste materials contaminated by PCBs and dioxins. The Commission supports a study entitled "Dioxins and other POPs in wastes and their potential to enter the foodchain" in order to fill the data gaps on the subject of the re-use of contaminated waste in the feedingstuff production. Lands have been heavily contaminated by disposal of dioxin and PCB-containing waste. As one of many possible preventive measures of further contamination of the soils, the Commission is considering to amend Directive 86/278/EEC on the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture in order to ensure a high level of environmental protection. A careful assessment of the opportunity of including threshold limit values in sewage sludge for dioxins and PCBs will be carried out.

D) Research

The Commission will encourage all types of research that will contribute to reduce the impact of dioxins and PCBs. It will also bring together researchers across projects to exchange information and will facilitate co-ordination among Member States. In order to 1) *further identify measures* to reduce the contamination, to 2) *predict the effects of regulatory controls* and to 3) be able to *monitor* the environment (both on ecotoxicological and epidemiological aspects) in the future an integrated approach to research, thus ensuring value for money and appropriate coverage of the key issues is needed. This strategy sets a guidance list of priorities for further research (Annex III) both for the Commission and for the Member States.

E) Communication to the public

To allay public concern, to raise awareness and to inform the public reliable, accurate, clear and comprehensible information will be provided on activities of the Commission, on possible effects and risks, on uncertainties, etc ... During the EC/WHO seminar (Brussels, September 2000) the WHO and the EC decided to jointly define elements of an appropriate *risk communication strategy* on the subject of dioxins and related compounds and develop approaches, involving various fields of science as well as all stakeholders. Within the CAFE programme active dissemination and Communication to the public of technical information and policy development will be given high profile, to ensure the full involvement of the public in the development and implementation of policy.

To educate the public : the general public has not only to be informed, but has *to play an active role* in the prevention of releases into the environment. The influence of the public in the emissions of dioxins can generally only come from a certain awareness concerning the domestic incineration of wood, waste, etc...(the public will be educated on the environmental effects and the abuse of inappropriate materials as fuels for heating purposes - such as treated wood, coal for domestic combustion - and on the risks of domestic waste burning), but the influence of the public in the releases of PCBs can be much more important, as household electrical appliances are a very important source of PCBs and the households can ensure that their electrical appliances are given to authorised undertakings that will dispose of them in an environmentally sound manner (the public will be educated on the

disposal of PCB containing equipment). Therefore, exchange of information and experience between Member States as regard education, training and awareness raising will be promoted by the Commission.

F) Cooperation with third countries and international organisations

Emissions in the Accession Countries are likely to be higher than in the EU. The Commission intends to launch a project in order to identify important dioxin sources and to carry out measurements in the Accession Countries. Cooperation with WHO is essential to avoid duplication of work and will continue in the future. As a contracting party to several conventions in the field of dioxins and PCBs the Commission will continue international cooperation on this subject.

LONG-TERM ACTIONS (10 years)

An important part of this strategy will be a long-term preparation to 1) *further identify* source directed actions and to 2) *evaluate* the efficacy of existing legislation. In order to implement the "Environment-Health" objectives in the 6th EAP a set of actions are identified which relates to data collection, monitoring and surveillance and further identification of measures.

A) Data collection on the level of dioxin/PCB contamination in air, water (sediment) and soil :

- The Commission will support the collection of existing data and the setting up of a Geographical Information System (GIS) for the selected indicators. This GIS will be integrated in the global environment GIS strategies. Consequently "hot spots" of high contamination levels will be identified.
- The Commission will support the collection of epidemiological and toxicological data in the same database in order to be able to establish a link between environment and health.

B) Monitoring and surveillance of the level of dioxin/PCB contamination in air, water (sediment) and soil :

- The Commission will support the establishment of programmes to monitor the level of contamination. It is important to set up a very detailed and common procedure of continuous monitoring of the selected indicators in the selected areas. Having a common methodology of monitoring for all areas, the results will be comparable and an overall trend could be drawn across the EU.
- The Commission will conduct surveys and measurements of the *status* and *trends* of the contamination in order to measure progress in reducing the presence of dioxins and PCBs in the environment.
- The Commission will investigate the possibility to link epidemiological data collection and monitoring of the environment in the framework of the 6th EAP implementation.
- The Commission will examine the opportunity to develop a rapid alert and reaction system for acute or emergent environmental dioxin and PCB dangers

in the framework of the 6th EAP. This system will help to establish information consultation and co-ordination procedures between Member States.

C) Identification of measures :

The above-mentioned information will provide a comprehensive picture of the environmental dioxin/PCB problem and a good understanding of the trend, which will permit further policy making and evaluation. The Commission will then further identify :

source directed measures to further reduce the environmental contamination and to guarantee that maximum levels in food and feed can be respected and target levels achieved within a certain period of time;

measures to improve consumer's protection : regular revisions of feed and food limits, adjusted to environmental contamination trends and to risk assessment (including vulnerable groups) will be proposed as well as transitory restriction for consumption of natural food from "hot spots" and with high bio-accumulation rate.

6.2. Strategy to reduce the presence of dioxins and PCBs in feed and food

Food of animal origin is a predominant source of human exposure to dioxins and PCBs. As food contamination is directly related to feed contamination, an integrated approach is followed to reduce dioxin/PCB incidence all along the food chain, i.e. from feed materials through food-producing animals to humans. Taking measures with regard to feed is therefore a decisive step to reduce human intake. Measures in food and feed solely based on establishing maximum levels would not be sufficiently effective in reducing the level of feed and food contamination unless the levels are set so low that a large part of the feed and food supply would be declared unfit for animal/human consumption. Besides the important measures to limit the release of dioxins and PCBs into the environment, other measures for aiming at the reduction of dioxins and dioxin-like PCBs in feed and food, are envisaged to come into application in the course of the year 2002.

These legislative measures concerning feedingstuffs and foodstuffs consist of three pillars:

- the establishment of maximum levels at a strict but feasible level in food and feed
- the establishment of action levels acting as a tool for "early warning" of higher than desirable levels of dioxin in food or feed
- the establishment of target levels, over time, to bring exposure of a large part of the European population within the limits recommended by the Scientific Committees.

Establishment of maximum limits:

The establishment of maximum limits at a strict but feasible level, gradually decreasing with time, in order to discard the unacceptably highly contaminated products. The establishment of such a limit is a necessary tool for management and to ensure uniform application across the EU.

From a toxicological point of view, limits should include dioxins and dioxin-like PCBs. However, as the data on the occurrence of dioxin-like PCBs are still very limited, in particular for feedingstuffs but also for foodstuffs, this approach may lead to unrealistic limits because the contribution of the dioxin-like PCBs to the total contamination load is different for different food and feed matrices and may be high (up to 4 times the dioxin contribution). But not acting immediately for dioxin-like PCBs should not prevent immediate action for dioxins. Therefore measures are proposed for dioxins (PCDD/F) only, awaiting more comprehensive data for dioxin-like PCBs. An active approach is pursued to obtain these data and build up a reliable database in order to allow a revision of the limits for dioxins before the end of the year 2004 to cover also dioxin-like PCBs, and this in accordance with the toxicological evaluation.

In order to ensure that all operators in the food and feed chain continue to do efforts and take all the necessary measures to limit the presence of dioxins in feed and food, it is envisaged to set substantial stricter maximum limits within a period of 5 years time.

With regard to feedingstuffs, the Commission submitted on 20 July 2001 draft measures establishing maximum levels for dioxins and furans in several feed materials and feedingstuffs for an opinion to the Standing Committee for Feedingstuffs. Not having received a favourable opinion on the proposed draft measures, the Commission has referred on August 2001 these proposed measures to Council for adoption¹⁰.

With regard to foodstuffs, the Commission submitted on 25 July 2001 draft measures establishing maximum levels for dioxins and furans in several foodstuffs for an opinion to the Standing Committee for Foodstuffs. Also not having received a favourable opinion on the proposed draft measures, the Commission has referred on August 2001 also these proposed measures to Council for adoption¹¹.

For the classical ("non dioxin-like") PCBs which show a different toxicological profile a risk assessment will be carried out and will be followed by discussions on limit values proposals in the coming years, at least in sea food, which is the main source of human exposure in the EU.

Action levels and target levels :

Permanent monitoring of the presence of dioxins and PCBs in feed and food across the EU is necessary. In case of an abnormal increase in the level those compounds, sources and/or pathways of contamination have to be identified. Once identified, the measures to prevent or reduce contamination from this source could be determined and applied.

In order to determine what has to be considered as an abnormal increased level, an *action level* is set. Action levels are designed to trigger a proactive approach from competent authorities and operators to identify sources and pathways of

¹⁰ Proposal for a Council Directive amending Council Directive 1999/29/EC on undesirable substances and products in animal nutrition (COM (2001) 493 of 28 August 2001)

¹¹ Proposal for a Council Regulation amending Regulation (EC) No 466/2001 setting maximum levels for certain contaminants in foodstuffs. (COM (2001) 495 of 28 August 2001)

contamination and to take measures to eliminate them. Exceeding the action level would also automatically imply an analysis of the dioxin-like PCBs in order to build up quickly a reliable database, besides the regular at random analysis of the presence of dioxin-like PCBs in food and feed.

Target levels are the levels to be achieved in food and feed whereby it can be reasonably assumed that the dietary exposure of a large majority of the European population will be within the tolerable weekly intake for dioxins and dioxin-like PCBs. These target values will be set in the light of more accurate information on the impact of the environmental measures on the reduction of the presence of dioxins and dioxin-like PCBs in the different feedingstuffs and foodstuffs, more occurrence data, etc. Target values will act as the driving force for measures necessary to further reduce emissions into the environment.

A Commission Recommendation on action and target levels in feed and food addressed to the member states will be adopted at the same time as the Directive and Regulation on maximum limits

The measures to reduce the emissions of dioxins and PCBs resulting in a downward trend of their presence in the environment, food and feed, together with the active approach pursued to reduce the presence of dioxins in feed and food, based on the continued efforts of the operators will cause the contamination levels for the different feed/food groups to shift to lower levels and to ultimately reach the target levels. Therefore a regular review, gradually decreasing the maximum limits and action levels will be necessary.

7. CONCLUSIONS

Dioxins and PCBs are occupying a predominant situation in the consciousness of the European citizens because these compounds are known to cause severe and far-reaching environmental and health effects. In spite of the existing legislation and of the progress already achieved in reducing emissions and human exposure deficiencies still remain. An integrated and systematic approach is missing. There is an urgent need for action to further reduce emissions and avoid environmental and adverse health effects from dioxins and PCBs. Therefore it is essential that the Commission adopt a strategy to reduce the presence of those compounds in the environment, in feed and food, including short- to medium-term and long-term actions. Such an integrated approach would have to guarantee that the dioxin and PCB problem is totally under control in 10 years. At that point this strategy will have to be assessed and eventually revised to take account of the latest progress. The results of this strategy could then be applied to reduce the presence of other persistent hazardous substances in the environment.