PCDD/PCDF - German Policy and Measures to protect Man and the Environment

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1) Introduction

Daily human intake of PCDD/PCDF in the FRG is estimated at 1-3 pg TEq/kg body weight (TEFs according to Federal Health Office) for adults and at 80-100 pg TEq/kg b.w. for brest-fed infants. According to a report prepared by both the Federal Health Office (BGA) and the Federal Environmental Agency (UBA) after an international dioxin symposium held in Karlsruhe/FRG in January 1990 daily human intake of PCDD/PCDF (calculated on a lifetime basis) for reasons of prevention should be less than 1 pg TEq/kg body weight. Therefore a catalogue of measures was developed to reduce human dioxin body burden, especially in respect of brestfed infants.

To protect both human health and the environment it is essential to reduce further dioxin release as much as possible. The German Federal Government has taken far-reaching legislative action to reach this aim. Nevertheless as dioxins have to be regarded as ubiquitious and are only slowly degradable in most environmental media a short time reduction of human body burden can not be expected.
Furthermore as most dioxins reach humans via the food chain and soil may play a more or less important role in food and forage contamination with dioxins the Bundesrat (Upper House of Parliament) in a resolution from 11th of May 1990 urged to establish generalized criteria for risk evaluation and limit values for farmland soils and other media to reduce human exposure. A joint working group of the Federation and the Länder (Federal States) was established to elaborate recommendations. The measures taken by the German Federal Government and the results of the working group are described.

2) Measures of the German Federal Government

2.1 Ordinance on MWIs

The Ordinance on Incineration Plants for Wastes and Similar Combustible Substances was put into force on 01.12.1990. A limit value for dioxins in exhaust gases amounting to 0,1 ng TEq/m3 was established. By this dioxin release from MWIs will decrease by a factor of 100.

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2.2 Ban on the use of scavengers

Based on the Clean Air Act (BImSchG) the German Federal Government on 17.01.1992 released an Ordinance on Chlorinated and Brominated Compounds as Petrol Additives (scavengers). The ordinance prohibits to use chlorinated and brominated compounds as petrol additives and to place such substances on the market for the purpose. The ordinance will be put into force on 24.07.1992.

2.3 Ordinance on sewage sludges

The amendment of the Ordinance on Sewage Sludges (AbfKlärV) was passed by the German Federal Government on 14.08.1991 and was confirmed by the Bundesrat (Upper House of Parliament). A limit value for sludges used in agriculture of 100 ng TEq/kg sludge dry matter was established. Sludge application on grassland and pasture was generally banned. On cropland only up to 5 t sludge (dry matter) per ha within 3 years are allowed. The amendment will be put into force in July 1992.

2.4 Ban on PCP

An Ordinance on the Ban on Pentachlorophenol was released on 23.12.1989. Production, trade and use of PCP in the FRG are forbidden. Products containing PCP may not have more than 5 mg PCP/kg.

2.5 Ban on PCBs

On 29th of July 1989 an Ordnance on the Ban on PCBs was put into force banning production, trade and use of PCBs, PCTs and VC as well as products containing more than 50 ppm of these compounds.

2.6 Ban on polybrominated flame retardants

Subsequent to a German proposal the Commission of the EC in 1991 submitted a draft on the regulation of brominated biphenylethers. The German Federal Government opts for a total ban of these substances as soon as possible.

2.7 Ordinance on Dangerous Substances

The German Ordinance on Dangerous Substances sets stringent limit values for 8 PCDD/PCDF congeners in substances, preparations and articles placed on the market. This regulation is currently reevaluated in order to reduce limit values and extend the scope to all 17 PCDD/PCDF-congeners substituted in 2,3,7,8-position as well as 8 selected PBDD/PBDF-congeners

2.8 Packaging Materials

Dioxin contamination of milk caused by cardboard packaging may also contribute to the dioxin load of consumers. By reducing the dioxin content of packaging used for liquid foodstuffs (e.g. milk) to a maximum of 1 ppt TEq according to a mutual agreement between the Federal Health Office and the industry, a further source has been eliminated.

3) Further recommendations proposed by the Federal Health Office, the Federal Environmental Agency and the Joint Working Group of the Federation and the Länder on dioxins.

FHO and FEA have proposed further measures to reduce human body burden and environmental pollution by PCDD/PCDF. Some of these proposals are:
- technical measurements to reduce dioxin emissions in metallurgical processes, especially copper smelters and recycling plants).
- limitations in the use of halogenated plastics.
- modifications in the pulp bleaching process:
  - a short term substitution of elementary chlorine.
  - a long term substitution of all chlorine compounds.

The Joint Working Group of the Federation and the Länder on dioxins proposed in a report to the Conference of Ministers for the Environment (UMK) in 1991 the following reference values for dioxins in soils:
- up to 5 ng TEq/kg no restrictions.
- 5 - 40 ng TEq/kg: further examinations (e.g. plants, cows milk etc.) and recommended actions for reasons of prevention.
- above 40 ng TEq/kg restrictions in agricultural and horticultural use of soils
- above 100 ng TEq/kg measures on children's playing grounds. This may include exchange of soil.
- above 1 000 ng TEq/kg measures in urban areas.
- above 10 000 ng TEq/kg measures independent of the localization

Further details will be specified during the conference. Discussions are under way within the joint working group on reference levels for food, dust and depositions. Furthermore, subgroups have been established to coordinate monitoring programmes and research projects.