Measures to reduce PCDD/PCDF-impact on man and the environment in the Federal Republic of Germany

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During last year`s symposium at Tampere/Finland a report was given on the legislative actions of the German Federal Government to further reduce dioxin release into the environment[1]. Since then further progress has been made , especially to regulate chemicals and to establish orientation values for cows milk. An international dioxin symposium and hearing was held in Berlin in November 1992, focussing on the scientific base for legislative and other governmental action to minimize dioxin burden on man and the environment. Measurements from different media indicate a decrease in dioxin release into the environment during the last years in Germany.
Some details of the above mentioned points are given and will be further specified during the symposium:

1) Ordinance on Dioxins (Dioxin-Verordnung):
The Ordinance on Dioxins sets strict limit values for all 17 PCDD/PCDF-Congeners substituted in 2,3,7,8-position as well as 8 selected PBDD/PBDF-congeners in substances, preparations and articles placed on the market. A notification requirement for intermediate substances has been newly included into this ordinance if certain dioxin concentrations will be exceeded.
The ordinance was issued by the German Federal Government on 20/01/1993 and passed the Bundesrat. It is now in Brussels for notification at the EEC.
Two major product groups which were supposed to contain considerable amounts of dioxin impurities due to the manufacturing process are dioxazine and phthalocyanine pigments used as textile dyes. Data provided by the chemical industry within the German Limited Announcement based on the Chemicals Act (ChemG) clearly demonstrates, that all limit values of the DioxV can be met if appropriate modifications of the manufacturing process are undertaken.

2) Orientation values for milk:
In 1991 the Joint Working Group of the Federation and the Länder (federal states) on Dioxins recommended several reference values for dioxins in soils depending on their intended use[1]. It was recommended that at soil contents between 5 and 40 ng TEQ/kg possibly increased dioxin transfer (e. g. into cows milk or eggs) should be analyzed. Especially milk from grazing cows is regarded as a suitable and sensitive indicator for possible dioxin impacts on the food chain. A scheme to interprete data on dioxin contents of cows milk has been developed and is presented in table 1.

Table 1: PCDD/F-contaminated milk and dairy products.
Recommended actions

PCDD/F-contamination pg TEQ/g milk fat	recommended action
< 0.9	target value to be met. Only to be achieved by long-term reduction of PCDD/F release into the environment
> 3.0*	investigate sources and start measures to minimize release. If no short term measures to reduce emissions are possible, it is recommended to the farm to change pattern of land use. Recommendation not to distribute milk and dairy products directly to the consumer.
> 5.0	milk and dairy products no longer marketable.

3) International dioxin symposium and hearing of the Federal Health Office and the Federal Environmental Agency in Berlin, Nov. 1992.

Under the auspices of the Federal Minister for the Environment, Nature Conservation and Nuclear Safety and the Länder (federal states) Berlin and Brandenburg an international dioxin symposium and hearing was held in Berlin in November 1992. The purpose of the event was to provide a better scientific base for further legislative and other governmental activities to minimize dioxin burden on man and the environment in the Federal Republic of Germany. The Federal Health Office (FHO) and the Federal Environmental Agency (FEA) had prepared a catalogue of questions for the hearing and had asked internationally known experts for written statements on selected questions.
The proceedings of the symposium were published by The Toxicology Forum[3]. The publications of the written expert statements as well as the verbatim protocol of the hearing are currently prepared by the FEA. A first report on conclusions from the symposium and hearing was prepared by both authorities and was published by the FHO[4]. An English version is being prepared by the FEA. Some of the basic conclusions in the field of environmental protection are:

- whereas in the past the chemical industry (including pulp and paper) generally was considered to be the main source and cause for the today`s abandoned contaminated sites in Germany it can be assumed due to the available information that the new, particularly atmospheric inputs of PCDD/F are nowadays caused by thermal processes.
- sediment analyses show that the highest 2,3,7,8-TCDD-contents can be ascribed to the deposit areas of the late sixties. The current level decreased to values of the fourties.

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*for values < 3.0 a correlation to a distinct source is normally not possible.

- the magnitude of secondary sources (i.e. former emissions which now circulate in the biosphere) is still very difficult to estimate.

Currently a working group of the Immission Protection Committee of the Länder (Länderausschuß für Immissionsschutz) prepares a report on dioxin emissions from plants other than MWIs (e. g. metal recycling plants, steel mills etc.). It is examined whether a limit value of 0.1 ng TEQ/m^3 in exhaust gases (as valid for MWIs in Germany) can be met.

4) Data on AOX-content of the Rhine water, dioxin concentrations in sediment cores, dioxin immission concentrations in Hessen and dioxin concentration in brest milk of women from Northrhine Westphalia all indicates a decrease of dioxin release into the environment in Germany as a result of the described measures. The Federal Minister for the Environment, Nature Conservation and Nuclear Safety will also in the future introduce the necessary environmental protection measures in order to improve preventive health protection and to finally reach a daily human intake of PCDD/PCDF of less than 1 pg TEQ/kg body weight.

References

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3 The Toxicology Forum. Current Views on the Impact of Dioxins and Furans on Human Health and the Environment. Washington D.C. 1993.
4 Dioxine und Furane-ihr Einfluß auf Umwelt und Gesundheit. *Bundesgesundheitsblatt*, 36. Jahrgang, Sonderheft Mai 1993.