

# codex alimentarius commission



FOOD AND AGRICULTURE  
ORGANIZATION  
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## JOINT FAO/WHO FOOD STANDARDS PROGRAMME

### CODEX COMMITTEE ON FOOD ADDITIVES AND CONTAMINANTS

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#### PROPOSED DRAFT CODE OF PRACTICE FOR SOURCE DIRECTED MEASURES TO REDUCE DIOXIN AND DIOXIN-LIKE PCB CONTAMINATION OF FOODS

**Secretariat Note:** Due to time constraints, comments are not being requested on the attached document and therefore, comment summary paper CX/FAC 02/27-Add. 1 will not be issued.

#### BACKGROUND

1. The 33rd Session of the Codex Committee on Food Additives (CCFAC) agreed to return the draft Code of Practice to Step 2 and that the drafting group led by Germany, with the assistance of Belgium, Japan, the Netherlands and the United States, would revise it on the basis of comments submitted (CX/FAC 01/30 – add 1; February 2001) and present it for circulation, comment and further consideration at the 34th Session of CCFAC (ALINORM 01/12A, para. 180).
2. Dioxin and dioxin-like PCBs are pervasive in the environment.
3. This document deals with the major sources of dioxins/dibenzofurans and dioxin-like PCBs that can contaminate foods via different routes and gives advice on source directed measures to reduce levels of dioxin and dioxin-like PCBs in food and animal feed.
4. With respect to the different routes of food contamination, primary, secondary and indirect sources have to be considered. Measures to limit/reduce the contamination from these sources may lie outside the responsibility of national food control authorities and the Codex. Therefore it is indispensable that national food control authorities and the Codex Alimentarius Commission (CAC) inform all relevant national and international institutions or organisations about potential or existing problems of food contamination and to request them to take preventive measures.
5. In most countries, the bulk of the dietary intake of dioxins and related compounds is due to the contamination of animal fats in some fish and fish products, meat and meat products, and milk and dairy products. In Europe,<sup>1</sup> the fraction of the dietary intake of dioxins contributed by these foods are fish and fish products: 2 – 63 %; meat and meat products: 6 – 32 %; milk and dairy products: 16 – 39 % of dietary intake.

<sup>1</sup> Report SCOOP Task 3.2.5 (Dioxins); Final Report, 7 June, 2000

Because animal-derived foods are frequently important dietary sources of dioxins, the contamination of animal feeds must also be considered.

6. Current sources of dioxins entering the food supply include both environmental reservoirs and new emissions. The primary emission route is air. Reservoir sources include soil and sediment loads from historic emissions. Environmental reservoirs will increasingly become the primary source for dioxin contamination of food as emission controls become effective and more widespread. New emissions and reservoir sources share the same pathways to food. Therefore, measures to reduce the level of dioxin food contamination should focus on both reducing dioxin emissions and environmental reservoirs, as well as interrupting pathways into food. Interrupting contamination pathways has the advantage of being effective immediately; however source reduction measures will take years to show their effects.

7. The primary route of contamination is environmental and caused by emissions to the air. Air emission inventories identify the following major primary sources:

- waste incineration: municipal, hazardous and clinical waste, sewage sludge
- industrial combustion: power plants, industrial firing installations, industrial wood combustion
- iron/ steel industry: sintering plants, production of pig iron and crude steel, iron casting, scrap shredding
- non ferrous metals industry: primary and secondary production of aluminium, copper, lead, zinc, nickel; castings and galvanizers
- cement/limestone industry: production of cement, burning of lime, production of glass, asphalt and ceramics
- chemical industry: production and use of PVC, pesticides, pentachlorophenol, PCBs, halogenated compounds, inorganic chlorides; chloralkali process
- domestic combustion: domestic combustion furnaces; combustion of wood, coal, oil and gas
- transport/traffic: fuel, aviation fuel, heavy oil used for ships
- miscellaneous: backyard burning of waste, uncontrolled fires and crematoriums.

8. Reducing the emissions of dioxins into the air is a general measure to reduce exposure through foods. National Authorities should establish effective emission standards for dioxins. However, proposing dioxin emission standards is beyond the scope and terms of reference of the Codex Alimentarius. Several European countries have already enacted regulations limiting the emissions from waste incinerators to 0.1 ng I-TEQ/m<sup>3</sup> with considerable success. A recently adopted EU directive on the incineration of waste in municipal solid waste incinerator (MSWI), power plants, hazardous waste incineration plants and cement kilns also provides for a limit value of 0.1 ng ITEQ/ m<sup>3</sup>. Emission controls for other primary sources of dioxins would also reduce exposures. Measures such as

- substitution of substances or additives,
- process modifications (process optimisation),
- improved plant technology and
- installation of effective waste gas treatment

will bring about considerable reduction in the total emissions into air and, subsequently, in deposition levels - a significant factor for the contamination of food and feed. The Community Strategy for Dioxins, Furans and Polychlorinated Biphenyls as published by the Commission on 24 October 2001 contains comprehensive information on the presence of dioxins and PCB in the environment and feed and food.

9. Knowledge of emissions to water and solid waste is incomplete in comparison to data on emissions to air. Procedures should be developed that enhance the availability of reliable and comparable data on all possible emission sources and environmental performance. Emissions via wastewater from industrial processes however are currently much lower than emissions into the air. The main sources are processes in which chlorine is produced or used to produce chlorinated compounds and the production of paper pulp using chlorine and chlorine dioxide as bleaching agent. The use of pentachlorophenol as fungicide in wood

preservation and in the manufacture of textiles and leather has also been identified as a source of dioxins in wastewater and contaminated sewage sludge. Therefore the application of dioxin contaminated sewage sludge and sediments as fertilizers in agriculture is another potential source of dioxin in soil.

10. National authorities should consider establishing organizational and technical measures to reduce current dioxin emissions to soil and water such as:

- Substitution of chlorine in processes and products where the comparative life-cycle risks of those substitutions are known to be less than the risks caused by current practice, for example:
  - Substitution of the use of pentachlorophenol in all its applications – especially as a wood preservative - with alternative substances [Reason: Chromates are known to be carcinogenic]
  - Substitution or reduction of the use of chlorine dioxide as a bleaching agent in paper pulp production by chlorine-free bleaching processes (e.g., ozone).
- Prohibiting the use of PCBs; this could be achieved by signing and ratifying the „Stockholm Convention on Persistent Organic Pollutants” (so-called POP-Convention).
- Safe collection of dioxin and PCB contaminated devices and liquids, appropriate storage and environmentally compatible disposal or destruction of PCBs and PCB-containing products and materials (PCB contamination will also involve contamination by dioxins and furans. Source directed measures to reduce dioxin contamination therefore should also include PCB sources).
- Setting limit/recommended values for sewage sludge and soil.
- Monitoring the compliance with these values will limit the input of dioxin and PCBs in water and soil.

11. National authorities should increase their efforts in the fields of information and training, in order to promote a behaviour that contributes to the prevention or reduction of the release of dioxins, furans, and PCBs into the environment.

12. Foods derived from animal products are contaminated through feed. Some sources of feed contamination are controllable. In order to reduce the contamination of food (and to reduce monitoring frequencies), control measures at the feed and compound feed level are necessary. These may involve developing Good Agricultural Practice, Good Animal Feeding Practice, and Good Manufacturing Practice guidance and measures to reduce opportunities for introduction of dioxins into feed, such as:

- Setting limit/guidance values for possibly contaminated raw feed materials.
- Identification of areas with higher dioxin contamination due to local emissions or to accidents or illegal disposal of PCBs, and monitoring of finished feed and feed components derived from these areas
- Guidance for harvesting, storage and processing of food and feed.
- Identification of possibly contaminated feed and feed components.
- Monitoring compliance with these limit/guidance values and phase-out or decontamination of the raw materials.

13. In order to reduce dioxin contamination of food, other than through animal feeding, additional measures may be necessary. These may include identifying highly contaminated areas (e.g., streams that could lead to dioxin contaminated fish) that may result in dioxin contaminated foods.

**Proposed Draft Code of Practice to Reduce Levels of Dioxin and Dioxin-like PCB in Food**

1. National authorities should identify areas heavily polluted with dioxins due to local emissions, accidents, or illegal disposal of PCBs. The derivation of feeds from dioxin or PCB contaminated areas should be monitored to prevent dioxin/PCB contamination of foods.
2. Uncontrolled domestic burning of waste and open-air waste incineration should be avoided, especially in areas from which animal feeds could be derived.
3. The use of pentachlorophenol treated wood in animal production areas should be avoided.
4. Monitor levels of dioxins (PCDD/PCDF) and dioxin-like PCBs, implement testing, and enforce compliance limits for dioxins/PCB in raw materials (grains, fats, additives, etc.) to be used as components of animal feed.
5. The dioxin/PCB levels in final animal feeds and human foods should be routinely monitored.