

WHO/FAO JOINT EXPERT COMMITTEE RISK ASSESSMENT FOR DIOXINS, FURANS, AND DIOXIN-LIKE PCBs IN FOOD.

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Introduction

This paper presents a summary of the assessment and conclusions of an international evaluation of risks from dioxins, furans, and dioxin-like PCBs (dioxins) in food performed by Joint FAO/WHO Expert Committee on Food Additives (JECFA). The evaluation is based on a meeting held in Rome in June 2001, including supporting documentation developed prior to that meeting.

JECFA is an international expert committee that is administered jointly by the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO). It has been meeting since 1956. JECFA meets twice a year to evaluate food additives, contaminants, naturally occurring toxicants, and residues of veterinary drugs in food. The membership of the meetings varies accordingly, with different sets of experts being called on depending on the subject matter of the meeting. JECFA serves as a scientific advisory body to FAO, WHO, to FAO and WHO member governments, and to the Codex Alimentarius Commission (CAC). The CAC is an international intergovernmental body administered by the Joint FAO/WHO Food Standards Programme, which was established in the early 1960s. CAC subcommittees develop standards for chemicals in food based on JECFA evaluations. Through this use of JECFA assessments the CAC endeavors to protect the health of consumers and facilitate fair practices in international food trade through harmonization of food laws and elaboration of international standards. In general terms, the purpose and function of JECFA include: (a) reviewing the latest knowledge and expert information and making them available to the two Organizations; (b) formulating technical recommendations; and (c) making recommendations designed to initiate, stimulate, and coordinate the research necessary to fulfill their terms of reference. Specialists invited to serve as members of JECFA are independent scientists who serve in their individual capacities as experts and not as representatives of their governments or employers.

The detailed conclusions of JECFA meetings are set out in reports published in the WHO Technical Report Series. These reflect the agreed view of the Committee as a whole and describe

the basis for the conclusions. Toxicological and intake monographs are published after the meetings in the WHO Food Additive Series (FAS). These summarize the data used in the Committee's risk assessments and provide full references to the relevant literature. Information on JECFA is available at both the FAO and WHO web sites (www.fao.org/es/esn/jecfa/jecfa.htm and www.who.org/pcs, respectively).

The JECFA Assessment of Dioxins, Furans, and Dioxin-like PCBs in Food

The JECFA dioxin assessment draws upon national and international evaluations conducted in the last several years as a starting point for basic information and analysis, adding more recent data and analysis where available. Two recent evaluations were particularly important in this regard. The first is WHO Consultation that was held in May 1998.¹ At this meeting a TDI range of 1-4 pg dioxin TEQ /kg-day was proposed based on noncancer effects. The second is a draft Position Paper on dioxins developed by the Dutch delegation to the 33rd meeting of the Codex Committee on Food Additives and Contaminants (CCFAC) in March 2001 (www.codexalimentarius.net/Reports.htm). The Position Paper summarizes exposure levels and safety assessment values, and explores the arguments for and against setting maximum limits for dioxins in foods. Also considered were comprehensive evaluations recently conducted by several organizations, including the European Commission, the U.S. Environmental Protection Agency, U.S. Agency for Toxic Substances and Disease Registry, and the International Agency for Research on Carcinogens.

The JECFA assessment evaluated information submitted in response to a request for data regarding dioxin contamination in foods, and estimated exposures relevant to international assessment of health risk from food attributed to dioxins. The congeners considered in the assessment were the chlorinated dibenzo-dioxins and -furans with 2,3,7,8- chlorine substitutions, and the 12 mono-ortho and non-ortho substituted PCBs for which dioxin TEFs were available (the "WHO TEFs"²). Data on all congeners was rarely available for a food sample.

The JECFA assessment included review of toxicokinetics, animal toxicology, epidemiology, analytical methods, biological monitoring, prevention methods, and dose-response analysis. Analytical methods were reviewed in light of how they affect the use and interpretation of dioxin sample analysis results. Discussion was also included of the need for international harmonization of analytical methods. The assessment identified pivotal studies for risk assessment, compared estimated dioxin intakes for representative diets to tolerance levels, and presented description of the risk of specific health effects where dioxin exposures exceed the TDI.

References

1. Van Leeuwen, FXR and Younes, MM. (eds) (2000) Assessment of the health risk of dioxins: re-evaluation of the tolerable daily intake (TDI). *Food Additives & Contaminants* 17 (4):1-369.
2. van den Berg, M, Peterson RE, and Schrenk D. (2000) Human risk assessment and TEFs. *Food Additives & Contaminants* 17 (4):347-358.