

## Concentrations of PCDDS, PCDFS, and CPCBS in Humans and Factors That Influence These Levels

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From a global environmental health perspective, civic and governmental concern continues to focus on the toxicity of polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs). One of these compounds, 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD), has been called, "the most toxic man-made chemical known", because of its toxicity and carcinogenicity to some species of laboratory animals. None of these compounds are produced for commercial purposes but appear as trace contaminants in several chemical processes, primarily during the synthesis of chlorinated phenols. For example, 2,3,7,8-TCDD is a byproduct formed in the synthesis of 2,4,5-trichlorophenol, an intermediate compound used in the production of 2,4,5-trichlorophenoxyacetic acid and hexachlorophene. Trace levels of PCDDs and PCDFs are also produced during the incineration of waste materials, the combustion of leaded gasoline, and the bleaching of wood pulp. Thus, PCDDs and PCDFs can enter the environment by a variety of means and become potential sources of human exposure. Once in the environment these compounds are remarkably stable, and many of them bioaccumulate in the human food chain.

Levels ranging from low parts-per-trillion (ppt) up to parts-per-billion (ppb) of various congeners have been found in adipose tissue and blood of individuals from the general population in virtually every country where human measurements have been attempted. In addition to studying background levels in humans, researchers are conducting a number of epidemiologic studies designed to detect potential adverse health effects associated with excessive exposures to 2,3,7,8-TCDD. In order to link accurately any adverse health effects with levels of 2,3,7,8-TCDD in humans, the measurements of 2,3,7,8-TCDD (or other PCDDs and PCDFs) must be made using sound scientific methods, and the resulting data should be interpreted with certain factors in mind.

The purpose of this presentation is to give an overview of the levels of

these compounds in individuals from the general population as well as populations that have been exposed to higher levels from a variety of sources. In addition, we will discuss various factors involved in interpreting the human body-burden measurements such as: half-lives; partitioning among tissues; regional differences; declining background exposure; and personal characteristics of participants.