

DEVELOPMENT OF PCDD/F TEQ SERUM REFERENCE VALUES FOR THE US POPULATION FOR USE IN EVALUATING BIOMONITORING RESULTS

Paustenbach, DJ¹; Harris, MA²; Ferriby LL²; Williams, ES²; Haws, LC³; Unice, KM⁴ and Scott, PK⁴

¹ChemRisk, San Francisco, CA; ²ChemRisk, Houston, TX; ³ChemRisk, Austin, TX; ⁴ChemRisk, Pittsburgh, PA

Introduction

The CDC's National Center for Health Statistics (NCHS) conducts a survey every two years to collect health and nutritional information on the U.S. population. The National Health and Nutrition Examination Survey (NHANES) conducted during 1999-2000 supplied data on 116 chemicals measured in the blood of selected survey participants and was the first NHANES survey to include polychlorinated dibenzo-p-dioxin (PCDD) and polychlorinated dibenzofuran (PCDF) serum analyses¹. Although this survey provided the first opportunity to assess referent levels of certain environmental chemicals in the U.S. population, the PCDD/F data was found to have high detection limits and lacked analytical results for two of the 2,3,7,8-substituted PCDD/Fs. Recently, the CDC released the 2001-2002 NHANES data for PCDD/Fs. Sample collection methodologies for this survey were adjusted, possibly in an effort to address concerns regarding detection limits and analyses were conducted for all seventeen 2,3,7,8-substituted PCDD and PCDF congeners. This dataset also contained results for 9 dioxin-like polychlorinated biphenyls (PCBs). However, for the purposes of this analysis, only PCDDs and PCDFs were considered.

As the need to characterize populations potentially exposed to PCDD/Fs due to accidental industrial releases or contact with historically-contaminated environmental media continues to increase, so to does the need for valid referent concentrations of these chemicals in the human population. Hence, the objective of this project was to provide scientists, regulatory agencies, the regulated community, and the general public with descriptive reference statistics for PCDD/F levels in the U.S. population using the 2001-2002 NHANES data. An additional objective of this project was to demonstrate the utility of these reference values by evaluating recent PCDD/F biomonitoring results for a group of individuals from Southern Mississippi that reportedly combusted wood treated with either creosote or pentachlorophenol in their homes.