

MEASUREMENTS OF SERUM CONCENTRATIONS OF PCDDs, PCDFs, AND PCBs FROM A COMMUNITY IN MICHIGAN, USA

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Introduction

The University of Michigan Dioxin Exposure Study (UMDES) was undertaken to determine whether environmental contamination downstream of the Dow Chemical Plant in Midland, MI is contributing to the body-burden of dioxins, furans and PCBs in the surrounding population. To investigate, blood samples taken from a randomized sample of the population living within three counties surrounding the Dow Chemical plant and the Tittabawassee River were compared to a referent population of individuals living in two removed counties. This paper provides a brief overview of results of the serum analyses for the dioxins, furans and PCBs tested.

Materials and Methods

Participants were recruited from five counties in Michigan: Midland, Saginaw, Bay, Jackson, Calhoun. Residences were further stratified into five categories for comparison:

- Residents of Midland and Saginaw Counties who reside in the flood plain of the Tittabawassee River
- Residents of Midland and Saginaw Counties who reside in census blocks adjacent to the flood plain of the Tittabawassee River
- Residents of Midland, Saginaw and Bay Counties who do not reside in or near the flood plain of the Tittabawassee River
- Residents of Midland County who reside in the plume of the former Dow Chemical plant incinerator
- Residents of Jackson and Calhoun Counties, Michigan

To have been eligible to contribute a blood sample, participants must have met the study entrance criteria (over 18 years of age, lived in their current residence for five or more years), completed the questionnaire, and been capable of safely donating 80 milliliters of blood.^{1,2,3} Further details on blood donation safety criteria, phlebotomy methods and laboratory analysis can be found in the study protocol at www.umdioxin.org.

The final dataset consists of serum results from 946 eligible individuals. All serum results are lipid adjusted and are sample weighted to reflect the true population distribution. Toxic equivalence factors (TEFs) for the 29 congeners are taken from the 1997 World Health Organization meeting in Stockholm, Sweden.⁴ Results below the limit of detection (LOD) were substituted with $LOD/\sqrt{2}$ for analysis.

All statistical analyses were performed using SAS version 9.1.

Results and Discussion

Results and discussion will be provided after August 15th, 2006.

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