Airborne PCBs and their Sources

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Centers for Disease Control & Prevention
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Abstract: We have determined the magnitude, spatial extent and variation of airborne PCBs throughout the urban/industrial complex of Chicago using an innovative sampling strategy of vehicle-mounted high-volume air samplers and passive samplers mounted to exterior walls of buildings in residential areas. Concentrations of PCB congeners were determined using gas chromatography coupled to tandem mass spectrometry (GC-MS/MS). We have found that airborne PCBs in the city are enriched in lower chlorinated congeners in residential areas and in higher chlorinated congeners in industrial areas. We have examined several potential categories for airborne PCBs and conclude that the observed congener distributions are a result of emissions of Aroclors from historical use of commercial mixtures as well as emissions of individual congeners from current production and use of PCBs in paint and related materials. In this talk, we will present an overview of our findings from multiple studies conducted in Chicago and compare to similar studies recently completed in Cleveland Ohio and in northwest Indiana. We will discuss the implications of current sources of Aroclor and non-Aroclor PCBs on the bioavailability of these toxic pollutants in urban areas.

Dr. Hornbuckle is the project leader for long-term research projects funded by the Superfund Research Program, NIEHS: Atmospheric Sources of PCB Congeners, & Analytical: Extraction, Detection, and Interpretation of PCB Congeners in Complex Matrices. She is the Co-Project leader on: Characterization of Exposures of Urban and Rural Cohorts to Airborne PCBs. The

Iowa Superfund Research Program's overall theme is sources, exposures, and toxicity of semi-volatile polychlorinated biphenyls (PCBs). Hornbuckle's team focuses on volatilization, transport and exposure of lower halogenated PCBs, especially those PCBs that are associated with contaminated waters, former industrial sites, and other atmospheric sources. Her team also provides the major analytical resources for PCB analysis to the U of Iowa Program, including measurements of PCB congeners in ambient air, indoor air, water, sediment, and human blood serum. Dr. Hornbuckle is also the co-PI on an NSF grant: Transport of Sediments and Pollutants into the Terrestrial Regions of a Small Urban-Industrial City: The June 2008 Flood of Cedar Rapids, Iowa. She has been involved in a variety of Great Lakes Research activities; other topics of her publications also include agricultural pesticides, CAFOs, perfluoroctane surfactants and musk fragrances.

Peruse her Publications & see the specific Superfund sites on which she works!
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