Extraction, Detection, and Interpretation of PCB Congeners in Complex Matrices

The purpose of the Analytical Core is to support the analytical needs of the isrp investigators. Toward that end, the Analytical Core will provide routine and non-routine analytical service relating to PCB sources, exposures and toxicities. As requested by the project investigators, the Analytical Core will also train personnel and assist in sampling design and implementation.

Since the Analytical Core handles a large volume of samples for many different studies and because of the many challenges associated with complex matrices and environments, it has developed a Sample Priority Analysis Plan.

The Analytical Core is also deeply engaged in method development. In 2017, it supported method development for detection of PCB sulfate metabolites in human urine. It also supported more than ten different studies and a rigorous Quality Assurance plan for each project to assure accuracy, precision, representativeness, comparability, and reproducibility.

It trains student and post-doctoral researchers from the Colleges of Engineering, Public Health, and Pharmacy in extraction and analysis of PCBs and PCB breakdown products.

The Analytical Core also contributed to 11 research papers published or in progress in 2017 concerning the sources, exposure, remediation, and toxicity of PCB congeners and their breakdown products.

• Core Leader: Keri C. Hornbuckle, PhD

Dr. Hornbuckle is the Donald Bentley Professor of Engineering in the Department of Civil and Environmental Engineering. She is responsible for all aspects of the Analytical Core activities,
including handling and extraction of samples and analysis by capillary gas chromatography (GC), liquid chromatography (HPLC), mass spectrometry, and various other analytical methods. Dr. Hornbuckle oversaw the development of automated air sample analysis Standard Operating Methods and methods for more specialized applications. She will consult directly with Project Leaders to refine analysis to maximize sensitivity and selectivity for PCBs and metabolites in various matrices.

- **Hans Joachim-Lehmler, PhD**
  Dr. Lehmler is a chemist with experience in the synthesis and analysis of PCBs in animal tissues with a special emphasis on the analysis of chiral PCB congeners. He is a professor in the UI Department for Occupational and Environmental Health. In addition to being a member of the Analytical Core of the ISRP, he will also serve as the Leader of the Synthesis Core. This will facilitate the interaction between the Analytical and Synthesis Cores.

- **Ananya Sen Gupta, PhD**
  Dr. Sen Gupta will lead studies concerning complex instrumental signals produced through the analysis of hundreds of air samples collected by the ISRP Projects. She is an Assistant Professor at the University of Iowa who has collected and analyzed for PCBs and related compounds since 2006.

- **Kai Wang, PhD.**
  Dr. Wang is a Professor in Biostatistics at the University of Iowa. His research interests include the application and development of statistical technologies related to biomedical studies including bioinformatics, statistical genetics, and nonparametric estimation under biased sampling.

**Attach files:**  
[AC Sample Priority Analysis Plan](#) [2]

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