

## Tools for Interpreting Biomonitoring Data

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Biomonitoring of chemicals in human blood and urine samples is becoming commonplace and has been used to identify the presence of small amounts of chemicals in many human populations. The degree of risk posed by these chemicals depends on levels of exposure and the relationship of these exposure levels to levels that are known to cause toxicity in test animals or in more highly exposed human populations. CIIT has developed physiologically based pharmacokinetic (PBPK) approaches to assist in interpretation of biomonitoring results for limited classes of compounds. Investigators have also entered into formal interactions with Federal laboratories (e.g., CDC and EPA) to use these approaches with some of the compounds evaluated by the CDC in their biomonitoring program. CIIT has also offered courses in “PBPK Tools for Interpreting Biomonitoring Results” and developed a workbook with examples and background information. This project extends the approach from the current, limited classes of compounds to include more persistent chemicals that are being routinely evaluated by the CDC. This work is leveraged by ongoing work with specific companies to develop refined PBPK models for exposure reconstruction.

**Implications:** Biomonitoring has fueled widespread concerns about the dangers of chemicals found in blood and urine. New tools are needed to interpret biomonitoring studies in a risk context. This research uses pharmacokinetic modeling, and in particular, PBPK modeling, to support the interpretation of human biomonitoring data from the perspective of exposure reconstruction and risk characterization. During 2008, we extend the project to use our reverse dosimetry approaches to look at a more diverse group of compounds.

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