

Biographical Summary

Teresa S. Bowers, Ph.D., Principal

Dr. Bowers has nearly 20 years of experience in exposure modeling, mathematical and geochemical modeling, and the application of this information to risk-based environmental strategies and development of site-specific cleanup levels. She is the author of more than 40 journal articles on these and other topics. Her areas of expertise include modeling of blood lead and urine arsenic levels resulting from exposure to environmental sources of lead and arsenic. She is the author of an adult blood lead model now being used by US EPA, and she has worked on a number of sediment sites involving PCB contamination, where she has developed unique statistical approaches to calculating soil cleanup levels. She is frequently invited to speak on these topics by both industry and government groups. Prior to joining Gradient, Dr. Bowers held research and visiting faculty positions at the Massachusetts Institute of Technology and Harvard University, where she taught courses in resource geology and applied thermodynamics.



Practice Areas & Expertise

- Lead, Arsenic, & Metals
- Blood Lead Modeling
- Exposure Modeling
- Statistical Methods
- Cleanup Negotiations
- Geochemical Modeling
- Risk Communication

Education

Ph.D., Geochemistry, University of California, Berkeley
B.S., Mathematics and Geology, Purdue University

Selected Publications

- Bowers, TS; Mattuck, RL. 2001. "Further comparisons of epidemiological data with predictions of the Integrated Exposure Uptake Biokinetic Model for lead in children." *Human & Ecological Risk Assess.* 7:1699-1713.
- Bowers, TS; Beck, BD. 2006. "What is the meaning of non-linear dose-response relationships between blood lead concentrations and IQ?" *Neurotoxicology* 27:520-524.
- Saxe, JK; Bowers, TS; Reid, KR. 2005. "Arsenic." In *Environmental Forensics* (Eds.: Morrison, RD; Murphy, BL), p279-292.
- Cohen, JT; Beck, BD; Bowers, TS; Bornschein, RL; Calabrese, EJ. 1998. "An arsenic exposure model: Probabilistic validation using empirical data." *Human & Ecological Risk Assess.* 4:341-377.
- Cohen, JT; Lampson, MA; Bowers, TS. 1996. "The use of two-stage Monte Carlo simulation to characterize uncertainty and variability in risk analysis." *Human & Ecological Risk Assess.* 2(4):939-971.
- Bowers, TS; Shifrin, NS; Murphy, BL. 1996. "Statistical approach to meeting soil cleanup goals." *Environ. Science & Technology* 30(5):1437-1444.

Representative Projects

Combined Radionuclide and Non-Radionuclide Risk Assessment, Massachusetts: Assessed human health risks associated with contamination surrounding a nuclear power facility undergoing decommissioning.

Lead Risk Assessment, Missouri: Assessed human health risks to lead in ore concentrate on truck haul routes. Assisted in communications with agencies and the public.

Lead and Arsenic Risks, Kansas: Performed human health risk assessments and calculated cleanup levels for on-site and off-site potential exposure to lead, arsenic, and cadmium for a RCRA facility. Assisted in communications with state and federal agencies.

Pesticide Risks, New York City: Led project assessing potential public health risk associated with pesticides sprayed to control mosquitoes bearing the West Nile Virus. Assisted in preparation of the Environmental Impact Statement.

PCB Risk and Cleanup Strategies: Served as technical consultant to the mayor's office concerning issues arising from PCB contamination in Pittsfield, Massachusetts. Assisted the mayor during lengthy mediation with GE and multiple agencies, which produced an agreement for cleanup.

Geochemical Controls on Water Quality: Provided geochemical expertise and expert testimony concerning water treatment issues for metals at a Pennsylvania Superfund site.