

Ari S. Lewis, M.S.

Principal

alewis@gradientcorp.com



Ms. Lewis is a Principal with expertise in toxicology and risk assessment. She has led and contributed to a variety of projects, including product safety evaluations, regulatory comment, green chemistry assessments, and technical support for the utility and mining industry. She also has particular expertise in risk assessment of arsenic and coal combustion product regulatory issues. In this capacity, Ms. Lewis has both published and presented extensively on the carcinogenic risks of arsenic and provided direct input to US EPA on arsenic regulatory issues. Ms. Lewis also has expertise in developing quantitative human health risk criteria for chemicals with limited toxicity data. Before joining Gradient, Ms. Lewis earned her M.S. at Cornell University; her thesis project investigated the molecular and cellular responses to arsenic exposure during early animal development.

Representative Projects

Risk Assessment of Emerging Chemicals: Provided technical oversight of a large risk assessment evaluating potential drinking water risks for emerging contaminants, a majority of which did not have established toxicity criteria. Researched and developed quantitative toxicity information that could be used to estimate potential risks.

Regulatory Comment on Coal Combustion Product Risk Assessment: Led an evaluation of US EPA's technical approach for assessing human health and ecological risks associated with the storage of coal combustion products. Evaluations occurred in 2007 and on an updated version of the risk assessment in 2010. Our evaluations were provided to US EPA during a public comment period.

Arsenic Content in Dietary Supplement: Evaluated whether the amount of inorganic arsenic in a dietary supplement product line would constitute an unacceptable inorganic arsenic exposure if products were taken individually or as part of a multiproduct program. Exposure from supplements was estimated and compared to international guidelines for arsenic in food, typical inorganic arsenic exposure in the US diet, and levels known to cause adverse effects in humans.

Inhalation Criteria Development: Developed a series of health-based inhalation criteria (HBIC) for several different organic compounds present in consumer products. In some cases, derivation of the HBIC required surrogate selection, route-to-route extrapolation, and animal-to-human pharmacokinetic adjustments.

Toxic Tort Involving Pesticide Exposure: In the context of litigation, analyzed whether pesticide exposure was the cause of a specific birth defect. The evaluation involved a review of toxicological and epidemiological literature, as well as a reconstruction of potential dose via complex exposure pathways.

Green Chemistry Assessment: Lead toxicologist of an alternatives assessment for a product using criteria outlined in US EPA's Design for the Environment (DfE) program. The assessment was submitted to US EPA for acceptance under this "green" chemistry program.

Metal Risk Assessment: Interpreted the results of a metal bioassay and potential regulatory implications. Proposed an experimental approach to establish chemical mode of action and human relevance of rodent bioassay results.

Areas of Expertise

- Molecular Toxicology
- Human Health Risk Assessment
- Arsenic Toxicology

Education

M.S., Environmental Toxicology, Cornell University

B.A., Biology/Environmental Sciences, University of Pennsylvania

Selected Publications

Lewis, A; Bittner A; Radloff, K; Hensel, B. 2017. "Storage of coal combustion products in the United States: Perspectives on potential human health and environmental risks." In *Coal Combustion Products (CCP's): Characteristics, Utilization, and Beneficiation*. (Eds.: Robl, T; Oberlink, A; Jones, R), Woodhead Publishing, Duxford, United Kingdom. p481-507.

Lewis, AS; Dubé, EM; Bittner, A. 2017. "Key role of leachate data in evaluating CCP beneficial use." *ASH at Work* (Issue 1):32-34.

Cohen, SM; Arnold, LL; Beck, BD; **Lewis, AS;** Eldan, M. 2013. "Evaluation of the carcinogenicity of inorganic arsenic." *Crit Rev. Toxicol.* 43 (9) :711-752

Lewis, AS; Reid, KR; Pollock, MC; Campleman, SL. 2012. "Speciated arsenic in air: Measurement methodology and risk assessment considerations." *J. Air Waste Manage. Assoc.* 62(1):2-17.

Lewis, AS; Sax, SN; Wason, SC; Campleman, SL. 2011. "Non-chemical stressors and cumulative risk assessment: An overview of current initiatives and potential air pollutant interactions." *Int. J. Environ. Res. Public Health* 8(6):2020-2073.

Lewis, AS; Beck, BD. 2010. "Nonlinear low-dose extrapolations." In *Cancer Risk Assessment: Chemical Carcinogenesis, Hazard Evaluation, and Risk Quantification*. (Eds.: Hsu, CH; Stedeford, T), John Wiley & Sons, Inc., Hoboken, NJ, p659-680.



Science and Strategies for Health and the Environment www.gradientcorp.com

One Beacon Street, 17th Floor, Boston, MA 02108 | 617-395-5000