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## Areas of Expertise

- Molecular Toxicology
- Human Health Risk Assessment
- Arsenic Toxicology

## Services

- Toxicology & Risk Sciences
- Exposure & Risk Assessment
- Global Chemical Registration
- GHS Hazard Assessment
- Toxic Substance Control Act (TSCA)
- Chemical Portfolio Hazard/Risk Analysis
- Sustainability Consulting
- Environmental Justice (EJ)
- Alternative Analysis

## Education

- M.S., Environmental Toxicology, Cornell University
- B.A., Biology/Environmental Sciences, University of Pennsylvania

## Ari S. Lewis, M.S.

### Principal

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. Currently, Ms. Lewis is a member of the US EPA Science Advisory Board EJSscreen Review Panel.

## Selected 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.

**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.

**The Practice of Environmental Justice – Fundamentals and Peer Insights:** Provided an overview of Environmental Justice (EJ) concepts, key federal and state regulations and programs, and tools used to conduct EJ assessments. Included a comprehensive survey of EJ programs for each state, including information on agency oversight, key legislation and guidance documents, notable case law, and any state-developed tools or approaches for evaluating EJ issues.

**Recommended Best Practices for Assessing Risks in Baby Products:** Developed recommended best practices for assessing chemical risks associated with personal care products, focusing on those used in infant care. Compared several existing health assessment frameworks and made best practice recommendations for numerous categories. "Benchmarked" the best practice recommendations against current practices in the personal care product company.

## 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* (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.