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(he/him)

Steven R. Boomhower, Ph.D.

Senior Toxicologist

Dr. Boomhower is a senior toxicologist with specialties in metals toxicology, neurotoxicology, and human health risk assessment. He provides scientific consulting related to the evaluation of toxicology and epidemiology studies for hazard and risk assessment, food safety, consumer product safety, and regulatory comment. Before joining Gradient, Dr. Boomhower was a postdoctoral fellow at the Harvard T.H. Chan School of Public Health, where he assessed the genomic consequences of exposure to metals in human neural stem cells and neuroblastomas. As a predoctoral student, Dr. Boomhower evaluated the behavioral effects of methylmercury and the potential interactive effects of methylmercury with drugs in rodents. He has been funded by the National Institutes of Health and National Science Foundation, and he has authored several book chapters and peer-reviewed scientific articles in toxicology. Dr. Boomhower also teaches courses in toxicology and pharmacology as an instructor at Harvard University, and has served as an adjunct lecturer at Georgetown University.

Areas of Expertise

- Metals Toxicology
- Neurotoxicology
- Developmental Toxicology
- Cannabis
- Animal Testing & Extrapolation
- Exposure Assessment
- Human Health Risk Assessment
- Blood Lead Modeling

Services

- Toxicology & Risk Sciences
- Product Safety Assessment
- California Proposition 65
- Product Liability
- Food & Beverages
- Occupational Exposure Limits

Education

- Ph.D., Cognitive and Behavioral Sciences, Auburn University
- M.S., Psychology, Auburn University
- B.S., Psychology, Idaho State University

Selected Projects

Regulatory Comment: Evaluated US EPA's draft 2023 Integrated Science Assessment (ISA) and Integrated Review Plan (IRP) for the NAAQS for Lead (Pb) as part of its review for the NAAQS. Evaluated the US EPA's use of the Integrated Exposure Uptake Biokinetic (IEUBK) model for updated soil lead guidance for CERCLA sites and RCRA Corrective Action facilities.

Food Safety Assessment: Conducted an exposure assessment of lead, arsenic, mercury, and cadmium in infant formula products and evaluated potential human health risks of cancer and non-cancer endpoints.

Mining Safety Assessment: Conducted an in-depth review of epidemiology studies on the pulmonary health effects of bauxite and alumina dust inhalation in occupational settings, including pneumoconiosis, lung function, and respiratory symptoms.

Hazard Assessment of Sunscreen Ingredients: Assessed various sunscreen ingredients using the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) criteria, with a particular focus on carcinogenicity, reproductive and developmental toxicity, respiratory sensitization, repeated toxicity, and endocrine-disrupting endpoints.

Inhalation Toxicity Assessment: Performed an in-depth review and analysis of epidemiology and exposure studies of bleach-based cleaners (as well as unintended mixtures of cleaners) to determine the acute toxicity of cleaning-fume inhalation.

Biokinetic Modeling: Performed lead modeling to estimate the extent to which blood lead levels would decrease following the removal of lead sources in a residence.

Selected Publications

Lewis, AS; **Boomhower, SR**; Marsh, CM; Jack, MM. 2024. "Considerations for deriving a safe intake of propylene glycol." *Food Chem. Toxicol.* doi: 10.1016/j.fct.2024.114460.

Park, HR; Azzara, D; Cohen, ED; **Boomhower, SR**; Diwadkar, AR; Himes, BE; O'Reilly, MA; Lu, Q. 2024. "Identification of novel NRF2-dependent genes as regulators of lead and arsenic toxicity in neural progenitor cells." *J. Hazard. Mater.* 463:132906.

Boomhower, SR. 2022. "Public health issues of legalizing cannabis: Considerations for future studies." In *Handbook of Substance Misuse and Addictions: From Biology to Public Health*. (Eds.: Patel, VB; Preedy, VR) Springer, Cham, Switzerland, p1-18.

Bailey, LA; **Boomhower, SR.** 2021. "Potential implications of new information concerning manganese Ohio community health effects studies." *Regul. Toxicol. Pharmacol.* 127:105069.

Boomhower, SR; Long, CM; Li, W; Manidis, TD; Bhatia, A; Goodman, JE. 2021. "A review and analysis of personal and ambient PM_{2.5} measurements: Implications for epidemiology studies." *Environ. Res.* 204:112019.