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(he/him)

Steven R. Boomhower, Ph.D.

Senior Toxicologist

Dr. Boomhower is a senior toxicologist with specialties in metal and drug toxicity and their relation to human health risks. With expertise in neurotoxicology and psychopharmacology, he provides scientific consulting related to the evaluation of toxicology and epidemiology studies for hazard and risk assessment, consumer product safety, and regulatory comment. Before joining Gradiant, 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. He has been funded by the National Institutes of Health and National Science Foundation, and has authored several book chapters and peer-reviewed scientific articles. Dr. Boomhower also serves as an instructor at Harvard University and has served as an adjunct lecturer at Georgetown University.

Areas of Expertise

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

Services

- Toxicology & Risk Sciences
- Epidemiology
- Product Safety Assessment
- California Proposition 65
- Product Liability

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 National Ambient Air Quality Standards (NAAQS) for Lead (Pb) as part of its review for the NAAQS.

Causation Analysis: Conducted a general causation analysis regarding the impacts of inorganic arsenic, lead, and methylmercury exposure on intelligence and behavior using toxicology and epidemiology studies.

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

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

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.

Johnson, K; **Boomhower, SR**; Newland, MC. 2019. "Behavioral effects of chronic WIN 55,212-2 administration during adolescence and adulthood in mice." *Exp. Clin. Psychopharmacol.* 27:348-358.