

# Steven R. Boomhower, Ph.D.

## Senior Toxicologist

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Dr. Boomhower is a senior toxicologist with specialties in metals 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, litigation projects, 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 neurochemical and behavioral consequences of methylmercury exposure in animal models using cutting-edge statistical modeling techniques. He has been funded by the National Institutes of Health and National Science Foundation and has authored several peer-reviewed scientific articles. Dr. Boomhower also serves as an Instructor at Harvard University, where he teaches courses on cannabis, toxicology/risk assessment, research methodology, and psychopharmacology.

### Representative Projects

**Regulatory Comment:** Evaluated the Pennsylvania Department of Environmental Protection's proposed ambient water quality criterion (AWQC) for manganese using updated research on physiologically-based pharmacokinetic (PBPK) models. Derived an AWQC more consistent with the current science and performed a risk assessment to determine its adequacy to protect public health.

**Causation Analysis:** In the context of litigation, conducted a general causation analysis regarding the impacts of inorganic arsenic and lead exposure on intelligence and behavior using 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 Globally Harmonized System of Classification and Labelling of Chemicals (GHS)-based criteria, with particular focus on carcinogenicity, reproductive and developmental toxicity, respiratory sensitization, repeated toxicity, and endocrine-disrupting endpoints.

**Evaluation of Toxicology and Risks of Per- and Polyfluoroalkyl Substances:** Reviewed and summarized epidemiology studies and regulatory guidelines on the health effects of per- and polyfluoroalkyl substances (PFAS).

**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.

### Areas of Expertise

- Metals Toxicology
- Neurotoxicology
- Psychopharmaceuticals
- Developmental Toxicology
- Cannabis
- Animal Testing and Extrapolation
- Statistical Modeling

### Education

Ph.D., Cognitive and Behavioral Sciences, Auburn University

M.S., Psychology, Auburn University

B.S., Psychology, Idaho State University

### Selected Publications

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.

**Boomhower, SR**; Newland, MC. 2019. "D-Amphetamine and methylmercury exposure during adolescence alters sensitivity to monoamine uptake inhibitors in adult mice." *Neurotoxicology.* 72:61-73. doi: 10.1016/j.neuro.2019.02.001.

**Boomhower, SR**; Newland, MC. 2019. "Adolescent methylmercury exposure: Behavioral mechanisms and effects of sodium butyrate in mice." *Neurotoxicology.* 70:33-40. doi: 10.1016/j.neuro.2018.10.011.

**Boomhower, SR**; Newland, MC. 2017. "Effects of adolescent exposure to methylmercury and d amphetamine on reversal learning and an extradimensional shift in male mice." *Exp. Clin. Psychopharm.* 25:64-73.

**Boomhower, SR**; Newland, MC. 2016. "Adolescent methylmercury exposure affects choice and delay discounting in mice." *Neurotoxicology.* 57:136-144. doi: 10.1016/j.neuro.2016.09.016.

