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## Areas of Expertise

- Toxicology
- Human Health Risk Assessment
- Product Safety Evaluation
- GHS Hazard Assessment
- Product Stewardship

## Services

- Toxicology & Risk Sciences
- Global Chemical Registration
- GHS Hazard Assessment
- Product Safety Assessment
- Biocompatibility Analysis
- Chemical Portfolio Hazard/Risk Analysis
- Sustainability Consulting
- Third Party Profiling  
(GreenScreen®, EPA Safer Choice, Chemforward)
- Food & Beverages

## Education

- M.S., Environmental Health,  
Boston University School of Public Health
- B.S., Biological Sciences,  
Virginia Polytechnic Institute & State University
- Certified Professional Product Steward (CPPS)

## Charlotte Marsh, M.S., CPPS

### Senior Toxicologist

Ms. Marsh is a toxicologist specializing in product stewardship, human health risk assessment, and global chemical compliance. At Gradient, she conducts hazard and risk evaluations for chemicals in industry and consumer products. Ms. Marsh is well versed in the United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS), the GreenScreen® Method, and similar frameworks, and has extensive experience assessing ingredients in personal care products. Through her work, she has developed expertise in weight-of-evidence evaluation and incorporating new approach methodologies, such as read-across and predictive toxicology.

Before joining Gradient, Ms. Marsh earned her master's degree at Boston University School of Public Health, where she researched potential developmental effects of the flame retardant chemical, triphenyl phosphate. She also spent time as a research assistant on the Nurses' Health Study, investigating occupational exposure to disinfectants and respiratory outcomes.

## Selected Projects

**Copper GHS Technical Document:** Developed a technical background document detailing the scientific bases and rationale for hazard classifications for different forms of copper metal according to the GHS. Evaluated and summarized existing scientific literature of human health and ecological health effects. Prepared a public-facing communication tool that synthesized this information for the purposes of classifying the metal under GHS criteria.

**Global Chemical Compliance Assistance:** Assisted global chemical compliance with evaluation of challenges of new jurisdictions, GHS assessment, and safety data for automotive company.

**Chemical Hazard Assessments:** Provided toxicological and ecological hazard assessment of chemicals for REACH compliance. Identified and classified potential hazards according to the GHS.

**Toxicity and Regulatory Substance Review:** For an anti-microbial substance under consideration for ban by the US Food and Drug Administration (US FDA), performed a comprehensive review of the regulatory landscape, hazard and risk conclusions of international authoritative and regulatory agencies, and available human health and ecotoxicity data. Compiled the information into a dossier for potential external submission to regulatory agencies.

**GreenScreen® Assessments:** Performed chemical hazard assessments for several chemicals using Clean Production Action's GreenScreen® for Safer Chemicals method.

**Sensitization Hazard Assessments:** Performed hazard assessments and quantitative risk assessments for the constituents of various consumer products designed to be in long-term contact with the skin. Identified potential chemicals of concern and established exposure levels intended to protect consumers from experiencing adverse skin reactions.

## Selected Presentations

**Marsh, CM.** 2019. "Leveraging ECHA's Public Activities Coordination Tool." Presented at "Brexit: Impacts and Solutions for North American Chemical Supply Chains" Webinar. November 16.

**Marsh, CM; Butler, CH; Cohen, JM.** 2017. "Improving Read-Across for GHS Hazard Classification Using ECHA's Read-Across Assessment Framework (RAAF): Alkylbenzenes and Skin Sensitization." Presented at the Society for Chemical Hazard Communication (SCHC) Spring 2017 Meeting, New Orleans, LA, March 25-29.

Schlezingner, J; **Marsh, C;** Kim, S; Heiger-Bernays, W. 2017. "The Organophosphate Flame Retardant Triphenyl Phosphate Disrupts Bone Remodeling in Adult and Perinatally Exposed Female Mice." Presented at the Society of Toxicology (SOT) 56th Annual Meeting, Baltimore, MD, March 12-16.