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## Jessie M. Kneeland, Ph.D.

### Principal Scientist

Dr. Kneeland is a principal scientist with a diverse scientific background, including expertise in environmental chemistry, oceanography, and climate science. At Gradient, she interprets chemical signatures to discern different sources of chemicals in the environment. She also helps companies understand potential environmental impacts of new chemicals. Prior to joining Gradient, Dr. Kneeland taught environmental chemistry at Haverford College. Her doctoral research involved identifying new chemical biomarkers of environmental stress in corals. She also used chemical proxies from marine sediments to reconstruct ancient ocean temperature records and related those histories to known climate shifts. Her scientific interests involve using chemical signatures to trace biological, chemical, and physical processes in the environment.

### Selected Projects

**Chemical Testing Oversight:** Coordinated testing of representative chemicals within a Toxic Substances Control Act (TSCA) new chemical category. Worked with consortium members and US EPA scientists to select best testing sequence and methods to support a chemical category founded on read-across principles.

**Cost Allocation:** Coordinated a large, multidisciplinary project to evaluate equitable cost allocation options on behalf of a group of cooperating parties. Directed efforts to analyze site data, compile historical information, and consider risk assessments in the context of cost allocation among different chemicals, sites, and parties.

**Chemical Forensics:** Performed a multivariate data analysis on organic contaminant data to differentiate potential pollutant sources in support of an equitable cost allocation at a Superfund site with a long and complex history of industrial activity.

**TSCA New Owner Audit:** As part of a new owner's audit under TSCA, reviewed a portfolio of chemical products for regulatory compliance. Oversaw the collection and evaluation of product composition data, chemical-specific regulatory restrictions, import/export transactions, and regulatory filings.

**Landfill Permitting:** As part of a hearing regarding a proposed landfill expansion, evaluated potential impacts to surface water and groundwater from landfill leachate. Reviewed data regarding leachate, groundwater, and surface water chemistry in comparison to regulatory standards and permit conditions. Prepared exhibits to be used in hearing testimony.

**Forensics of Natural Gas Liquids:** Performed forensic analysis of hydrocarbons in fugitive non-aqueous phase liquid (NAPL) to evaluate claims of recent spills at a closed natural gas processing facility. Oversaw data analysis, including ratio and principal components analyses of PIANO data, to compare hydrocarbon composition in groundwater monitoring wells to potential contamination sources.

### Areas of Expertise

- Environmental Chemistry
- Chemical Fingerprinting
- Product Stewardship
- Fate & Transport
- Oceanography
- Climate Change Science
- Environmental Forensics

### Services

- Chemistry/Forensics
- PRP Cost Recovery/Allocation
- Toxic Substances Control Act (TSCA)
- Chemical Portfolio Hazard/Risk Analysis

### Education

- Ph.D., Chemical Oceanography, Massachusetts Institute of Technology and Woods Hole Oceanographic Institution
- S.M., Climate Chemistry and Physics, Massachusetts Institute of Technology
- B.S., Geology, California Institute of Technology

### Selected Publications and Presentations

**Kneeland, JM.** 2022. "What's Up with Microplastics?" Presented at the PSX 2022 Conference, Louisville, KY, October 18-20, 19p.

**Kneeland, JM;** Tcaciuc, AP; Tuit, CB; Wait, AD. 2021. "A review of marine oil sampling methods." *Environ. Forensics* doi: 10.1080/15275922.2021.1892873.

**Kneeland, J;** Sharma, M. 2019 (Winter) "Billion dollar dilemma." *Gradient Trends - Risk Science & Application* 74:1-2.

**Kneeland, J;** Zhang, J; Becker, G. 2019. "Polymers: Global Product Stewardship Approaches." Presented at Product Stewardship Conference 2019, Columbus, OH, September 10-12, 57p.

**Kneeland, J;** Hughen KA; Cervino J; Hauff B; Eglinton TI. 2013. "Lipid biomarkers in *Symbiodinium* dinoflagellates: New indicators of thermal stress." *Coral Reefs*. 32:923-934.