

Heather Alane Raymond

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Professional Summary: Lead scientist with over 20 years of experience championing innovative data-driven water quality programs, policies, and guidance. Adept at building critical partnerships with researchers and local, state, and federal agencies. Collaborative leader that thrives on new challenges. Recognized as a national leader on harmful algal bloom response and policy development.

Professional Experience

Ohio Environmental Protection Agency

Harmful Algal Bloom (HAB) Coordinator (2011 – Present)

- Designed and led research projects to inform policy decisions, analytical method development, and guidance. Research areas include analytical and molecular methods, contaminant fate and transport, flow modeling, source water protection and management, and drinking water treatment.
- Served as agency representative on review panels for Ohio Harmful Algal Bloom Research Initiative grants and Ohio Sea Grant and reviewed internal grant proposals.
- Selected by NOAA administration to serve on external review panel for NOAA-NCCOS Harmful Algal Bloom and Hypoxia 5-year Portfolio Review (2018). Helped set national program direction.
- Advised external research partners to help ensure grant proposals and projects aligned with state water quality goals and objectives (agency advisor).
- Established successful small grants program that served as model for other agency programs.
- Drafted and implemented the nation's first HAB monitoring, reporting, and treatment technique rules and assisted other states and federal agencies with policy, rule, and guidance development.
- Led workgroups and integrated HAB-related policies across Ohio EPA divisions and programs.
- Collaborated with federal agencies, including NOAA, U.S. EPA, USGS, USACE, NASA, CDC, and the World Health Organization (WHO) on water quality research, pilot projects, and policy development: CyAN project, NASA Hyperspectral Imaging project, U.S. EPA HAB Comprehensive Performance Evaluation and other pilot projects, USEPA and Interstate Technology and Regulatory Council guidance, and international WHO *Toxic Cyanobacteria in Water* guidance (2019)
- Instructed applied workshops on HABs at the Ohio State University's Stone Laboratory (2011-2018) and conducted training events for water treatment operators and staff at multiple agencies.
- Invited to present, serve on panels, and chair sessions at U.S. EPA regional and national conferences, NOAA meetings, Alliance for Coastal Technologies national water quality monitoring workshop, national webinars, local and regional stakeholder meetings, and professional conferences.
- Worked with Ohio EMA to develop inter-agency finished drinking water cyanotoxin detection tabletop exercises and participated in local and state emergency management exercises.
- Coordinated response-based HAB sampling throughout Ohio with Ohio EPA districts, ODNR, ORSANCO, USACE, USEPA, local health districts, beach managers, and university researchers.
- Assisted community water systems in effectively responding to cyanotoxins in their source and finished drinking water to protect human health, including trouble shooting treatment optimization in high stress environments (drinking water emergencies) and coordinating public messaging.
- Peer reviewed publications, oversaw staff work products, and mentored staff.
- Developed work plans, prioritized projects, conducted biennial assessments and surveys, and published reports and technical guidance.

Lead Hydrogeologist (promoted from Geologist 3 in 2000) (1996 – 2011)

- Developed programs, policies, and related guidance: Ohio Source Water Assessment and Protection Program, Ohio's Nonpoint Source Management Strategy, Ohio Farm*A*Syst

- Trained staff in Analytic Element Modeling (AEM), Published AEM Research in the journal Ground Water, and developed AEM guidance.
- Led innovative karst investigations to determine potential for contaminant transport in karst regions in Ohio, including development and implementation of dye traces in a variety of karst areas including the first successful well-to-well trace in Ohio.
- Reviewed Clean Water Act Section 319 grant proposals and developed review metrics.
- Presented program information at public meetings and professional conferences.
- Oversaw district work products, assisted in developing long and short-term goals, biennial reports, and program budgets.

Recent Awards

Ohio Lake Management Innovation Award (2016)
NASA Group Achievement Award (2015)

Education

Executive M.P.A. Ohio University, Athens, Ohio.
G.P.A. 4.0; Completed core coursework and public service practicum (2003-2005).

M.S. (Hydrogeology) 1998. Ohio University, Athens, Ohio.
GPA 3.9; Awarded Graduate Assistantships in 1995 and 1996.
Thesis: *Hydrogeologic Characterization and Numerical Modeling of a Constructed Tertiary Treatment Riparian Wetland in Athens, Ohio.*

B.S. (Geology) 1994. Ohio University, Athens, Ohio.
Graduated cum laude; Awarded Mannesheh Cutler Freshman Scholarship; Chemistry Department Scholarship; Tarr Award (Outstanding Senior Student), SEPM Outstanding Student Poster Session
Received NSF funding for undergraduate research on paleoclimates conducted in Litochoro, Greece.
President, Sigma Gamma Epsilon (Earth Science Fraternity) 1993-1994

Recent Ohio EPA Publications

- *State of Ohio PWS HAB Response Strategy* (2011-2019)
- *Developing a Harmful Algal Bloom (HAB) Treatment Optimization Protocol* (2019)
- *Developing a Harmful Algal Bloom (HAB) General Plan* (2019)
- *State of Ohio HAB Response Strategy for Recreational Waters* (2016)
- *White Paper on Cyanotoxin Treatment* (co-authored with Ohio AWWA) (2016)
- *Distribution System Monitoring in Response to Finished Water Microcystins* (2016)
- *Application of Aquatic Pesticides and Algaecides to Reservoirs* (2015)

Select Recent Invited Presentations

- “Evaluation of CyanoDTec Multi-Plex qPCR Assay as a Cyanotoxin Screening Tool for Ohio Public Water Systems and Inland Lakes,” North American Lake Management Society Conference (2018), molecular methods session chair.
- “Ohio HAB Monitoring and Lessons Learned,” Atlantic Canadian Cyanobacteria Workshop (2018).
- “Treatment Optimization for HABs,” U.S. Smart Water Conference (2018) and Association of State Drinking Water Administrators (ASDWA) National Webinar (2018).
- “Cyanotoxin Analysis Methods,” ASDWA National Webinar (2018).
- “Ohio EPA HAB and Emerging Contaminants Update,” Lake Erie Users Group (2018) and Operator Training Committee of Ohio Workshop (2018).