Water Treatment & Infrastructure Research

This research topic will provide innovative methods for assessing and treating water from source to tap and back to the source. It focuses on the assessment and control of opportunistic pathogens and disinfection byproducts (DBPs), analytical methods development, optimization and application of tools for improving drinking water infrastructure, and augmentation of reliable water sources through water reuse research and stormwater capture for enhancing water supplies.

Research Areas and Outputs

Research Area 1 — Drinking Water/Distribution Systems

Provide essential results and tools for managing existing and future drinking water needs.

Research Outputs:
- Resources and tools for characterizing and mitigating lead and copper release in drinking water distribution systems and premise plumbing
- Best practices, tools, and information for assessing and controlling pathogens, managing disinfectant residuals, and minimizing DBPs in drinking water systems
- Analytical methods, occurrence, health effects, and treatment assessments for emerging contaminants
- Resources and tools towards a systems approach for maintaining drinking water infrastructure performance and integrity

Research Area 2 — Per- and Polyfluoroalkyl Substances (PFAS)

Robust analytical methods for analyzing PFAS in water, solids, and tissue samples, and a centralized website for treatment and pretreatment recommendations for wastewater and reuse.

Research Outputs:
- Validated analytical methods for PFAS in environmental samples
- Treatment technologies and processes for removing PFAS from water
- Characterization of PFAS sources and remediation options for protecting drinking and agricultural water resources, wastewater, biosolids, and landfill leachates

Research Area 3 — Wastewater and Water Reuse

Guidance on new and existing treatment technologies and analytical methods for emerging contaminants and contaminant risks.

Research Outputs:
- Analytical methods, exposure and effects assessment processes, and tools for wastewater and fit-for-purpose water reuse
- Assessment of treatment strategies and technologies for wastewater and fit-for-purpose water reuse

Research Area 4 — Integrated Stormwater Management

Integrated aspects of green/gray infrastructure and stormwater flow control to help communities reduce combined sewer overflows.

Research Outputs:
- Integrated guidance for planning, implementing, and monitoring stormwater management practices
- Integrated stormwater management as a resource for enhanced recharge and reuse

Research Area 5 — Technical Support

Provide a means for rapid response to specific, unplanned state, tribe, community, and EPA program office research needs concerning high-priority issues.

Research Output: Technical support for water treatment, analytical methods, and risk assessments

Awarded Grant Research

RFA Aug-Oct 2018 — **Methods to Analyze & Treat PFAS in Solid Waste, Landfills, Wastewater/Leachates, Soils, & Groundwater**
Science to Achieve Results (STAR) Program grant solicitation.

RFA May-Jun 2018 — **Per- and Polyfluoroalkyl Substances (PFAS)**
National Priorities grant solicitation to better understand the impacts of PFAS on water quality and availability across the U.S.

2018 - 2021 — **Research into Detecting & Controlling Lead in Drinking Water**
Through a STAR grant, EPA awarded funding to Virginia Tech and the Water Research Foundation to create a consumer-centric framework to detect and control lead that complements the utility-centric framework embodied in the Lead and Copper Rule.

2016 - 2021 — **National Center for Sustainable Water Infrastructure Modeling**
Through a STAR grant, EPA awarded the University of Texas at Austin funding to develop an open source water infrastructure models center and share green infrastructure tools and research with local communities and stakeholders.

2016 - 2020 — **Life Cycle Costs of Water Infrastructure Alternatives**
Through a National Priorities grant, EPA awarded the Water Environment & Reuse Foundation (WERF) and the Colorado School of Mines funding to research innovative, cost-effective technologies to manage stormwater runoff and combined sewer overflows.

2015 - 2020 — **Health Impacts Associated with Water Reuse & Conservation Practices**
Through a National Priorities grant, EPA awarded WERF and the Universities of Nevada-Las Vegas, Southern California, Utah State, Illinois at Urbana-Champaign, and California-Riverside funding for research in human and ecological health impacts associated with water reuse and conservation practices.

2016 - 2019 — **Impacts of Water Conservation on Water Quality in Premise Plumbing and Distribution Systems**
Through a National Priorities grant, EPA awarded the U. of Nevada-Las Vegas, U. of Southern California, Utah State U., WERF, U. of Illinois at Urbana-Champaign, and the U. of California-Riverside funding for research in human and ecological health impacts associated with water reuse and conservation practices.