Developing a Nationwide Water Reuse Research Roadmap Workshop

Hosted by the Water Research Foundation

At the 37th Annual National WateReuse Symposium

March 7, 2022

In March 2022, The Water Research Foundation (WRF) held a water reuse research roadmap workshop at the 37th Annual WateReuse Symposium to leverage the vast breadth of knowledge and variety of experience of the Symposium attendees on the topic of municipal potable water reuse. The workshop was structured to be highly interactive, providing participants with an overview of the current state of research in potable reuse and an opportunity to discuss their specific research needs and collaborate on the development of potential research project concepts. The workshop supported the broader scope of work for the National Water Reuse Action Plan Action 7.2 – Develop a National Research Strategy for Water Reuse.

Presentations and breakout tables were categorized into 4 potable reuse topics: Source Water (presented by Shane Trussell, Trussell Technologies); Treatment (presented by Vijay Sundaram, AECOM and Erin Mackey, Brown & Caldwell); Monitoring (presented by Troy Walker, Hazen & Sawyer and Andy Salveson, Carollo); and Implementation (presented by Eva Steinle-Darling, Carollo and Trent Stober, HDR). Through breakout sessions lead by these speakers and other experts, workshop participants developed 59 research concepts. They were ranked through polling at the Symposium and after by WRA members and WRF subscribers. The following table represents the most needed research by topic.

Source Water

- Pretreatment for Industrial Programs to Improve Reuse
- Impacts and Management of Wastewater Sidestreams for Reuse
- Impacts of Organics Management and Treatment Processes on IPR/DPR
- Impacts of New/Innovative Wastewater Treatment Processes on Source Water Quality
- Source Water Characterization of Industrial Discharges and Impacts on Municipal Wastewater

Treatment

- Alternative Treatment Processes: Reimagining Advanced Water Treatment Trains
- Development of a Standard Protocol for Wastewater Treatment Effluent Characterization
- Optimizing Process and Energy Efficiency in Potable Reuse
- Viral Surrogates for Ozone Log Removal Values (LRV) for Potable Reuse
- Pass-through Chemicals' Occurrence and Related Public Health Risk
- Balancing the Competing Objectives of Energy Minimization and Innovation with Safety and Reliability

Monitoring

- Correlations Between Raw Wastewater Quality and Potable Reuse Risk
- Use of AI / Machine Learning for Potable Reuse Water Quality, Efficiency, and Risk Minimization
- Adapting PCR Methods for Real-Time / Near Real-Time Monitoring
- Wastewater Effluent Early Warning System - Assessing Low Probability / High Threat Events
- Guidance for Advanced Treatment Monitoring and Implementation / Keeping Up with the Instruments and Monitoring Effectiveness

Implementation

- Regional Approaches To Brine Management
- Building Public Trust In Reuse Programs (Specific To Constituents Of Concern; Exposure Pathways; Blind Sampling/Comparison To Other Utilities)
- Interagency Collaboration For Reuse: Understanding Successes, Failures, And Guidance
- Identifying Changing Workforce Development Needs For Reuse & Innovation
- Defining An Acceptable Level Of Risk for Reuse Projects (Environmental Health, Public Health, Economic)