Monitoring for Microcontaminants in an Advanced Wastewater Treatment Facility

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Trace levels of microcontaminants in reclaimed water, most notably endocrine disrupting compounds (EDCs) and pharmaceutically active compounds (PhACs), have been shown to accumulate in marine plants and organisms impeding or altering their natural growth. This problem then has the potential to propagate among other species that utilize these organisms as a food source or if the reclaimed water is used to supplement fresh water drinking sources. Therefore, monitoring the fate and transport of a suite of EDCs and PhACs and how different treatment process effluents impact the toxicity of various organisms in reclaimed water discharges will prove to be of great importance and value to the water reuse community.

As part of an inter-agency agreement, the Southwest Florida Water Management District and the City of Plantation (Broward County, Florida) performed an advanced wastewater treatment (AWT) pilot study to evaluate the impact of discharging reclaimed water to the East Holloway Canal. The study evaluated the ability of the best available technologies/processes (e.g., nutrient removal, MBR, RO, UV) to treat raw wastewater from the City's wastewater treatment facility. Monitored water quality parameters included phosphorus, suspended solids, biochemical oxygen demand, nitrogen, etc. The overall objectives of this project were to:

1. Identify the microcontaminants present in the influent and effluent of the AWT system.
2. Determine the microcontaminant removal efficiencies of various best available AWT processes (e.g., MBR, RO, UV_1).
3. Evaluate the toxicity of reclaimed water discharges, allowing for a comparison between levels of microcontaminants and effluent water toxicity.
4. Model chemical transport and the movement of the reclaimed water from its source (point of discharge), through a canal network, and through the surficial aquifer system.

The presentation will include a general discussion on the impacts of emerging contaminants on wastewater treatment process selection and the current results of this study.

Key Words: Microconstituents, Emerging Contaminants, Advanced Wastewater Treatment, Water Reuse

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