Treatment Hydraulics Webinar Description

Hydraulics is one of the most important—and most overlooked—factors in water and wastewater treatment. While it is often associated with pipes, pumps, and flow rates, hydraulics also controls how effectively processes such as mixing, settling, chemical reactions, and biological treatment actually work.

This course provides a comprehensive, practical understanding of hydraulics at both the system level (macro) and the process level (micro). Participants will learn how key concepts such as detention time, surface loading rate, and weir overflow rate directly impact treatment performance, along with how issues like short circuiting and temperature stratification can reduce efficiency and lead to permit violations.

The course goes beyond basic hydraulics to explore fluid behavior in real systems, including laminar versus turbulent flow, viscosity effects, and energy relationships. Participants will also examine how hydraulics influences chemistry and process outcomes—affecting coagulation, flocculation, settling, and overall treatment effectiveness.

Piping hydraulics, pressure and flow measurement, and system losses through valves and fittings are covered in a practical, application-focused manner. At a finer scale, the course introduces molecular-level concepts such as surface tension and their role in mixing and separation processes.

Drawing on real-world troubleshooting experience, this course helps participants understand how poor hydraulics can limit even well-designed systems—and how to identify and correct those issues to improve performance, efficiency, and reliability.