Course Title**: Optimizing Polymer Mixing and Activation: Following the Science**

60 minutes of instruction

Course Description: This 60-minute seminar will provide water and wastewater system managers, operators and engineers a practical understanding of the science behind the basics of polymer chemistry, goals of activation, the development of polymer mixing equipment and equipment configuration basics. Polymer is used in both drinking water and wastewater treatment and is one of the top consumable costs at most treatment plants.

Course Outline:

1. History of polymer
    a. Polymer use in water/wastewater treatment
    b. Basic polymer chemistry
    c. Viscosity – indicator of polymer solution quality
2. Real science of polymer activation
    a. Effects of dilution water quality
    b. Two-stage mixing and residence time
    c. Emulsion polymer activation
    d. Dry polymer activation, minimizing aging time
3. Polymer activation equipment
    a. Mixing energy profile, chamber volume and residence time
    b. Mechanical mixing equipment and mixing chambers
    c. Hydraulic mixing equipment and mixing chambers
4. Case Studies
    a. Emulsion polymer dewatering application, effects of mix chamber size
    b. Dry polymer dewatering (screw press) application

Learning Outcomes:

- Attendees will understand the basics of polymer chemistry and the use of viscosity as an indicator or polymer solution quality
- Attendees will understand the science of polymer activation and the role of proper two-stage mixing
- Attendees will be able to understand both mechanical and hydraulic polymer activation systems, their efficiency and adherence to the principles of polymer activation