



MWOA Lab & Process Control Workshop June 25-26, 2025

Rochester International Event Center
7333 Airport View Dr SW
Rochester, MN 55902

Day One

- 7:30 – 8:00 **Registration & Welcome Tony Glymph** - Wastewater Microbiology Solutions
- 8:00 – 10:15 **Introduction to Microscopy**
Sampling, Slide preparation, Role of Bacteria, Growth Characteristics, Parameters Affecting Their Growth
- 10:15 – 10:30 **Break**
- 10:30 – 12:00 **The Role of Protozoa and Metazoans**
Parameters Affecting Their Growth, Identifying Protozoa & Metazoans
- 12:00 – 1:00 **Lunch**
- 1:00 – 2:30 **Process Control Tools Using the Microscope**
Dispersed Bacteria, Protozoa & Metazoa: Relative Dominance, Slime Bulking & Nutrient Deficiency, India Ink Staining, Toxicity
- 2:30 – 2:45 **Break**
- 2:45 – 4:00 **Filamentous Bacteria Identification & Control**
Identifying Bulking Filamentous Bacteria, Identifying Foaming Filamentous Bacteria, Monitoring and Process Control, Gram Staining For Filamentous Bacteria

Day Two

- 8:00 – 10:00 **Biological Phosphorus Removal Process Description**
Microbial Activity in the Anaerobic Zone – Hydrolysis & Fermentation, Phosphorus Accumulating Organisms (PAOs), Glycogen Accumulating Organisms (GAOs)
Microbial Activity in the Aerobic Zone – Luxury Phosphorus Uptake, GAOs in the Aerobic Zone
- 10:00 – 10:15 **Break**
- 10:15 – 12:00 **Factors Affecting PAO Performance – Carbon**
PAOs vs GAOs, Wastewater Composition, pH, Solids & Hydraulic Retention Time, Mixed Liquor Concentration
- 12:00 – 1:00 **Lunch Break**
- 1:00 – 2:30 **Factors Affecting PAO Performance – VFAs**
Wastewater Composition, Mixed Liquor Concentration, Solids & Hydraulic Retention Time, Cations
- 2:30 – 2:45 **Break**
- 2:45 – 4:00 **Slide Preparation & Staining**
Sudan Black (PHB) Staining, Neisser Staining, Quantifying PAOs and GAOs

13 Direct WW contact hours for attending both days

Attendees are encouraged to bring a microscope and mixed liquor sample for hands on examination!