

Activated Sludge Operations Webinar Outline

Day 1 – two 2-hr sessions

Overview of Wastewater Treatment – 1 hr

- Composition of Wastewater - types of solids, organics
- Preliminary Treatment - screening, equalization
- Primary Treatment - settleable solids vs. suspended solids removal
- Secondary Treatment - conversion of organics, solids capture
- Sludge Treatment - thickening, dewatering, disposal

Primary Treatment – 1 hr

- Solids Capture and Efficiency
- Negative Impacts from Primary on Secondary Treatment

HOUR BREAK

Overview of Biological Treatment – 2 hr

- Bacterial growth - metabolism, respiration, growth phases
- Growth Pressures: F/M, Temp., pH, dissolved oxygen, nutrients, toxics, hydraulic loading

Day 2 – two 2-hr sessions

Activated Sludge Process Control Tests – 2 hr

- Settlemeter - measuring sludge settling characteristics
- Depth of blanket - determining clarifier inventory and sludge detention time
- Oxygen uptake - assessing metabolic rates; toxicity detection; shock loads
- Process monitoring

HOUR BREAK

Microscope – 2 hr

- floc formation, filament abundance, EPS
- Protozoa/Metazoa

Day 3 – two 2-hr sessions

Controlling Return Sludge Flow – 1 hr

- RSF strategies
- Optimizing clarifier capacity
- Controlling clarifier inventory

Controlling Waste Sludge Flow – 1 hr

- MCRT/Sludge age
- F/M
- Sludge yield
- Controlling sludge inventory
- Wasting strategies

Hour Break

Controlling Aeration – 2 hr

- Monitoring, D.O. probes
- Mixing
- Oxygen demand - organic, nitrification, endogenous respiration
- D.O. deficiency

Day 4 – one 2-hr session

Nutrient Management – 1 hr

- ° Nutrients - ammonia, phosphorus, various types used
- ° Nitrogen - managing considerations
- ° Nitrification/Denitrification
- ° Nutrient management plan

Troubleshooting Overview of Activated Sludge Problems – 1 hr

- Poor floc formation
- Foaming
- Rising sludge
- Toxicity
- Rapid settling, turbid effluent
- Slime bulking
- Filamentous bulking – short-term and long-term control