Activated Sludge Operations Training Outline
14-hour workshop

Overview of Biological Treatment (2 hour)
- Introduction to Treatment
- Effects of: Temperature, pH, Organic loading, Dissolved oxygen, Toxics, Hydraulic loading, Spills, Nutrients

Process Control and Monitoring Tests for Activated Sludge Operations
- Settlometer – measuring/assessing sludge settling characteristics (1.5 hour)
- Depth of blanket - determining clarifier inventory and sludge detention time (0.5 hour)
- Microscope - determining microbial health (1.5 hour)
- Oxygen uptake - determining metabolic rate, detecting and managing toxicity, spills (1 hour)

Controlling Recycle Sludge Flow (1.5 hour)
- RSF strategies
- Optimizing clarifier capacity

Controlling Waste Sludge Flow (1 hour)
- MCRT/Sludge age
- F/M
- Sludge yield
- MLSS concentration
- Sludge Inventory

Controlling Aeration (1.5 hour)
- Monitoring, D.O. probes
- Oxygen demand, effects of spills

Nutrient Management (1.5 hour)
- Nutrients - ammonia, phosphate, nitrate
- Nutrient Management
- Nitrification/Denitrification

Troubleshooting Sludge Settling Problems (2 hour)
- Foaming
- Filamentous and slime bulking
- Low D.O. bulking (liquor spills, high BOD)
- Low F/M bulking (mill shutdown, low production)
- Nutrient-deficient bulking
- Septic/sulfide bulking
- Toxicity
- Rapid settling, turbid effluent

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