TUESDAY – JUNE 2, 2020
1:00 PM to 3:00 PM

**Topic: Advanced Biological Nutrient Removal**

1:00 pm  **Introduction** – Synthia Parveen Mallick | Marquette University

1:05 pm  **“MBBR and IFAS Biological Treatment Explained”**
         Somnath Basu | Headworks International

Biological wastewater treatment facilities are upgraded or expanded to accommodate increased flows or wastewater strengths. MBBR and IFAS (moving bed biofilm reactor & integrated fixed-film activated sludge) processes are options for improving treatment without increasing footprint. Both processes will be explained. Case studies & examples will be presented.

2:00 pm  **“Ntensify Biological Nutrient Removal for Reduced Energy and Nutrient Discharges”**
         Don Esping | Brown and Caldwell

The most elusive biological nutrient removal (BNR) goal is to reliably and sustainably perform combined biological nitrogen and phosphorus removal. Ntensify™ BNR combines two intensification processes: 1) advanced aeration controls to maintain the proper dissolved oxygen levels needed to promote simultaneous nutrient removal while reducing the energy demands and 2) hydrocyclone-based wasting combined with a metabolic selector to promote sludge densification and improved nutrient removal. Full-scale data from the Pueblo CO Ntensify BNR system will be presented along with a planning level analysis showing a 30 percent reduction in capital costs, energy usage, and life cycle cost compared traditional BNR flow schemes.

3:00 pm  Adjourn

**CONTINUING EDUCATION**

*2.0 CEUs for Operators in Illinois, Wisconsin & Minnesota.*
Operator ID/Quiz required for webinar.

*2.4 PDHs for all Professional Engineers*  
IEPA Course #15269

**COST**
- $15 – Members (Discount Code: CSWEA)
- $20 – Non-Members
- $5 – Student (Discount Code: Student)
- $5 – International (Discount Code: International)

**REGISTER HERE**