



MIEX[®] PRESS



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Letter from the editor

Welcome to the August 2010 issue of Orica Watercare's Newsletter. I would like to introduce myself, Holly Hein, as the new editor of MIEX[®]PRESS. I am looking forward to keeping all of you up to date on what the Watercare team has busily been working on.

We are excited to announce the recent awarding of a contract for a 16.4 MGD MIEX[®] High Rate Treatment System at Palm Beach County. This is currently the largest MIEX[®] System in construction in North America and on start-up will be the second largest operating system in the world. Read how the city of Saxman will be Alaska's first city to install a MIEX[®] System to reduce the consumption of water treatment chemicals. Also find inside an article that discusses how florescence can quantify the benefits of using the MIEX[®] process for organic matter removal.

Our upcoming trade show schedule is included along with a recap of ACE10 in Chicago where we had 10 published papers and posters.

Read on for more MIEX[®] News, and feel free to contact me at holly.hein@orica.com with any questions on our featured articles.

Best Regards,

Holly Hein

www.miexresin.com

Palm Beach County Awards Contract for 16.4 MGD MIEX[®] System

PALM BEACH COUNTY, Florida -- Palm Beach County awarded the construction of a 16.4 million gallon per day MIEX[®] High Rate Treatment System to John J. Kirilin, LLC in the amount of \$5,83M on June 29, 2010.

Palm Beach County's Water Utilities hired Carollo Engineers in 2009 to design a MIEX[®] system and decommission the aging ozone treatment operation at Water Treatment Plant No. 2. When completed in the summer of 2011,

(See *Palm Beach County*, on Pg 2)

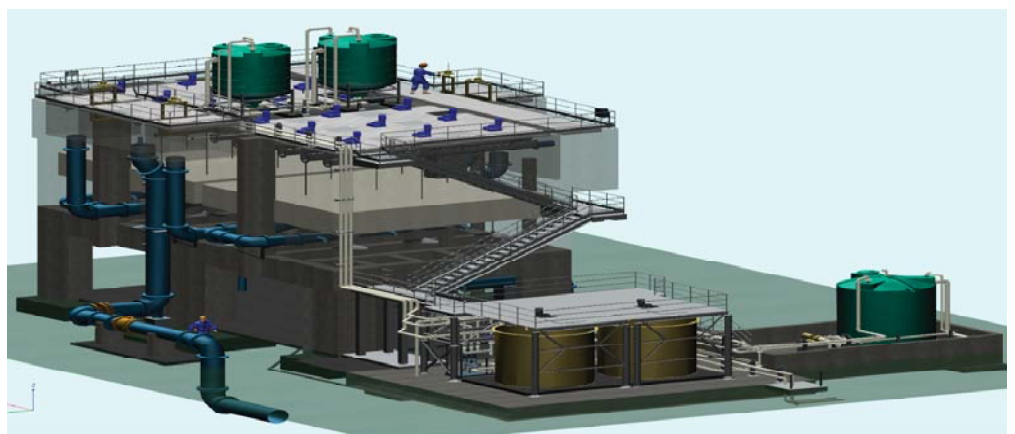


Figure 1: 3-D Installation Model courtesy of Carollo Engineers.

Fingerprinting NOM to Understand Impacts on Treatment Processes

Natural Organic Matter (NOM) has implications at many water treatment plants across the United States, both in terms of regulatory compliance and impacts on plant operation. In addition to being heterogeneous in nature and difficult to characterize, NOM is the precursor material that reacts with chlorine to form regulated disinfection byproducts, fouls filtration equipment and is the source of fishy and earthy odors that end up in potable water supplies. Although source water NOM may be difficult to characterize, the known abundance of functional groups present on the

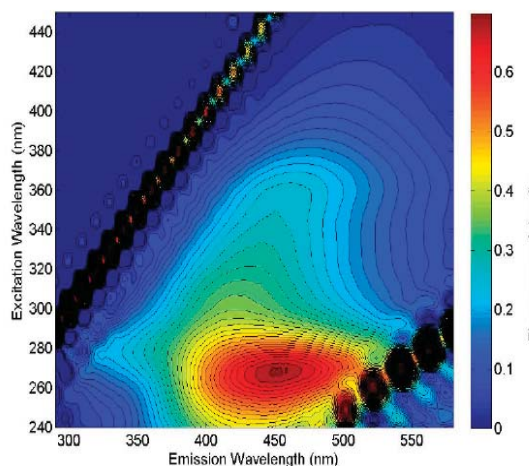


Figure 1: Saskatchewan Reservoir Water Excitation-Emission Matrix

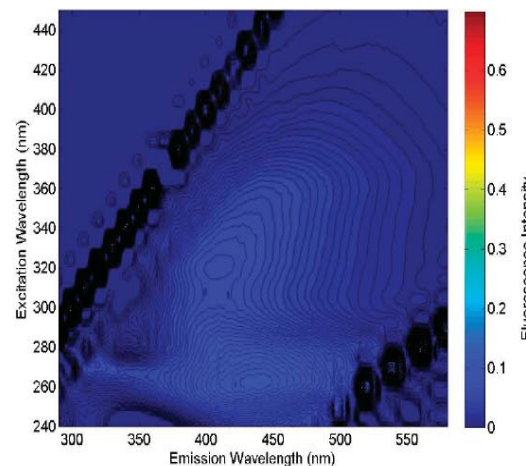


Figure 2: MIEX® Treated Saskatchewan Reservoir Water Excitation-Emission Matrix

Palm Beach County

(Continued from page 1)

this will be the largest MIEX® treatment system in the United States, the second largest in the world, and the largest of Orica Watercare's newest high rate system.

"The anionic exchange system will produce higher quality water compared to ozone treatment and will reduce both chemical usage and energy consumption" said Steve McGrew, Manager, Plant Design for Palm Beach County.

"The MIEX® anionic exchange process is a low energy "green" technology with a superb ability to remove dissolved organic carbon (DOC)" said McGrew.

The first MIEX® system to be used in the United States was installed in 2005 by the Village of Palm Springs, only two miles from Palm Beach County's Water Treatment Plant No. 2.

organic matter; such as carboxylic acids and phenols, lends itself to removal via the ion exchange process. The physical benefits of removing the organic matter with MIEX® Resin can be understood both quantitatively and qualitatively by observing the effects on downstream processes. What is difficult to quantify is exactly what changes in organic matter characteristics have caused these downstream benefits.

Analytical techniques for NOM characterization, such as fluorescence, provide the opportunity to understand correlations between physical effects of treatment and differences in NOM composition. For example, Figure 1 shows a Saskatchewan Reservoir water source fluorescence excitation-emission matrix (EEM). The peak where the fluorescence has the highest intensity is representative of humic acids present in the water. When this source water was directly passed through a microfiltration membrane unit at a flux of 45 gallons per ft² per day (GFD) the trans-membrane pressure became unstable and increased to a point where too

much pressure needed to be applied to maintain this flux and a cleaning was required after 3 days. The water produced to waste generated ratio at such a short run time was unfeasible for both cost and environmental reasons compared to the industry standard filtration run time of 30 days. Figure 2 shows the fluorescence EEM for the Saskatchewan Reservoir water after treatment with a MIEX® Pilot Plant. It can be seen that the peak greatly decreased in intensity. The resulting physical behavior that was noted was that the membrane performance greatly improved, even at fluxes of 55 GFD, and filtration run times greatly increased to be in order with industry standards. Further research is currently underway using advanced analytical techniques to continue to understand the effects of heterogeneous NOM on treatment processes.

The ultimate goal is to fingerprint NOM characteristics and understand possible physical effects just by understanding the nature of the NOM.

ACE10 Recap



Figure 2: Watercare booth at ACE10

This year's AWWA Annual Conference was another successful show for us. Our theme was well received with our time sensitive message of 'the time is now to prepare for Stage 2 DBP compliance'.

We had an impressive 10 platform presentations and posters on the MIEX® technology featured at this year's conference. And, Shane Jones, President of Orica Watercare Inc. was showcased in a video interview with Water World.

The increased attendance overall at ACE10 this year was apparent at our booth with an abundance of activity from current customers and new prospects, many who stopped by to learn about our new EcoRegen™ and EnviroPak™ systems. With the great turnout this year we are looking forward to next years show in Washington DC.

City of Saxman to Install Alaska's First MIEX® System

Disinfection by-products (DBPs) are a common water quality challenge for many small communities in Alaska. The Alaska Native Tribal Health Consortium (ANTHC) Department of Environmental Health and Engineering (DEHE) works with water systems across Alaska to assist them with solving their water treatment challenges, including those associated with controlling disinfection by-product formation.

The City of Saxman, located on Revillagigedo Island in Ketchikan Gateway Borough in southeastern Alaska and famous for having the world's largest collection of standing totem poles, is one of these systems.

ANTHC is working with the City of Saxman on an upgrade of the existing 200 gpm water treatment plant to minimize DBP formation, as well as improve overall water quality. In June 2010 the MIEX® Process was selected for Saxman's water treatment plant as a means to remove additional dissolved organic carbon (DOC) from the raw water source prior to coagulation and filtration. The City plans to install a 200 gpm pressurized MIEX® System upstream of pressure filters at their water treatment plant.

Pilot test results indicated that the additional DOC removal provided by the MIEX® System will enable the Saxman Water Treatment Plant to comply with United States Environmental Protection Agency (US EPA) Disinfectants and Disinfection



Figure 1: World's largest standing totem pole collection is in Saxman AK

Byproducts Rule requirements as well as reduce the plant's consumption of coagulant chemicals. John Warren, ANTHC's Director of Engineering Services, stated, "We look forward to providing the City of Saxman with improved water quality that meets US EPA drinking water standards."

Construction for the project is currently underway, with the plant expected to be operational in the spring of 2011. Orica Watercare is represented by William H. Reilly & Co. in the state of Alaska.

WQTC Papers Preview

MON07 - Ion Exchange and AOP Applications

11:00 AM - New Insights to MIEX® Treatment: Florescence Spectra Across Synthetic, Natural and Waste Waters.

Pedro Palomino, University of Florida; Treavor Boyer

TUES06 - Membrane Treatment: Feed Water Quality, Pre-Treatment, Post-Treatment and Water Reuse

9:00 AM - Impact of Magnetic Ion Exchange Pretreatment on Low Pressure Membrane Filtration of Natural Surface Water.

Haiou Huang, Johns Hopkins University; Kellogg Schwab; Joe Jacangelo

WED01 - Something About Nothing: Zero Liquid Discharge

8:30 AM - ZLD Desalination: Results from Two WRF Projects Used to Discuss Factors that Affect Costs and Process Selections.

Rick Bond, Black & Veatch

10:30 AM - Waste Ion Exchange Brine Treatment and Removal of Trace Contaminants.

John Tobiason, University of Massachusetts

11:00 AM MIEX® Treatment of Drinking Water and Municipal Solid and Waste Residuals.

Katherine Graf, Univeristiy of Florida; Treavor Boyer; Sarah Comstock; Timothy Townsend

WED06 - Iodinated and Brominated Disinfection By-Products

Strategies to Mitigate DBP Formation with Increasing Bromide Concentrations: A California Utility Case Study.

Miguel Arias, Orica Watercare; Michael Bourke; Pamela Borba; Forrest Vaughan

Employee Profile: Steve Byg



Steve Byg started working for Orica Watercare Inc. March 1st 2010 as the Water Treatment Chemist. Steve is responsible for treatability studies for external water samples, analyses for pilot trials, and analysis monitoring for the performance of full scale MIEX® Installations.

Steve has 15 years of laboratory experience with 6 of those including commercial testing and engineering. Before joining the Watercare team, Steve worked for the Metro Wastewater Reclamation District for 9 years as an analyst. There he was accountable for microbiology studies, wet chemistry and solids analysis.

In his spare time, Steve rebuilds classic cars; he currently has a 1965 Corvair Convertible and a 1966 Corvair Coupe. He is a fifth generation Colorado native and enjoys spending time with his wife and 3 yr old son. Steve has also held Vice President and President Positions for 8 years for the Aurora chapter of Trout Unlimited.

Upcoming Trade Shows

RMSAWWA.....	September 12th.....	Orica Booth
TWWA.....	September 23rd.....	Presentation with Eshelman
AWWA Virginia.....	September 18th.....	At Sherwood Logan's Booth
CA WCWWA.....	September 21st.....	At Mequipco's Booth
AL/MS.....	October 3rd.....	Orica Booth
CA/NV Fall.....	October 5th.....	Orica Booth
WQTC.....	November 14th.....	Orica Booth