



Metropolitan Water Reclamation District of Greater Chicago

Press Release

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Heart of wastewater treatment celebrates 100 years *Activated sludge process vital to MWRD work*

The heart of the Metropolitan Water Reclamation District of Greater Chicago's (MWRD's) seven wastewater reclamation plants marked a major milestone in its history as the activated sludge process turned 100 years old this summer.

The Water Environment Federation, a not-for-profit technical and educational organization representing water quality professionals around the world, convened a special forum in June at Stonehill College in Easton, Mass., as a tribute to the early research work done in nearby Lawrence, Mass., to improve the wastewater treatment process.

Along with distinguished industry leaders from North America and Europe, MWRD Director of Engineering Dr. Catherine O'Connor, Assistant Director of Engineering Thomas Kunetz, and Supervising Environmental Research Scientist Dr. Joseph Kozak participated in a forum titled "Activated Sludge on its 100th Birthday: Challenges and Opportunities."

The development of the process revolutionized modern sewage treatment across the globe, allowing the treatment process to take place in a much smaller footprint than previously possible. The improvements in sanitation were key to allowing cities like Chicago to grow and prosper through improved public health and a cleaner environment. In 1922, the MWRD first installed the activated sludge process at the Des Plaines River Sewage Treatment Works; however, this plant no longer exists.

The activated sludge process has its roots in experiments carried out at the Lawrence Research Station in Massachusetts beginning in 1912, using vertical slabs of slate immersed in a tank of aerated sewage. An observer at the Lawrence Research Station shared the information with two chemists named Ardern and Lockett of Manchester, England. The team continued the experiments, and in 1914 they refined the process by reintroducing bacteria that was removed from the process by settling—called "sludge"—back into the aerated tank. This bacteria was alive and "active," ready to consume more food, so they coined the term "activated sludge" to describe the recycled slurry.

"The event at Stonehill was a gathering of some of the world's foremost innovators in the wastewater industry who over the last 30 years pioneered ground-breaking improvements to the activated sludge process that are commonplace today," said Dr. O'Connor. "They encouraged the researchers and practitioners who will follow them to build upon their work and meet the new challenges of the new century: nutrient recovery and energy reduction."

The MWRD is working today to reduce energy consumption at its plants by 40 percent by modifying the wastewater treatment process without reducing the quality of the effluent. One test underway is the modification of the activated sludge process using a process called deammonification which removes ammonia with much less oxygen than is currently required. This approach may allow the MWRD to reduce electricity demand by 120,000,000 kWh per year.

"We completed a successful deammonification pilot test at the Egan plant in Schaumburg, Illinois and plan to install a process full-scale centrate treatment by mid 2014," said Dr. O'Connor. "This is very promising technology and is an innovation that could completely change the way wastewater is treated around the world."

"The activated sludge process was novel for its time, but the MWRD saw the possibilities for significant improvements to public sanitation and developed the process to full-scale application," said MWRD Commissioner Patrick D. Thompson, Chairman of the Monitoring and Research committee. "The MWRD has a long history as a national leader in research and innovation in the water sector and we will continue this tradition into the future."

Our water environment, Take it personally.

Established in 1889, the MWRD (www.mwr.org) is an award-winning, special purpose government agency responsible for wastewater treatment and stormwater management in Cook County, Illinois.