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Emerging Water Treatment Company APTwater Recognized For Nitrate Removal Technology

Long Beach-Based Company To Install Demo Plants In Burbank, Rialto



David Stanton, chief executive officer of APTwater, has been with the company since it relocated its headquarters from Pleasant Hill to the Landmark Square office building in Downtown Long Beach in January 2010. (Long Beach Business Journal photograph by Carlos Delgado)

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Staff Writer

Long Beach-based APTwater, Inc., an emerging leader in water treatment, wastewater reuse and environmental remediation, was recently recognized for innovative technology that treats and cleans water sources affected by nitrates.

The company, founded in 2009, won a Progressive Manufacturing 100 Award for Innovative Mastery from Managing Automation Magazine last month for its latest water treatment process, ARoNite. APTwater recently signed a contract with Cucamonga Valley Water District for its first ARoNite demonstration plant.

According to APTwater CEO David Stanton, ARoNite removes nitrates from water using an all-natural process. Nitrates are chemical contaminants that typically come from agricultural farming and impact water supplies everywhere from the L.A.

Basin to the Central Valley and up, Stanton said. Most of the time, seriously contaminated wells are just shut down, but sometimes water supplies are blended into wells. In those cases, the nitrate problem isn't being treated, he said.

The main consumable needed for ARoNite is natural gas. APTwater technology splits the hydrogen and carbon dioxide. ARoNite consumes the hydrogen, and the carbon dioxide is used for pH control. Water is introduced to the process, and hydrogen is fed to the naturally occurring bacteria in the water. The bacteria use the hydrogen as a source of electrons to digest contaminants in the water, which are then reduced to something inert.

There are about 8,000 water wells currently shut down statewide for nitrate contamination, according to Stanton. In Rancho Cucamonga, nitrates impact 17 of the 30 wells in their water district, he said. APTwater is working on one well there, but

“just by bringing to life these assets by treating the nitrates and bringing a safe water supply, we see that’s going to have a huge impact on the state water supply,” Stanton stated.

The original patents for the technology were under license with Northwestern University, he said. “We’ve subsequently innovated and developed a whole series of patents and technology around it. We’re bringing high technology solutions to a fairly low technology market.”

APTwater provides the technology, as well as employs service and field employees to operate the plants installed on site. “When a client wants to reuse water, they don’t have to go out and buy a big piece of capital equipment and train all their employees to run and install it. We’ll actually go in and operate it for them,” Stanton explained. APTwater is financed to sell companies or municipalities the treated water by the gallon or through a service



APTwater's latest innovation is called ARoNite, the first of its kind available commercially. The technology uses a biological respiration process by which hydrogen and carbon dioxide pass through a membrane surface and are delivered to the impaired drinking water for treatment. ARoNite is being marketed as an alternative to conventional reverse osmosis and ion exchange processes for nitrate removal in water treatment and environmental remediation projects. (Graphic courtesy of APTwater)



The focus of APTwater is on environmental remediation projects, in which technologies such as PulseOx are being used. PulseOx technology, implemented using a trailer similar to that seen above, to directly impact the subsurface, rapidly oxidizing various groundwater chemicals. (Photograph courtesy of APTwater)

contract catered to the buyer's needs for clean water – which is how many of APTwater's clients are already purchasing water from entities such as the Metropolitan Water District (MWD).

Matthew Veeh, director of government and public affairs with the Long Beach Water Department, said in an e-mail that Long Beach has two potable water sources: MWD and groundwater from the Central Basin aquifer. "Nearly 60 percent of our potable water is groundwater, with the remaining portion coming from our MWD imported water purchases. . . . Five years ago this split used to be reversed (60 percent imported, 40 percent groundwater)," he said. "However, due to conservation, the split has gone in the other direction to where we are today (60 percent groundwater, 40 percent imported)."

According to Stanton, APTwater services offer a means for municipalities to purchase less water from MWD, though he said the entity is not a competitor. In fact, he said MWD encourages and enables companies like APTwater to find other sources of water. "They're not really the competitors as much as they establish the pricing for new water," he said. "So we can provide cheaper water than them on a reuse basis."

The City of Burbank is APTwater's biggest metropolitan client in the region. Stanton said building out the service capability is a "very important plan to our plan." Currently 17 of the 55 employees of APTwater work in field services full time.

APTwater plans to also open plants for hexachrome and perchlorate treatment

soon. A demonstration plant to treat hexachrome – known as the Erin Brokovich contaminant that's found in various water supplies and has yet to be regulated – is slated for Burbank, and a demonstration plant for treatment of perchlorate is in the works for the City of Rialto. California has some standards on perchlorate, a compound that results from the use of jet fuel.

APTwater has a large base of industrial clients, particularly in aerospace. HiPOx, an oxidation process that destroys organic contaminants and disinfects water supplies, is currently being implemented at more than 20 aerospace facilities across the country. The company's largest industrial client is Boeing. APTwater is putting water plants on two Boeing sites – one in Huntington Beach and one in Long Beach – to treat the water under their facilities to environmental standards.

"We really proved out our technologies on these very hard to treat waters from industrial clients, but when we look at reuse and municipal and city applications, that's actually much easier for us in terms of the water being relatively easier to treat," he said.

The firm has installed its HiPOx and PulseOx technologies at more than 120 environmental remediation projects sites worldwide. PulseOx is a treatment that directly impacts the subsurface and rapidly oxidizes various groundwater chemicals using ozone and hydrogen peroxide.

The company is currently working in Singapore on the country's reuse projects, where wastewater is treated in a closed loop and brought back to the total drinking water

supply, according to Stanton. "We're piloting and demonstrating one of our technologies there to improve that process. It's our hope long-term that we get more comfortable with this concept of reuse, of taking water and getting it back into the drinking water."

Stanton said his company can create better water from wastewater using their technologies than what could be taken from the Mississippi or Ohio or Arkansas rivers – the resources for the majority of the drinking water supplies in the central U.S. – possibly even the Colorado River. These inland resources are impacted by wastewater that is not only impacted by nitrates, but also takes human products with it, from pharmaceuticals to hormones and trace organic materials, he said.

"When we look at the dirty water supplies and problems with water reuse, we look at everywhere there's contaminated water as a source of water."

APTwater moved to Long Beach's Landmark Square in 2010 and employs several alumni of EarthTech, an environmental engineering firm formerly based in the International City before it was sold and subsequently moved out of the city. Before heading up APTwater, Stanton led EarthTech's International Asset Management Division focused on the design, construction, and operation and financing of global water and wastewater projects. He is a member of the Long Beach Area Chamber of Commerce Board of Directors, and APTwater is a part of the chamber's new Green Business Council. ■