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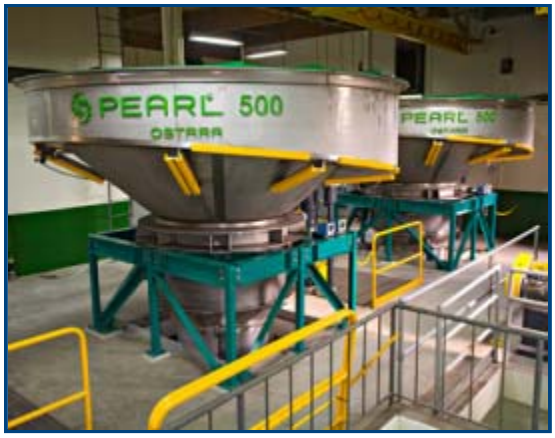
Wastewater-to-fertilizer plant captures nutrients

by Martin LaMonica

Ostara Nutrient Recovery Technologies later this week will dedicate a system that converts wastewater from sewage-treatment plants into fertilizer while recycling valuable phosphorus and nitrogen.

On Thursday, the Hampton Roads Sanitation District (HRSD) in Suffolk, Va., will host the official opening of the facility, the second commercial-scale plant to use Ostara's technology. Long-time clean water advocate Robert F. Kennedy Jr., who is an investor in the company through his involvement with VantagePoint Venture Partners, will be a speaker at the event.



Ostara's reactors isolates nutrients from wastewater at sewage treatment plants to make fertilizer.

Because of environmental regulations, some wastewater treatment plants separate nutrients using bacteria to prevent them from being discharged into waterways. Ostara's technology can be added to these plants to convert the separated wastewater into a sellable product called Crystal Green, explained Ostara CEO Phillip Abrary.

Instead of treating that wastewater with chemicals and disposing of the solids, the HRSD facility has installed three vessels that take in wastewater and mix it with the salt **magnesium chloride**. Water moves upward into the cone-shaped tank, called a fluidized bed reactor, which prevents the solid material from settling and causes crystals to form through a chemical reaction.

The white crystals are ammonium magnesium phosphate, which is sold as high-phosphate fertilizer pellets to nurseries, turf, and specialty agricultural companies. The technology,

which can capture about 85 percent of the available nutrients, can also be used in plants where nutrient build-up is a problem, said Abrary.

In Virginia, these reactors will replace a process that relies on adding chemicals to the wastewater. The sale of fertilizer, handled by Ostara, will finance the sale of equipment and operations. Ostara's first facility in Oregon also purchased the equipment and projects a payback in five years, Abrary said.

The key to the technology, which was originally developed at the University of British Columbia, is the shape of the reactor, which allows the company to make crystals that can be sold as slow-release fertilizer, he said.

In addition to dealing with nutrient run-off, the technology helps preserve phosphorus, which is mined from Morocco, Jordan, Saudi Arabia, and China, where the majority of reserves are found.

"Discharging nutrients is not a good thing and there are more and more regulations coming," Abrary said. "Phosphorus is a nonrenewable resource that's absolutely necessary. If you don't have phosphorus, you can't grow things."

The facility in Virginia will be able to produce about 500 tons of fertilizer product a year, which is a sliver of the 35 million tons of phosphates sold every year. Because the company's technology is a relatively efficient way to capture the nutrients in waste, Abrary said the company has a significant pipeline of projects under discussion, including one in Pennsylvania where Ostara would own and operate the facility itself.

"The technology is proven, the market believes that it works because it's a chemical process," he said. "The biggest barrier is that many customers are municipal organizations that just don't react as quickly as the private sector."

Martin LaMonica is a senior writer for CNET's Green Tech blog. He started at CNET News in 2002, covering IT and Web development. Before that, he was executive editor at IT publication InfoWorld. E-mail Martin.

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