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Mosaic sinkhole bolsters argument for new technology; JDC wants to provide it

With The Mosaic Co.'s New Wales phosphogypsum sinkhole a major story in the Florida and national press, JDC Phosphate, Fort Meade, Fla., is reminding the industry, the public, and regulators that its technology, still under development, would produce phosphate fertilizers in sinkhole-prone Florida without producing radioactive phosphogypsum.

"JDC's Improved Hard Process technology is safer for the public and more cost-effective and efficient for the industry," said Theodore "Tip" Fowler, JDC Phosphate CEO. "Our technology can make phosphoric acid without any high-volume waste. The generation and landfilling of 30 million new tons a year of radioactive phosphogypsum, of concern for the environment and especially groundwater given Florida's geology, could be avoided by utilizing IHP."

JDC, currently operating a demonstration facility at its 20-acre site in Fort Meade (*GM* July 21, 2014), is planning a new next-generation plant to commercialize the technology, and updating Florida Department of Environmental Protection officials on what Florida producers can do now to transition to the new technology.

"Industry and regulators need to aggressively implement alternatives to the wet acid process if the industry in Florida is to have a sustainable future," said Fowler. "JDC has developed an alternative that we believe industry and regulators should urgently support and adopt. If not now, when?"

"The current sinkhole emergency at the New Wales fertilizer facility is the most recent of many environmental calamities associated with phosphogypsum stacks in Florida and around the world that could have been avoided by using IHP," said Mark Vignovic, JDC Phosphate vice president of safety, health, and environment. "Phosphogypsum is the primary reason that the phosphate industry shut down in Texas, Mississippi, and most of Europe."

Citing the Florida Industrial and Phosphate Research Institute (FIPR Institute), JDC said there are currently about 1 billion tons of phosphogypsum stacked in 24 stacks (landfills) in Florida, and about 30 million new tons are generated each year. JDC said its process would allow industry to avoid creating new

gypsum stacks. The company lists other benefits, including producing higher quality phosphoric acid; lowering production costs by as much as 40 percent; producing a safe aggregate for construction; and being adaptable to lower-grade rock, thereby extending the phosphate reserve base and protecting industry jobs for decades.

Despite its prospects, there is still work to be done on JDC's technology. To date, the company has spent some \$50 million on its research, including the 12,000 ton/y super phos acid demonstration plant. However, problems were detected in the plant, as dust accumulated in the kiln. Fowler told *Green Markets* that this was potentially a "technology killer," however, he said a robust, patent-pending solution was discovered that also makes a purer phos acid.

The company is in the process of raising approximately \$10 million to make the process modifications required to support continuous operation that enables full commercialization. Fowler said it will take about a year to install and months to test. Thereafter, it would take three-to-five years to build a full-scale plant (75,000-200,000 st phos acid).

Currently, he said the company is involved in fund raising and laboratory work for optimization and preparation. Fowler listed current investors in JDC as Agrifos, Mitsui, Florida Opportunity Fund, Espirito Santo Ventures (Portugal), and Avenir (Australia), among others.

In other news, JDC reports that Dr. James Trainham, its chief technology officer, has been selected by the American Institute of Chemical Engineers (AIChE) to receive the AIChE's 2016 industry leadership award. He will receive the award at the AIChE annual meeting in San Francisco in November. JDC said the award recognizes Dr. Trainham's impact on the marketplace and global community, the magnitude of the challenges overcome, and the innovation and technical creativity demonstrated throughout his career, including his ongoing work with the development and commercialization of JDC's technology in producing phos acid. JDC added that he has more than 40 patents and publications to his credit.

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