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→ COVER STORY

White Gold

The high demand for frac sand has some aggregate producers seeing dollar signs.

BY DARREN CONSTANTINO

The latest buzz term in the aggregates industry is “frac sand.” This sand product – high in silica content – is used in the hydraulic fracturing process to extract natural gas from deep deposits. A mixture of sand, water and chemicals blasts open the rock, then the sand holds open the fractures so gas can make its way to the surface.

Currently, about a quarter of all energy used in the United States is natural gas, and that percentage is expected to grow. High energy prices have made the process of extracting natural gas a profitable business, resulting in frac sand prices that are through the roof. And some aggregate producers are cashing in.

If frac sand is the new gold, then the new gold rush is in the Mississippi River Valley areas of Illinois, Wisconsin and Minnesota.

According to CBS Local Media, Tony Runkel, Minnesota’s chief geologist, said those areas have the potential to turn into a hot spot for frac sand mining. “There’s a huge amount. This sandstone layer that they’re targeting is very, very extensive,” Runkel says. “What’s relatively rare is where it occurs – in a setting where it’s close enough to the land surface that it can be mined in an economically feasible fashion.”

One big problem

With the material plentiful and the price high, it sounds like paradise for producers in the area. Unfortunately, there’s a catch. Hydraulic fracturing is loaded with controversy, as the process and the chemicals used are reported to be responsible for contaminating



Brian Harvey, operations manager for Savage Services, holds a handful of frac sand at TransFlo’s distribution facility in Butler, Pa.

ground water and creating other environmental problems.

One popular video even shows a homeowner putting a lighter to the water pouring out of his kitchen faucet, and the water bursting into flames.

Such fears have resulted in a hold on gas exploration in certain areas until further study is done, and New York State lawmakers are also reportedly contemplating a moratorium.

Scientific American reports that a new study sampled water from 60 wells and has found evidence for natural gas contamination in those within a kilometer of a new natural gas well. The magazine quotes environmental scientist Robert Jackson of Duke University, who led the study: "Methane concentrations in drinking water were much higher if the homeowner was near an active gas well. We wanted to try and separate fact from emotion."

Methane in well water is not unusual; however, by measuring the ratio of radioactive carbon present in the methane contamination, the researchers determined that in drinking water wells near active natural gas wells, the methane was old and therefore fossil natural gas from the Marcellus Shale, rather than more freshly produced methane.

"This marks the first time that drinking water contamination has been definitively linked to fracking," says *Scientific American*.

"In fact, concentrations were 17 times higher in those drinking water wells within one kilometer of an active natural gas well than those farther away," the magazine continues.

"The U.S. Department of Energy has convened a special task force to improve the safety and environmental impacts of such fracking for natural gas, including how best to dispose of the voluminous wastewater as well as ensuring proper sealing of wells to prevent such groundwater contamination."

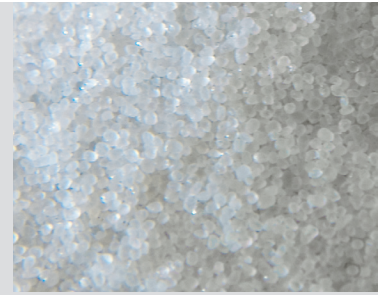
In the meantime, some aggregate producers are cashing in on the demand for

What is frac sand?

Frac sand is generally large-grain sand high in silica content. The material is usually 20/40 mesh, 40/70 mesh or 100 mesh. The smallest of these – 100 mesh – is the most common type used for hydraulic fracturing of Marcellus Shale, which extends throughout much of the Appalachian Basin. U.S. Silica ships the product from Illinois to Pennsylvania for distribution.

According to the *Barron News Shield* of Barron, Wis., the price of frac sand has a tendency to fluctuate with the price of oil. The paper quotes mine-permitting attorney Gerry Duffy: "What makes it valuable is they have to dry it. They have to get it down to 1 percent moisture content, which means once they dry it, they've got to store it inside, or ship it in hopper railcars because they can't expose it to the atmosphere, because they've dried it down."

Duffy reports that in the past three years, he has seen frac sand being sold from \$36 to \$96 per ton. Duffy adds that there is a lot of demand for U.S.-mined frac sand in Canada.



U.S. Silica, the producer of this 20/40-mesh frac sand, calls it Ottawa White.

frac sand, and it seems to be the hot topic at industry gatherings.

Mining frac sand

According to the *Milwaukee-Wisconsin Journal Sentinel*, it's easy to mine frac sand in Wisconsin, because it's easy to burrow into the bluffs. The report says there are no mine shafts to dig and no water to pump because it's above the water table.

Associated Press reports that an energy company bought 155 acres of land near Red Wing, Minn., for \$2.6 million earlier this year. The company said it would use the land as a sand pit, though reportedly no permit application had been made at the time of the report. Despite this, local residents had already begun meeting to discuss environmental and health questions.

In addition to local opposition to the mining of frac sand, opposition to the hydraulic fracking process is coming together at the national, as well as local level.

The Citizens for Water Foundation (CWF) is a group "committed to protecting and preserving America's water resources today and for all future generations." Ac-

ording to CWF representatives, the group was formed in response to the accelerating development of extreme methods of fossil fuel extraction throughout the United States and, specifically, hydraulic fracturing in the Northeast.

"Fracking and other extreme fossil fuel development present dangerous and shortsighted solutions to the world's energy needs," says CWF Co-Executive Director Joe Levine, who adds that we cannot afford to ruin our water supply. "The cost now and to future generations is simply too great."

With opposition to hydraulic fracturing and even new frac sand mines, it is difficult to determine how long the process will remain a viable alternative to other energy sources. And with an Environmental Protection Agency study now in the works, new regulations could change the landscape.

In the meantime, some aggregate producers – particularly in the Mississippi River Valley of Illinois, Wisconsin and Minnesota – are continuing to turn a good profit with the new white gold that is frac sand. **PQ**

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