

# FARM AID: GYPSOIL CONNECTS FARM MARKET TO FGD GYPSUM

By Kevin Orfield

Indiana farm boy and Purdue agriculture college graduate Ron Chamberlain has worked in agronomy for over 43 years marketing crop inputs, including fertilizer, seed and agricultural chemicals. He eventually established an agronomy consultancy to help crop growers maximize productivity while sustaining their resources and profits.

Chamberlain recognized synthetic gypsum's enormous potential in the early 2000s when he saw improvements in soil condition on farms where it was used. But often growers had difficulty sourcing gypsum when they needed it, so Chamberlain began working with

Indianapolis Power and Light Company (IPL) to organize truckloads of material for his clients. Impressed further with gypsum's impact, he established GYPSOIL™ brand gypsum in 2006.

"I saw that gypsum could help transform tight, difficult-to-farm soils into softer, more garden-like soils that soaked up rainwater and produced better crops," Chamberlain says from his office near Indianapolis.

## A BUSINESS OPPORTUNITY TAKES ROOT

As an agronomist, Chamberlain easily preached the gospel of gypsum to farmers, but the challenges related to logistics, marketing and regulatory requirements soon became more than he wanted to manage. In 2008, Chamberlain met two men who would help him fulfill his vision of realizing gypsum's full potential: Robert Spoerri, chief executive officer, and David Schuurman, chairman, of Beneficial Reuse Management. Based in Chicago, Beneficial Reuse was working on a recycling project with IPL at the time and the three were introduced through a mutual business associate. The company creates partnerships between industrial companies that generate materials suitable for beneficial reuse and others that can use these materials in projects and products. Repurposing IPL's flue gas desulfurization (FGD) gypsum that was destined for a landfill was a perfect fit.

In 2009, Chamberlain sold GYPSOIL to Beneficial Reuse. He continues to work as

their agronomist, educating others on the benefits of gypsum in agriculture. "It's been a great partnership," says Spoerri. "We're in a very good position to lead an industry transformation. It's an exciting opportunity for us that helps energy companies reduce costs and farmers improve yield, while benefiting the environment."

Prior to partnering with Beneficial Reuse, Chamberlain had been selling 15,000 to 18,000 tons of GYPSOIL a year. After purchasing GYPSOIL in July 2009, Beneficial Reuse sold 40,000 tons of gypsum the first year and has more than doubled sales every year since, with projected sales of 500,000 tons in 2012.

Beneficial Reuse signed its first major gypsum marketing agreement with Milwaukee-based We Energies in October 2009. Before 2008, when We Energies began producing gypsum as a byproduct from its state-of-the-art new emission cleaning operations, FGD gypsum was not available to Wisconsin farmers. "We're somewhat unique in Wisconsin in that we use wet scrubbers, which produce gypsum," says Bruce Ramme, manager of land quality in the environmental business unit at We Energies. "Most of the other utilities in Wisconsin use dry scrubbers, which do not produce gypsum."

Last year, We Energies distributed almost 100,000 tons of gypsum via Beneficial Reuse, representing 50 percent growth from the previous year. "In my entire career I've never seen growth quite that quickly for a market entry like this," says



Ron Chamberlain began working with agricultural applications for synthetic gypsum in the early 2000s.

Ramme. “We’re actually at a point now where (gypsum) demand exceeds supply – I never would have envisioned that in 2008. This huge growth is a tribute to how the product works for the farmers in the field, to Beneficial Reuse’s excellent customer service, and to the GYPSOIL brand.”

## ENORMOUS MARKET POTENTIAL

Like many utilities that produce FGD gypsum, We Energies also supplies gypsum to the wallboard industry. At its peak, this market consumed about 8.5 million tons of gypsum nationwide per year\* and it was quite common for wallboard plants to be built right next to power plants. But the demand for wallboard declined sharply after the housing market bust.

Meanwhile the supply of FGD gypsum from power plants continued to increase, doubling between 2002 and 2010, from 11 million to 22 million tons\*. Future growth for even higher production is expected. The potential agricultural market for byproduct gypsum is enormous – there are over 320 million acres of farmland in the United States\*\*, much of which can benefit from gypsum.

“The cost of landfills is very high and they are very difficult to license and permit today,” adds Ramme. “Byproduct reuse of gypsum is a huge economic advantage for We Energies and its customers.”

But selling gypsum is more complicated than just opening the doors and inviting farmers to come and get it. Gypsum must compete with all the other inputs and farming practices available to today’s sophisticated crop operations, and the growers must be educated about the benefits that gypsum can offer. Further, logistics are complicated, and as a byproduct, gypsum is tightly regulated in most states, requiring scrupulous attention to regulatory compliance.

“Beneficial Reuse is able to bridge the gap between the utility companies, who are looking for ecologically friendly ways of using the byproduct instead of filling up landfills, and the agricultural community, where there is potentially a huge demand. Our company understands growers’ needs and the agronomic potential for



An agronomy classroom: Ron Chamberlain speaks to farmers about the use of gypsum in soils.

using gypsum both as a soil amendment and as a cost effective source of nutrients,” explains Spoerri.

## LOGISTICAL CHALLENGES

Because GYPSOIL’s first partners were IPL and We Energies, its markets developed initially in Indiana and Wisconsin. Today, Beneficial Reuse partners with 11 suppliers representing 25 power plants and has permits to sell GYPSOIL in 17 states in the Southeast and Midwest. Ultimately, the company hopes to distribute gypsum in all 50 states.

Logistics presents a major hurdle to achieving this goal. Of the 150 utilities that produce gypsum, only a handful are west of the Mississippi River. “The biggest challenge is to identify where is the supply and where is the demand and marry the two,” says Schuurman. “It’s very complex. It’s not always easy to find a source of gypsum near our largest potential markets. We have to reach these markets at an affordable cost and make the economics work for both the farmers and the utilities.”

To accomplish these tasks, Beneficial Reuse has established a network of 230 distributors, including a number

of traditional farm coops. Most of the current distribution areas are serviced by truck, but beyond a certain distance the cost of transport becomes prohibitive. To reduce costs, Beneficial Reuse is working on more cost-effective solutions such as setting up a distribution network via rail and barging for river transport.

Although gypsum is produced year round, it is principally only sold to farmers in the spring and fall. Beneficial Reuse has set up numerous locations to store GYPSOIL locally so it is available when needed. “Two-thirds of our sales are in the fall,” says Dana Meier, byproducts manager, IPL. “We can’t produce enough in the fall to meet the demand, so offsite storage is essential. We’re also working with Beneficial Reuse to find ways to increase storage both onsite and offsite to ensure the product is available when the farmers need it.”

Beyond pushing the product through a distribution network, Beneficial Reuse’s marketing strategy also involves pulling in customers through advertising and awareness campaigns. GYPSOIL is advertised in the major farm publications and is represented at the top farm shows in its market areas. This year, Beneficial Reuse held its second Midwest



**Beneficial Reuse Management executives Dave Schuurman and Robert Spoerri.**

Soil Improvement Symposium August 21 near Indianapolis.

“It’s a great opportunity to educate the crop consultants who growers turn to for advice,” explains Spoerri. “Last year, 200 consultants, researchers, agronomists and growers attended the first Midwest Soil Improvement Symposium at the University of Wisconsin. We brought in researchers, agronomists, and other experts to discuss the different aspects of agricultural gypsum and had panel discussions lead by growers with lots of experience with gypsum on their farms.”

### NAVIGATING THE REGULATORY MAZE

In addition to addressing logistical and marketing challenges, Beneficial Reuse must also meet regulatory and reporting requirements, which vary from state to state. States in the Southeast already have experience with gypsum, which is used in specialty crops such as peanuts, so the regulatory process is relatively straightforward. Other states are completely unfamiliar with gypsum, so the process can be quite complex, taking up to a year to get the proper permits.

“It’s an arduous process. We have two

people who do nothing but file regulatory reports,” Schuurman says. “To help ensure the process goes smoothly, we’ll meet with regulators and give them a presentation on how gypsum works, what other states are doing, and what we think the appropriate standards are for establishing a rational regulatory framework for the material.”

### FUTURE MARKET OPPORTUNITIES

The Mississippi River Delta region represents a significant opportunity for Beneficial Reuse and GYPSOIL. Decades of repeated tillage and the impact of heavy equipment have left the clayey soils compacted, erosive and prone to suffering during drought, requiring heavy irrigation to produce crops. As a soil amendment, gypsum loosens the soil particles to improve the soil tilth and permeability, thus capturing early spring rainwater for use later on in the season by the crop. The calcium in GYPSOIL can also displace aluminum, a major limiting factor in crop productivity in the Delta and other regions.

“There’s a tremendous opportunity to turn these soils around,” says Chamberlain, who spends countless days on the road, educating growers at tradeshow, meetings, and other events; visiting growers and agronomists

one-on-one and walking through fields to observe soil and crop conditions.

“The farmer’s potential return on investment for gypsum is huge,” says Chamberlain. “When you balance soil and improve its quality, the costs for inputs, including tillage, machinery, fuel, fertilizer and labor go down. But it’s a new paradigm for people. Our challenge has been to create awareness of gypsum’s benefits, work through regulatory barriers, and find logistical solutions that ensure cost-effective distribution.”

### ENVIRONMENTAL IMPACT

By reducing emissions while generating profits and reducing costs, their agricultural gypsum project won We Energies the prestigious 2010 Governor’s Awards of Excellence in Environmental Performance. The award also recognized We Energies’ commitment to helping others in the industry by sharing information and expertise.

Beyond reducing emissions and landfilling, a significant environmental impact of gypsum is reducing the amount of nutrient runoff in sensitive watersheds. Beneficial Reuse is working with utilities to support studies by university researchers and agronomists to demonstrate how gypsum can be a very important tool in mitigating phosphorus pollution in our nation’s waterways.

“We’re really excited about the new research related to ameliorating phosphorous runoff,” says IPL’s Meier. “Indiana, including the Indianapolis area, has many areas that could benefit from the reduction of phosphorus runoff. The research will be important to demonstrating gypsum’s effectiveness in this area and expanding its use even more.”❖

\* 2002-2010 Coal Combustion Product (CCP) Production & Use Survey Reports, ACAA, Aurora, CO.

\*\* Acreage Report for Principal Crops Released by National Agricultural Statistics Service, Agricultural Statistics Board, USDA, June 30, 2009.

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