

Ethanol plants pose pollution challenge

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PRESTON, MINN. -- When Steve Roessler walks onto the deck of his hilltop home in southeastern Minnesota, he views the Root River valley with its cornfields and woods in full summer foliage, broken by a two-lane road and an occasional farmhouse.



Mike Zerby photo

The Pro-Corn LLC Ethanol Fuel Plant in Preston, MN

He also watches a plume of smoke rising from a lone smokestack about 2 miles away and is glad the wind isn't blowing it in his direction.

"When it hits here, it's like my throat slams shut," said Roessler, who works out of his home and suffers from asthma.

The plume belongs to the Pro-Corn LLC ethanol plant on the edge of Preston, a town of about 1,500 in Fillmore County. It is one of 14 ethanol plants in Minnesota, most of which are considering or planning to expand production to feed the growing demand for ethanol as a gasoline additive.

Farmers are optimistic about new markets and higher prices for corn and describe ethanol as a clean fuel. However, several ethanol plants in the state have a history of air-and water-quality violations, ranging from failure to submit reports on time to excessive emissions.

Four of the plants, including Pro-Corn, paid pollution penalties during the past three years and were required to make improvements.

State environmental authorities attribute the violations in part to start-up problems and initial mistakes in operating the ethanol plants, most of which have been built since 1993. The officials say that there should be less pollution in the future as managers fine-tune production and increase plant efficiency.

Boost to industry

Ethanol is added to gasoline primarily to increase oxygen in the fuel to make it burn cleaner. The industry received a major boost last month when federal environmental officials ruled that gasoline in California could not receive a waiver from "oxygenated" fuel requirements, effectively opening the market there to an estimated 650 million gallons of ethanol that will add \$1 billion in value to the nation's corn crop.

"The outlook for ethanol is positive, even bullish," said Ralph Groschen, agricultural marketing specialist for the Minnesota Department of Agriculture. But for all of its economic benefits, ethanol also has an environmental burden that is borne by individuals, such as Roessler, for whom the odor is a major annoyance. "Everything was fine and dandy until the ethanol plant came along," he said.

The plume from Pro-Corn blows his direction once or twice each week, Roessler said. Its strong, yeast smell is potent enough to make it difficult to breathe and causes his eyes to water, he said, and for others it produces headaches and nausea. "It's a condition I've had to learn to live with," he said.

Marc Sather, who has owned and operated the historic Jail House Inn in Preston for the past 10 years, views the odor as a threat to business in an area of burgeoning tourism. Sather's customers, who enjoy the bike trails, canoe routes and shopping in the Preston-Lanesboro area, have mentioned the "nasty odors" that occasionally invade the area, he said.

"I'm in favor of benefiting the farmer, but I don't think the [Pro-Corn] plant is a good neighbor," Sather said. "We have an investment here, too."

Sather and others raised several environmental issues in two public meetings in Preston this spring after Pro-Corn proposed an expansion of its production capacity from 22.5 million gallons a year to about 50 million gallons. Sather is concerned that a larger plant will produce more odors and other emissions, consume millions more gallons of ground water and perhaps increase water temperatures in nearby trout streams.

Pro-Corn general manager Richard Eichstadt said the cooperative, which employs 26 people and purchases \$13 million of corn each year within a 30-mile radius of the plant, is aware of the odor and other issues and will resolve them. He said that Pro-Corn will install scrubbers as part of the exhaust system to reduce odors and that it will nearly double the height of the smokestack to disperse the plant's plume farther from Preston.

The changes were included as conditions in an air-quality permit that the Minnesota Pollution Control Agency (MPCA) approved June 20 for the Pro-Corn expansion. "We know what we'll have to do to engineer to meet those requirements, and I feel comfortable and confident that we can do so," Eichstadt said.

A byproduct: Odor

Odor is a byproduct of turning corn into an energy product.

At Pro-Corn and other "dry-mill" ethanol plants, corn is ground and cooked so that its starches are converted into sugars and fermented to make ethanol.

State environmental officials said that methanol and ethanol emissions cause most of the odor. They can be released during distillation and fermentation, but most escape at the end of the process when the wet corn mash is dried for use as an animal feed.

The pure ethanol is shipped by truck to refineries or oil terminals where it is blended with gasoline, usually at a ratio of one part ethanol to nine parts gasoline. Complaints about odor and pollution are not limited to Pro-Corn, which was required to pay a \$3,500 penalty for air-quality problems last year, according to Rhonda Land, MPCA enforcement officer.

Some plants have had dozens of air-and water-pollution violations, MPCA records show. Plants have released pollutants into wetlands in violation of their permits or without obtaining the proper permit. Some repeatedly have violated air-pollution standards by releasing excessive amounts of volatile organic compounds, nitrogen oxide and other pollutants.

Not 'as bad as hogs'

David Kolsrud, chairman of the Minnesota Coalition for Ethanol, a trade association, said that some violations are the result of "growing pains in an industry in its infancy" in the state.

"Some of the odor and emissions problems are part of that, but we're getting our arms around it," Kolsrud said.

Ann Foss, enforcement supervisor at the MPCA, said that Minnesota ethanol plants are improving their compliance with environmental standards. "It was a new sector, not used to being regulated, and now they're starting to get the hang of things," she said.

Foss said the state regulates emissions of several compounds from ethanol plants, including dust and other small particles, nitrogen oxides and chemicals called volatile organic compounds, including ethanol and methanol, that can affect people with respiratory conditions.

Foss said the MPCA does not have a regulation concerning odor, so it is treated as a public nuisance, often by local ordinances.

Such a prospect is not likely in Preston, where the mayor and City Council members have expressed enthusiastic support for the ethanol plant.

Council Member Jerry Scheevel, a former corn grower and Pro-Corn shareholder, lives half a mile from the plant and says the odor is not objectionable to him.

"It doesn't smell as bad as hogs, believe me," Scheevel said. "I've been waiting for ethanol to be developed like this for 20 years."

However, odors are a significant problem. In St. Paul, the Gopher State Ethanol plant has triggered complaints about neighborhood odors since it opened in April 2000.

After rejecting one proposed solution -- an industrial scrubber, designed to dilute the stinky vapor with a series of water-filled trays -- plant officials installed a thermal oxidizer, which began working last week.

The oxidizer uses natural gas to burn away the smelly compounds created by drying corn. Tom Fabel, an attorney for the plant, said the new equipment appears to be working.

State pollution officials fined the company \$45,000 three months ago to settle noise and reporting violations.

Sharon Ness, a teacher in Benson, said that the odors from the nearby Chippewa Valley Ethanol Co. have been offensive to her since the plant opened in 1996.

"It made some of the kids sick, so we'd have to close up the windows to keep the smell from blowing into the classroom," she said.

Ness, now retired, said that she feared for her job after several of her fourth-grade students, with parental permission, wrote letters to the MPCA in 1997 to complain about the odors in their west-central Minnesota community. But other parents "let me know that they had invested a lot of money in it, and they cut me down," Ness said.

Ness said that she has no asthma or other breathing problems, but that the odor in Benson becomes overwhelming, especially during winter, when a cloud from the ethanol plant hangs over the town for hours or even days.

"It smells like very strong yeast, but it's so much more potent that I could almost barf when it's really strong," Ness said. "I get angry to think that I have to smell this when I live in rural America."

Bill Lee, the general manager of the Benson plant, doesn't deny that it produces odors and emissions. But he said it complies with pollution laws, though it was hit with an \$8,750 fine three years ago because of particulate releases.

"We have done a lot of work on our system," Lee said of the efforts to reduce odor. "Most people here feel like it is a minimal nuisance, but there probably are a few people who would disagree."

Lee said he is closely monitoring whether the oxidizer installed at the St. Paul ethanol plant curtails the odor.

"We are certainly interested in that technology," said Lee, whose plant is considering an expansion that would double its size.

Reducing odors

David Morris, vice president of the Institute for Local Self-Reliance, a nonprofit research group in Minneapolis, said thermal oxidizers and other technology that scrubs plant exhaust should reduce ethanol plant odors by 70 to 80 percent -- if the operators are willing to invest in the equipment.

Morris said that an ethanol plant essentially is a combination of a brewery and a corn-drying operation. It is less complicated and potentially less hazardous than other fuel-related plants, such as refineries. "If you compare ethanol to any other fuel production or raw materials processing, such as petroleum or pulp or steel, it wins hands down," he said.

If odors are a problem, said Morris, "now is a good time for citizens to say that they should be reduced," because "at this time in history, ethanol plants should be able to absorb those costs."

Twelve of Minnesota's 14 ethanol plants are farmer cooperatives -- an ownership structure that the state encouraged through loan programs. Morris said one benefit of the system is that the owners live nearby and should be responsive to concerns of the community.

Lee, of the Benson plant, said ethanol is environmentally benign despite the "community relations" issue of odor.

"We continue to turn corn grown in our area into the cleanest, lowest-pollution fuel in the country," he said. "We are a big part of why a lot of urban air has improved, particularly in the Midwest. ... It stings when somebody tells us we are polluters."

-- Staff writer Kevin Duchscherer contributed to this report.