

Small amounts of pesticides detected in groundwater 6 miles from AltEn site

By Chris Dunker, Lincoln Journal Star, Sept. 9, 2021

Trace amounts of pesticides commonly used in seed treatments have been discovered in two groundwater wells near AltEn, including a private well 6 miles downstream.

The biofuel plant south of Mead turned discarded, treated seeds into ethanol, producing wastewater and distiller's grains heavily laced with pesticides in the process.

The byproducts were released into streams and spread in fields across Saunders County before the Nebraska Department of Environment and Energy ordered the plant to shut down earlier this year.

On Sept. 1, environmental regulators notified Stan and Evelyn Keiser that their drinking water well contained three compounds, including insecticides like clothianidin (1.3 parts per billion) and thiamethoxam (less than 1 ppb) and the fungicide mefenoxam (less than 1 ppb).

Commonly used as seed treatments, [clothianidin and thiamethoxam have been found at levels as high as 427,000 ppb and 85,100 ppb](#), respectively, in byproducts that came from AltEn.

Few studies have examined the health effects of neonicotinoids in humans, but scientists have found evidence that the widely used pesticides may cause neurological damage and congenital defects.

The levels detected in the Keisers' well, dug 40 feet below ground, were well below the levels deemed unsafe by the Environmental Protection Agency, according to state regulators.

The drinking water benchmark established by the EPA for clothianidin is 630 ppb -- the Minnesota Department of Health places the level at 200 ppb -- while the level for thiamethoxam is 77 ppb. The EPA does not have a safety benchmark for mefenoxam.

The state also pulled samples from the Keisers' pond, which is [the collection point for a 6,000-acre watershed including the AltEn property](#) and was the site of a 2016 fish kill event. Those samples turned up nearly a dozen different fungicides and insecticides, all at low concentrations.

Among the compounds detected in the samples taken from the pond on Aug. 16 were those also found in the well: clothianidin, thiamethoxam and mefenoxam.

The state environment department also notified the University of Nebraska-Lincoln of an Aug. 6 test showing clothianidin at concentrations of less than 1 ppb in groundwater at its research farm directly south of the AltEn property.

The No. 9 well where the neonicotinoid was discovered at the Eastern Nebraska Research and Extension Center is used for drinking water, according to Ron Yoder, UNL's senior associate vice chancellor who oversees the research farm.

Other wells at the research site showed no detectable amounts of pesticides.

In an Aug. 20 email to Yoder, Tom Buell, administrator for the Department of Environment and Energy's Monitoring and Remediation Division, said further testing of the well was being done. Those results have not yet been made public.

Although the concentrations are minuscule -- equal to roughly one drop in a 14,000-gallon pool - - the results show how quickly the compounds can move through the environment, said Shannon Bartelt-Hunt, chair of UNL's Department of Civil and Environmental Engineering in the College of Engineering.

"These are compounds that are fairly mobile in water, they don't stick to soil as much as some other types of compounds, and the soils there are more transmissible," Bartelt-Hunt said, referring to the sandy soils in the Todd Valley, the ancient channel of the Platte River that cuts across Saunders County.

"It's a sign things from the surface are moving vertically," she added.

But whether vertical movement is happening on AltEn's property or is occurring where pesticide-contaminated stormwater is running away from the site toward the Platte River is unknown and in need of further study, Bartelt-Hunt said.

Samples taken from a monitoring well southeast of AltEn's damaged lagoon system -- what hydrologists call downgradient, or downstream, from millions of gallons of highly contaminated wastewater -- measured levels of thiamethoxam at 22.6 ppb in October 2020.

In March 2021 the same well showed increased concentrations of 37.6 ppb of thiamethoxam. But by June, the level of thiamethoxam in the monitoring well near the lagoon had dropped to 19.2 ppb, while the level of clothianidin was recorded at 34 ppb.

Thiamethoxam has been observed to break down into clothianidin in the environment.

Bartelt-Hunt, who is part of a collaborative between UNL, the University of Nebraska Medical Center and Creighton University researching the environmental and health impacts stemming from pesticide contamination at AltEn, said the groundwater results show further testing is needed.

Specifically, researchers need to begin examining where the pesticides from AltEn are leaching into the groundwater, whether it's from the ethanol plant itself, or from various points along the water's path to the Platte River.

“We need to collect more monitoring data to understand how these compounds are migrating offsite,” she said. “Unfortunately, we don’t have much information on groundwater within the region at this time.”

Rain events, such as the Aug. 31 thunderstorm that dropped 4 inches in the Mead area, have pushed pesticide-laden stormwater downstream from AltEn for years despite the state’s insistence AltEn take measures to prevent it.

Last week, heavy rains saturated a dirt berm built around a pile of highly contaminated wet distiller’s grains on the east side of AltEn’s property, quickly filling a drainage area that runs southeast from the facility.

An environmental contractor hired by a group of seed industry giants to help with cleanup at AltEn was unable to completely stop the flow of water away from the site, the Department of Environment and Energy said.

Clean Harbors was able to recover an estimated 1.75 million gallons of water, it said in a report to the state, which was pumped into an emergency lagoon on the property.

The state granted the companies -- six companies that formerly sent discarded treated seed to the plant now known collectively as the AltEn Facility Response Group -- an extension in submitting a plan for cleaning up the site.

The group was initially scheduled to submit its remedial action plan on Sept. 30, but was granted a four-week extension while it seeks to “stabilize” the facility for winter, according to an email from an environmental contractor to state regulators.

NewFields, an environmental engineering firm from Atlanta hired by the response group, said work is being performed to improve the treatment of wastewater, consolidate wet cake piles and repair the damaged lagoon system at AltEn.

Plans are also being drawn up to land-apply treated wastewater, a NewFields representative told the state, as well as drain the remaining 4-million gallon digester tank, and temporary storage tanks now at the facility.

Communications between the response group and the state do not indicate what actions, if any, may be taken to address locations away from AltEn’s property.

The remedial action plan being formed by the response group, which will go through a public comment period once submitted, is now due to the Department of Environment and Energy on Nov. 1.

Meanwhile, the Lincoln Water System said it is continuing to watch the situation unfold near the wellfields where it sources the Capital City's water.

A spokeswoman for the utility said more than 100,000 quality checks are performed annually on Lincoln's drinking water, including for 25 herbicides and pesticides, to ensure it is safe and meets regulatory requirements.

The list of pesticides screened by Lincoln Water System doesn't currently include neonicotinoids like those found in high concentrations at AltEn, but the utility said it is working with the U.S. Geological Survey on a method to test for those compounds upgradient from its wellfields.