

Ohio EPA, health officials dismiss radioactive threat from fracking

Other states studying health risks in waste

Spencer Hunt, Columbus Dispatch, 1-27-14

When Pennsylvania environmental officials tested creek mud near a fracking wastewater-treatment plant last year, they found radiation at levels 45 times higher than federal drinking-water standards.

As the plant owner prepares to dredge radium from Blacklick Creek, Pennsylvania officials are examining other radiation problems related to Marcellus shale fracking. They're testing tons of castoff rock and drilling sludge sent to Pennsylvania landfills and liquid waste routinely trucked to Ohio disposal wells.

"We're going all throughout the state," said Lisa Kasianowitz, a Department of Environmental Protection spokeswoman.

In West Virginia, radiation concerns have regulators asking landfills to separate shale drilling waste from garbage over worries about the health dangers associated with fracking.

Ohio is experiencing a similar drilling boom in which drillers are pulling up radioactive waste from wells. Although it's unknown how much radiation there is, there are some standards already in place. That's why state officials say they have no plans for similar surveys or precautions.

"We're not looking at that right now," said Michael Snee, the Ohio Department of Health's radiation-protection division chief. Snee said Ohio addressed radiation in a law that took effect on Sept. 29 and redefines how shale waste should be handled and tested before it is sent to landfills. But environmental advocates say the law ignores radiation hazards in liquid waste and makes it easier to dump some waste into landfills without testing.

"We have a health risk to be considered. In Ohio, we're just ignoring it," said Julie Weatherington-Rice, a senior scientist with Bennett & Williams Environmental Consultants in Columbus and a critic of Ohio's shale-waste laws and regulations.

"With each law, we're getting weaker, not stronger."

Erik Klemetti, a Denison University geology professor, said that naturally occurring radon is a bigger concern than radiation from drilling materials. Radon is a colorless, odorless gas that can seep into buildings from underground and is known to cause cancer.

"I sympathize with the idea that we need to be very careful with this sort of material," Klemetti said about radiation from shale drilling. "It's likely not adding any additional radioactive hazard to the surface, compared to the rocks around here that we have to begin with."

When shale drilling and fracking began in Ohio in late 2010, concerns about water and air pollution, landowner rights, even earthquakes took center stage. A public debate about the effectiveness of Ohio's property, pollution and health safeguards continues unresolved.

Radiation is now increasingly listed among environmental advocates' top concerns.

The fracking process pumps millions of gallons of water, sand and chemicals below ground to fracture shale and free oil and gas. Much of that water bubbles back out of the wells with the gas and oil.

In addition to fracking chemicals, the water is tainted with high concentrations of salt, toxic metals and radium, which is naturally found in shale.

A 2011 U.S. Geological Survey study of Pennsylvania's Marcellus shale wastewater included one sample that contained levels of radium 3,609 times higher than the federal safety limit for drinking water. The study found that the median concentration was more than three times higher than levels recorded in waste from conventional oil and gas wells.

A higher median concentration doesn't mean that wastewater from a well is always hazardous, but the finding shows that naturally occurring radium is more common in Marcellus shale.

Although the Marcellus extends into Ohio, it is deemed too thin in most areas to produce natural gas. To date, 19 Marcellus wells have been drilled.

Radium also is found in drill cuttings, soil and bits of shale and rock. And it can seep into "drilling muds" — lubricants that are pumped below ground during drilling to push cuttings up and out of the well shaft.

Radium levels can increase in fracking sands, drilling muds and spent fracking fluids that are recycled for future use. State officials and environmental advocates agree that the process can enhance the radioactivity.

The concern is that radium can grow so concentrated that it exceeds safety limits.

Environmental advocates fear that there can be enough radium in cuttings and fracking fluids to violate limits without being enhanced.

Ohio environmental officials do not track how many tons of drill cuttings and spent mud are produced at fracking sites. But the annual number typically reaches into the millions. In Pennsylvania, where the state does keep track, more than 9.3 million tons of cuttings and sludge were dumped at 24 landfills in 2013. The waste had acceptable, low levels of radioactivity, Kasianowitz said.

The Ohio Department of Natural Resources does keep track of liquid fracking waste. That's because it charges a fee for every barrel taken to Ohio's 189 active disposal wells.

The wells injected 14.16 million barrels of oil and gas-well waste below ground in 2012 — enough fluid to fill 900 Olympic-size swimming pools.

Nearly 58 percent of that waste — 8.16 million barrels — was trucked into Ohio from Marcellus shale wells in other states, including Pennsylvania.

Pennsylvania banned dumping treated waste in streams and rivers and has seven active disposal wells.

Ohio is not concerned about radiation in waste that goes down a well, Snee said. "The material is being put thousands of feet down. It's not coming back up where it will be in contact with anybody."

That doesn't reassure Teresa Mills, fracking coordinator with the Buckeye Forest Council, who said radioactive waste could leak from tanker trucks and from storage lagoons to contaminate groundwater and streams.

Ohio Natural Resources inspectors found shale-well waste leaking under a liner into the soil from May through June at seven Gulfport Energy drilling sites in Belmont and Harrison counties. On Sept. 9, the company agreed to pay a \$250,000 fine and to clean up the polluted soil.

The 2013 Ohio law does require radiation tests for some types of shale-well waste in which radiation can be enhanced by drilling or recycling.

Any material that contains at least 5 picocuries of radiation per gram above normal background radiation cannot be disposed of in a landfill unless state officials approve a plan to mix it with other waste to dilute the radioactivity.

Without mixing, the alternative is a more expensive trip to dump the waste in a landfill that can handle radioactive materials.

Oil and gas companies are supposed to test materials for enhanced levels of radiation.

The law gives Natural Resources more authority to regulate the tests and requires companies to keep the test results so state officials can inspect them.

The law doesn't require testing waste injected in disposal wells, and it doesn't cover drill cuttings, which are defined as "naturally occurring radioactive materials."

"All it is, it's dirt and rock that's coming up," Snee said.

Environmental advocates disagree. Weatherington-Rice said the cuttings, even if they are not considered enhanced, could contain radium that exceeds safety limits.

"We're mixing it into landfills," she said. "You do not have to keep track of it. You don't have to report it. You don't have to say where you are sending it."

Pennsylvania tests drill cuttings that trigger radiation monitors in landfills, Kasianowitz said.

Ralph Haefner has tried for months to study radiation and other pollutants in the wastewater from Utica shale wells.

The supervisory geologist with the U.S. Geological Survey in Columbus said he has yet to find an energy company willing to share well samples.

"I know the oil and gas companies are doing a lot of damage control against the negative perceptions of shale development," Haefner said. "In a lot of ways, we would be another thorn in their side, no matter what we find."

Mark Bruce, a spokesman for the Natural Resources department, said the agency has yet to collect information on enhanced radiation in drilling muds, sludge and fracking sands sent to landfills. Laboratory radiation tests typically take two to three weeks to return results.

As more tests are done, the results should help provide the state with its best view of how much radioactivity is in Utica shale waste, Snee said.

Industry officials say radiation isn't a problem.

"We are talking about naturally occurring radioactive materials," said Tom Stewart, vice president of the Ohio Oil and Gas Association. "It's the very same thing that you encounter on your granite desktop, or when you eat a banana."

Then-Ohio EPA Director Scott Nally said much the same in a November interview.

"There's radon in granite countertops," said Nally, who resigned from the Ohio EPA on Jan. 7.

Many West Virginia landfills are limited to 10,000 tons of waste each month, said Scott Mandirola, water- and waste-management director for the state's Department of Environmental Protection.

Nothing keeps the landfills from mixing shale-well waste with regular garbage in West Virginia.

But Marcellus drilling waste doesn't count toward a monthly 10,000-ton limit if landfills dump it in areas separate from other waste. The areas contain two plastic liners, a system to collect liquid waste and leak-detection wells. "It's very attractive for landfills," Mandirola said. "They can make a lot more money" by taking more waste. So far, one landfill has added a separate area for drilling waste, and three others are building them.

"We've had (the one active site) tested, and in virtually all cases we haven't found a concern with elevated radioactivity," Mandirola said. "There is a certain degree of uncertainty with this."

That uncertainty has Pennsylvania officials moving ahead with their study of Marcellus shale radiation.

The study, which began in January 2013, is looking for radiation in liquid waste, stream sediments and solid waste filtered by wastewater-treatment and recycling plants.

That includes Blacklick Creek in Indiana County, where officials found radium contamination from Aquatech Inc.'s Josephine Treatment Plant.

Aquatech, which is paid by drilling companies to recycle water and filter pollutants from oil and gas well waste, agreed to stop taking fracking waste and will dredge a 500-foot section of the creek this summer.

"That would essentially include picking up that part of the sediment and taking it off-site and disposing (of) it in a suitable landfill," said Devesh Mittal, the company's vice president.

Pennsylvania officials also are surveying drill cuttings and other solid wastes that tripped radiation detectors in landfills. The monitors were triggered by 773 separate loads of drilling sludge in 2012. Drill cuttings triggered 224 monitors. Each case required tests to determine whether radiation levels exceeded the state's safe-disposal standards, Kasianowitz said.

Although Pennsylvania officials know that 9.3 million tons of solid wastes containing enhanced radiation were safely disposed of, they could not say how much was rejected and sent to landfills that handle hazardous waste or low-level radioactive wastes. They are now examining landfill disposal reports to determine that.

Jack Shaner, a lobbyist for the Ohio Environmental Council, said he hopes the Ohio legislature will strengthen radiation and shale-waste standards, using a bill that's intended to update the state's 24-year-old landfill laws.

Nally wasn't sure that would happen.

"I know we have teams that have carved that out as a discussion," he said. "I don't know how that's going to play out."