

Pa. allows dumping of tainted waters from gas boom

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In this Dec. 15, 2010 photo, the Neshaminy Creek is shown after sunset in Chalfont Pa. The natural gas boom gripping parts of the U.S. has a nasty byproduct: wastewater so salty, and so polluted with metals like barium and strontium, most states require drillers to get rid of the stuff by injecting it down shafts thousands of feet deep. Not in Pennsylvania, one of the states at the center of the gas rush. There, the liquid that gushes from gas wells is only partially treated for substances that could be environmentally harmful, then dumped into rivers and streams from which communities get their drinking water. (AP Photo/Matt Rourke)

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In the two years since the frenzy of activity began in the vast underground rock formation known as the Marcellus Shale, Pennsylvania has been the only state allowing waterways to serve as the primary disposal place for the huge amounts of wastewater produced by a drilling technique called [hydraulic fracturing](#), or fracking.

State regulators, initially caught flat-footed, tightened the rules this year for any new water treatment plants but allowed any existing operations to continue discharging water into rivers.

At least 3.6 million barrels of the waste were sent to treatment plants that empty into rivers during the 12 months ending June 30, according to state records. That is enough to cover a square mile with more than 8 1/2 inches of brine.

Researchers are still trying to figure out whether Pennsylvania's river discharges, at their current levels, are dangerous to humans or wildlife. Several studies are under way, some under the auspices of the [Environmental Protection Agency](#).

State officials, energy companies and the operators of treatment plants insist that with the right safeguards in place, the practice poses little or no risk to the environment or to the hundreds of thousands of people who rely on those rivers for drinking water.

But an Associated Press review found that Pennsylvania's efforts to minimize, control and track wastewater discharges from the Marcellus Shale have sometimes failed.

For example:

- Of the roughly 6 million barrels of well liquids produced in a 12-month period examined by The AP, the state couldn't account for the disposal method for 1.28 million barrels, about a fifth of the total, because of a weakness in its reporting system and incomplete filings by some energy companies.
- Some public water utilities that sit downstream from big gas wastewater treatment plants have struggled to stay under the federal maximum for contaminants known as trihalomethanes, which can cause cancer if swallowed over a long period.
- Regulations that should have kept drilling wastewater out of the important Delaware River Basin, the water supply for 15 million people in four states, were circumvented for many months.

In 2009 and part of 2010, energy company Cabot Oil & Gas trucked more than 44,000 barrels of well wastewater to a treatment facility in Hatfield Township, a Philadelphia suburb. Those liquids ultimately were discharged into a creek that provides drinking water to 17 municipalities with more than 300,000 residents. Cabot acknowledged it should not have happened.

People in those communities had been told repeatedly that the watershed was free of gas waste.

"This is an outrage," said Tracy Carluccio, deputy director of the Delaware Riverkeeper Network, an environmental group. "This is indicative of the lack of adequate oversight."

The situation in Pennsylvania is being watched carefully by regulators in other states, some of which have begun allowing some river discharges.

New York also sits over the Marcellus Shale, but Gov. David Paterson has slapped a moratorium on high-volume fracking while environmental regulations are drafted.

Industry representatives insist that the wastewater from fracking has not caused serious harm anywhere in Pennsylvania, in part because it is safely diluted in the state's big rivers. But most of the largest drillers say they are taking action and abolishing river discharges anyway.

Cabot, which produced nearly 370,000 barrels of waste in the period examined by the AP, said that since the spring it has been reusing 100 percent of its well water in new drilling operations, rather than trucking it to treatment plants.

"Cabot wants to ensure that everything we are doing is environmentally sound," said spokesman George Stark. "It makes environmental sense and economic sense to do it."

All 10 of the biggest drillers in the state say they have either eliminated river discharges in the past few months, or reduced them to a small fraction of what they were a year ago. Together, those companies accounted for 80 percent of the wastewater produced in the state.

The biggest driller, Atlas Resources, which produced nearly 2.3 million barrels of wastewater in the review period, said it is now recycling all water produced by wells in their first 30 days of operation, when the flowback is heaviest. The rest is still sent to treatment plants, but "our ultimate goal is to have zero surface discharge of any of the water," said spokesman Jeff Kupfer.

How much wastewater is still being discharged into rivers is unclear. Records verifying industry claims of a major drop-off will not be available until midwinter.

Natural gas drilling has taken off in several states in recent years because of fracking and horizontal drilling, techniques that allow the unlocking of more methane than ever before.

Fracking involves injecting millions of gallons of water mixed with chemicals and sand deep into the rock, shattering the shale and releasing the gas trapped inside. When the gas comes to the surface, some of the water comes back, too, along with underground brine that exists naturally.

It can be several times saltier than sea water and tainted with fracking chemicals, some of which can be carcinogenic if swallowed at high enough levels over time.

The water is also often laden with barium, which is found in underground ore deposits and can cause high blood pressure, and radium, a naturally occurring radioactive substance.

In other places where fracking has ignited a gas bonanza, like the Barnett Shale field in Texas, the Haynesville Shale in Louisiana, and deposits in West Virginia, New Mexico and Oklahoma, the dominant disposal method for drilling wastewater is to send it back down into the ground via injection wells.

In some arid states, wastewater is also treated in evaporation pits. Water is essentially baked off by the sun, leaving a salty sludge that is disposed of in wells or landfills.

Operators of the treatment plants handling the bulk of the Pennsylvania waste say they can remove most of the toxic substances without much trouble, including radium and [barium](#), before putting the water back into rivers.

"In some respects, its better than what's already in the river," said Al Lander, president of Tunnelton Liquids, a treatment plant that discharges water into western Pennsylvania's Conemaugh River.

The one thing that can't be removed easily, except at great expense, he said, is the dissolved solids and chlorides that make the fluids so salty.

Those substances usually don't pose a risk to humans in low levels, said Paul Ziemkiewicz, director of the West Virginia Water Research Institute at West Virginia, but large amounts can give drinking water a foul taste, leave a film on dishes and give people diarrhea. Those problems have been reported from time to time in some places.

Those salts can also trigger other problems.

The municipal authority that provides drinking water to Beaver Falls, 27 miles northwest of Pittsburgh, began flunking tests for trihalomethanes regularly last year, around the time that a facility 18 miles upstream, Advanced Waste Services, became Pennsylvania's dominant gas wastewater treatment plant.

Trihalomethanes are not found in drilling wastewater, but there can be a link. The wastewater often contains bromide, which reacts with the chlorine used to purify drinking water. That creates trihalomethanes.

The EPA says people who drink [water](#) with elevated levels of trihalomethanes for many years have an increased risk of cancer and could also develop liver, kidney or central nervous system problems.

Pennsylvania's multitude of acid-leaching, abandoned coal mines and other industrial sources are also a major source of the high salt levels that lead to the problem.

Beaver Falls plant manager Jim Riggio said he doesn't know what is keeping his system off-kilter, but a chemical analysis suggested it was linked to the hundreds of thousands of barrels of partially treated gas well brine that now flow past his intakes every year.

"It all goes back to frackwater," he said.

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