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## With Natural Gas Drilling Boom, Pennsylvania Faces Flood of Wastewater

A spate of water contamination problems in Pennsylvania have been linked to new natural gas drilling in the state

By Joaquin Sapien and ProPublica | October 5, 2009 | 20

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Workers at a steel mill and a power plant were the first to notice something strange about the Monongahela River last summer. The [water](#) that [U.S. Steel](#) and [Allegheny Energy](#) used to power their [plants](#) contained so much salty sediment that it was corroding their machinery. Nearby residents saw something odd, too. Dishwashers were malfunctioning, and plates were coming out with spots that couldn't easily be rinsed off.



**WASTEWATER ONSLAUGHT:** The McKeesport Sewage Treatment Plant, one of nine plants on the Monongahela River that has treated wastewater from Marcellus Shale drilling operations.  
Image: CREDIT: PROPUBLICA/JOAQUIN SAPIEN

Pennsylvania's [Department of Environmental Protection](#) soon identified the likely cause and came up with a quick fix. The Monongahela, a drinking water source for 350,000 people, had apparently been contaminated by chemically tainted wastewater from the state's growing natural gas industry. So the DEP reduced the amount of drilling wastewater that was being discharged into the river and unlocked dams upstream to dilute the contamination.

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But questions raised by the incident on the [Monongahela](#) haven't gone away.

In August, contamination levels in the river spiked again, and the DEP still doesn't know exactly why. And this month the DEP began investigating whether drilling wastewater contributed to the death of 10,000 fish on a 33-mile stretch of Dunkard Creek, which winds through West Virginia and feeds into the Monongahela. A spate of other [water contamination](#) problems have also been linked to gas drilling in Pennsylvania, including methane leaks that have affected drinking water in at least seven counties.

### 2011: 19 million gallons, per day

Pennsylvania is at the forefront of the nation's gas drilling boom, with at least 4,000 new oil and gas wells drilled here last year alone, more than in any other state except Texas. This rapid expansion has forced state regulators to confront a problem that has been overlooked as [gas drilling](#) accelerates nationwide: How will the industry dispose of the enormous amount of wastewater it produces?

Oil and gas wells disgorge about 9 million gallons of wastewater a day in Pennsylvania, according to industry estimates used by the DEP. By 2011 that figure is expected to rise to at least 19 million gallons, enough to fill almost 29 Olympic-sized swimming pools every day. That's more than all the state's waterways, combined, can safely absorb, DEP officials say.

"I don't know that even our [water] program people had any idea about the volumes of water that would be used," said Dana Aunkst, who heads the DEP's water program.

Much of the wastewater is the byproduct of a drilling process called [hydraulic fracturing](#), or fracking, which pumps at least a million gallons of water per well deep into the earth to break layers of rock and release gas. When the water is sucked back out, it contains natural toxins dredged up during drilling, including cadmium and [benzene](#), which both carry [cancer](#) risks. It can also contain small amounts of chemicals added to enhance drilling.

But DEP officials say one of the most worrisome contaminants in the wastewater is a gritty substance called Total Dissolved Solids, or TDS, a mixture of salt and other minerals that lie deep underground. Drilling wastewater contains so much TDS that it can be five times as salty as sea water.

Large quantities of TDS can clog machinery and affect the color, taste and odor of drinking water – precisely the problems reported along the Monongahela. While TDS isn't considered particularly harmful to people, it can damage freshwater streams, which is what happened when TDS levels spiked in Dunkard Creek this month. [West Virginia's DEP](#) is investigating whether TDS-laden wastewater from a coal mine near the creek could be to blame. It is also investigating reports that wastewater from [natural gas](#) wells may have been illegally dumped into the stream.

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1. Michael Sebetich

09:06 PM 10/5/09

This is another example of money trumping clean water. We know that the water source for mining the Marcellus Shale natural gas will have to be clean surface or well water, and that the consumption of the source water will deplete the streams and wells. At the same time we know that the polluted water recovered from the drilling will have to be disposed of in clean streams and possibly ground water. Clearly, the result will be the destruction of stream ecosystems and possibly pollution of clean ground water. One needs no college degree to reach this conclusion. A similar scenario occurred in Pennsylvania with the coal industry which polluted more stream miles than any other state, and we are still paying the ecological price. Now, here we go all over again, and this time it could be worse. This type of natural gas mining will always result in destroyed ecosystems, and we will be paying the ecological cost ourselves, and will leave this sorry legacy to our children and their children. They will ask what we were thinking. And we will say it's all about money. How dumb can we be?

Michael J. Sebetich

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2. JamesDavis

08:07 AM 10/6/09

Talk about the blind and stupid leading the blind and stupid. Again greed triumphs and human life is sacrificed on the front line. If the people of these communities do not rise up and get this disaster under control, these drilling companys are going to destroy you...community by community. You are acting like sheep being led to the slaughter by these stupid ignorant

SOBs'. Do something to stop this mass chemical genocide before it is too late. Don't let greed plant you and your children in these empty gas and coal graves. Your life is worth a lot more than the couple of dollars these thoughtless people are stuffing in the politicians' pockets.

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3. [galaxy\\_man](#)

10:28 AM 10/6/09

What a familiar cycle. Greedy business causes giant environmental / health risk, agencies notice and wag their fingers, greedy business comforts everyone with long term plans to fix the problem, everyone calms down, and it's business as usual. Except NOTHING EVER CHANGES.

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4. [Soccerdad](#)

02:30 PM 10/6/09

James,

Kind of extreme rhetoric on an issue for which the most damaging effects on humans appear to be spotty dishes. This isn't some big environmental disaster. TDS is salt. And for salt, dilution is a good solution.

You probably get more salt in streams in that area from ice control in the winter.

Relax a little. Enjoy life, spotty dishes and all.

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5. [JamesDavis](#)

in reply to

[Soccerdad](#)

03:16 PM 10/6/09

Well, Soccerdad, people shouldn't curl up in a corner and whimper like a whipped pup and let these people poison their drinking water and food. There were more, and deadlier, chemicals listed than just TDS. If you drink enough of the TDS in the ocean, you will get brain damage and later die. I think that is serious enough for people to want to stop it being dumped into their water in such large quantities. These gas, oil, and coal companies shouldn't be dumping anything into the water and food supplies. As much as these companies care about our environment, a human would think that they are from another planet; come here to rape, pilfer and exterminate us.

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6. [Soccerdad](#)

04:33 PM 10/6/09

Yea right JD, like people are dying off by the scores because of this issue.

People want natural gas, and apparently it takes some water to produce it. I agree there needs to be limits on discharge, but your hyperbole seems a bit extreme here.

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7. [Coal](#)

01:13 PM 10/7/09

Y'all are right! We need to stop natural gas drilling NOW!  
Keep the status-quo!

(brought to you by the Coal Miners for Mountain Top Removal).

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8. [sparcboy](#)

10:42 AM 10/8/09

The problem: Oil & gas companies are in business to make a profit. Solution: Pennsylvania needs to modify it's environmental regulations to reduce or prevent the discharge of the contaminated water, which will include large fines for non-compliance. Then, the problem becomes the solution. In order to make a profit, the companies will have to avoid the fines. Environmental companies will then arrive and start competing with solutions to the contaminated water.

This is exactly what has occurred in many similar scenarios. It's all about money, so use that to get what you need. The environmental companies will need workers, i.e. more jobs and therefore more tax revenue. More tax revenue. Politicians love that so they will get right on it.

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9. [CellBioProf](#)

11:55 AM 10/20/09

For those who think that this is simply a matter of spots on dishes, I suggest you read the letter to the editor I submitted to our local newspaper:

The identity of many of the chemicals used in gas extraction from Marcellus shale have not been disclosed by the drilling companies. Of those that have been reported, The Endocrine Disruption Exchange ([www.endocrinedisruption.org](http://www.endocrinedisruption.org)) states that 73% are known to be damaging to human health. Of the damaging chemicals, 95% affect the respiratory system - and remember that Washington County and Allegheny County (PA) already are among the 35 counties in the entire United States with the lowest (worst) air quality.

Furthermore, 44% of the potentially harmful chemicals are endocrine disruptors that effect development and reproduction. Think bis-phenol A and hard plastic water bottles; think lowered sperm counts in males (hence increased difficulty in conceiving children) and increasingly early puberty in boys and girls; think about the mounting evidence for a connection between endocrine disruptors and autism.

Other of these chemicals affect the brain and nervous system, the heart, the liver, and the immune system. Approximately 30% are known to contribute to the development of cancer. Most of the effects are long-term and the extent of damage to human health wont be apparent for years or even decades after gas drilling has stopped.

The gas company will clean all of the chemicals out of the water they use? They regularly dump enormous amounts of dissolved salt and other dissolved solids into the Monongahela

River as brine water from fracturing operations. That's not counting the leaks and spills such as the one that wiped out fish and other wildlife in Cross Creek Park in May.

Not near the drilling operation? Don't breathe a sigh of relief. 45% of the chemicals known to harm humans are volatile. They'll get into the air and blow over everyone's property, well or no well.

And that \$40/month which is a realistic estimate for the payment you'll get for the gas they extract from under your property? Better think about saving it for future medical bills.

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10. [Shoshin](#)

04:06 PM 10/21/09

I find it all quite ironic; for all the talk by the sound-byte seeking senators and President Obama clucking about the Canadian Oil Sands being "dirty oil", Canadian environmental protection laws are so stringent that any oil executives in Canada attempting this type of stunt would be thrown in jail.

I guess Greenpeace knows that they can raise more money chaining themselves to a conveyor belt in the pristine Canadian wilderness than to someone's plugged up dishwasher in Allentown.

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