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Natural Gas Drilling Produces Radioactive Wastewater

Wastewater from natural gas drilling in New York State is radioactive, as high as 267 times the limit safe for discharge into the environment and thousands of times the limit safe for people to drink

By [Abrahm Lustgarten](#) and [ProPublica](#) | November 9, 2009 | 12

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As New York gears up for a massive expansion of gas drilling in the Marcellus Shale, state officials have made a potentially [troubling](#) discovery about the wastewater created by the process: It's radioactive. And they have yet to say how they'll deal with it.



WASTEWATER FOUNTAIN: Natural gas drilling in New York State could introduce unsafe levels of radiation into the drinking water. Image: [FLICKR/JOSHME17](#)

The information comes from [New York State's Department of Environmental Conservation](#), which analyzed 13 samples of wastewater brought thousands of feet to the surface from drilling and found that they contain levels of radium 226, a derivative of uranium, as high as 267 times the limit safe for discharge into the environment and thousands of times the limit safe for people to drink.

The findings, if backed up with more tests, have several implications: The energy industry would likely face stiffer regulations and expenses, and have more trouble finding treatment [plants](#) to accept its waste—if any would at all. Companies would need to license their waste handlers and test their workers for radioactive exposure, and possibly ship waste across the country. And the state would have to sort out how its laws for radioactive [waste](#) might apply to drilling and how the waste could impact

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[water](#) supplies and the environment.

What is less clear is how the wastewater may affect the health of New Yorkers, since the [danger](#) depends on how much radiation people are exposed to and how they are exposed to it. [Radium](#) is known to cause bone, liver and breast cancers, and the [EPA](#) publishes exposure guidelines for it, but there is still disagreement over exactly how dangerous low-level doses can be to workers who handle it, or to the public.

The DEC has yet to address any of these questions. But [New York's Health Department](#) raised concerns about the amount of radioactive materials in the wastewater in a confidential letter to the DEC's oil and gas regulators in July.

"Handling and disposal of this wastewater could be a public health concern," DOH officials said in the letter, which was obtained by ProPublica. "The issues raised are not trivial, but are also not insurmountable."

The letter warned that the state may have difficulty disposing of the drilling waste, that thorough testing will be needed at water treatment plants, and that workers may need to be monitored for radiation as much as they might be at nuclear facilities.

Health Department [officials](#) declined to comment on the letter. The DEC sent an e-mail response to questions about the radioactivity stating that "concentrations are generally not a problem for water discharges, or in solid waste streams" in New York State. But the agency did not directly address the radioactivity levels, which were disclosed in the appendices of the agency's environmental review of gas drilling in the Marcellus Shale, released September 30.



The review did not calculate how much radioactivity people may be exposed to, even though such calculations are routinely completed by scientists studying radiation exposure. Yet the review concluded that radiation levels were "very low" and that the [wastewater](#) "does not present a risk to workers." DEC officials declined to explain how they reached this conclusion.

Although the review pointed to a possible need for radioactive licensing and disposal for certain materials, and it looked at other states with laws aimed at radioactive waste from drilling, the DEC said there is no precedent for examining how these radioactive materials might affect the environment when brought to the surface at the volumes and scale expected in New York. And it said that more study is needed before the DEC can lay out precise plans to deal with the [waste](#).

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The production zones for oil and gas in Kentucky also have radioactivity, which has resulted in surface contamination across the state. Although considered naturally occurring radioactive material ("NORM"), bringing that to the surface is a problem not widely publicized.

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This is an ancient and well known issue. Natural radioactive materials are common. How could this be a surprise or unexpected?

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3. [bryant hudson](#)

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The radiation dose is totally trivial compared to what your doctor would prescribe without blinking an eye. Of course the radiation from modern medicine is not okay either.

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4. [JamesDavis](#)

07:34 AM 11/10/09

Why don't New York just ask West Virginia how they dispose of their nuclear waste from gas drilling. West Virginia has enough nuclear waste to supply every nuclear power plant in the world...of course, West Virginia keeps that a secret or every state in the union would be flocking to them for nuclear fuel for their reactors.

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Please get very vocal with your news.....nag the media to get you on tv news every day with your news.... Otherwise the majority of Americans do not hear you...! Thank you.

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6. [jerryd](#)

02:15 PM 11/10/09

NG wells don't produce that long. Just pump it down an old

well back where it came from. If these wells hold NG, they will hold about anything.

If you are worried about these radiation sources, you better stop burning coal as they put out far more either in the air, scrubber of waste pile.

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04:23 PM 11/10/09

actually just because it came up from underground doesnt mean it goes back down safely. depends if the wells are constructed correctly, the injection is done under safe pressures so that it doesnt fracture rocks, etc. this practice has led to widespread groundwater contamination across the country. look at the Safe Drinking Water Act, Underground Injection Control program sometime. we just don't hear much about this because it's "out of sight out of mind"!

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8. [hankroberts](#)
09:34 PM 11/10/09

Good heavens, people, this isn't `_news_`. Nor is it trivial, despite the people who try to dismiss it. You can look it up.
<http://www.google.com/search?q=drilling+pipe+cleaning+radiation+hazard+oil+gas>

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9. [ellenzharrison](#)
08:25 AM 11/26/09

In addition to radioactivity in the water, the cuttings removed from the Marcellus as they drill will also be radioactive. Where will they be disposed?

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10. [davidos](#)
09:43 AM 12/16/09

according to the data used in the URS Corporations report to NYSERDA dated Sept. 16, 2009 - Water - Related Issues Associated With Gas Production In The Marcellus Shale, the Marcellus shale flowback water is radioactive on 24 occasions out of 100. This means that the probability is 24 percent which is a large number. The median and maximum alpha and beta radiation of the effluent that will be discharged untreated with regard to radiactivity are 1,414.5, 18,950 and 1,395 , 7,445 respectively which by more than 3 orders of magnitute exceeds the standards. There are technologies available to remove the radioactive metals, but all these facts are being ignored

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