

# Radiation in fracking fluid is a new concern

**Don Hohey and Daniel Malloy, Pittsburgh Post-Gazette, 3-1-11**

Wastewater from Marcellus Shale drilling may contain unhealthy concentrations of radioactivity, and federal officials, researchers, the industry and the former head of Pennsylvania's Department of Environmental Protection have called for testing of drinking water sources and full disclosure of results.

The New York Times reported in a story Saturday that 116 of 179 Marcellus wells in Pennsylvania had high levels of radiation in wastewater samples and that wastewater discharges into rivers and streams were untested for radiation even though government agencies and the industry knew of the risks. The radiation is picked up by water used to hydraulically fracture the deep, 380 million-year-old shale layer and release the natural gas it holds.

In response to the Times article, Rep. Ed Markey, D-Mass., wrote a letter Saturday to U.S. Environmental Protection Agency Administrator Lisa P. Jackson asking for responses to various issues regarding toxic wastewater from fracking.

"I do not believe that the price for energy extracted from deep beneath the earth's surface should include a risk to the health of those who live above it," Mr. Markey wrote. "I am outraged that state and federal regulators were evidently well aware of the risks that the wastewater might pose, but instead chose to adopt a 'see no evil, hear no evil approach' to regulation by ignoring them."

Mr. Markey asked Ms. Jackson to provide any new steps the agency is taking to test sources of drinking water downstream from treatment plants that take in drilling waste and, if no regulatory changes are planned, to justify that decision in light of the Times report.

According to a June 2010 article in the online journal Environmental Science & Technology, by David Kargbo, Ron Wilhelm and David Campbell, all of the EPA's Region III office in Philadelphia, the Marcellus Shale is considered to contain "elevated levels" of naturally occurring radioactive materials.

They cite a recent study of 13 Marcellus fracking wastewater samples by the New York Department of Conservation that found levels of radium-226 as high as 267 times the safe disposal limit and thousands of times higher than the safe drinking water limit. Another study by the New York Department of Health found elevated radium-226 levels in samples of drilling "brine," a salty drilling wastewater.

John Hanger, former secretary of the Pennsylvania Department of Environmental Protection, denied charges in the Times article that the state's gas drilling regulations are "lax," citing regulatory changes that tightened water withdrawal and disposal rules, stream protections and drilling standards.

But he said it raises "serious concerns" about radioactivity and public health.

During his more than two years as DEP secretary, Mr. Hanger said he reviewed the radioactivity issue with David J. Allard, DEP deputy secretary for the Bureau of Air, Recycling and Radiation Protection, and they determined it was not a threat to drilling workers or the public.

"Personally I believe there isn't a [radiation] problem," Mr. Hanger said. "But test the water."

A November 2010 study of fracking's effect on radioactive material in the Marcellus Shale by Tracy Bank, a geologist at the State University of New York in Buffalo, found that the process that released the gas also releases uranium trapped in the shale. She said additional study is needed to understand and predict the reaction in the shale to fracking.

"We found that some of the metals in the shale can react to the fracking fluids and become mobile, including uranium, chromium and zinc, which can come back to the surface with the fluids," Ms. Bank said. "It's totally treatable and all the chemically contaminated waste water needs to be treated. It definitely can't be disposed of in streams without treatment. That might result in a fish kill."

Kathryn Klaber, president and executive director of the Marcellus Shale Coalition, a lobbying and advocacy organization that includes most of the drilling companies operating in the Marcellus Shale, said after drilling companies pre-treat wastewater to settle out drill cuttings and other solids, which are sent to approved landfills, radiation levels of water sent to sewage treatment plants for discharge are much lower.

Public drinking water intakes do not often test for radiation levels, but the Pittsburgh Water and Sewer Authority will do so this year because of issues raised by the Times article, said Stanley States, authority water quality manager.

The DEP said it has added 78 well inspectors in the past 18 months to review operations at the 2,815 Marcellus wells drilled to date.