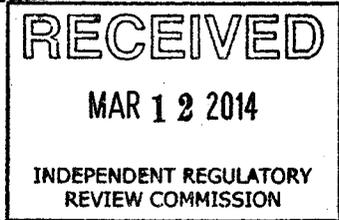


**Westmoreland Marcellus Citizens' Group Comments to
Proposed Environmental and Protection Performance Standards
At Oil and Gas Well Sites
Jan Milburn**

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**RE: Proposed Environmental Protection Performance Standards
at Oil and Gas Well Sites (25 Pa Code, Chapter 78)**

Westmoreland Marcellus Citizens' Group, Westmoreland County, submits the following comments to the Environmental Quality Board's proposed regulations, published in the *Pennsylvania Bulletin* on Saturday, December 14, 2013 (43 Pa.B. 7377). Westmoreland Marcellus Citizens' Group is a nonprofit organization that works to raise the public's general awareness and understanding of the impacts of Marcellus drilling on the natural environment, health, and long-term economies of local communities.

General Comments

The proposed standards do not serve to sufficiently provide protection to the environment or the health and welfare of citizens of Pennsylvania. Over 1600 residents of Pennsylvania thus far have entered their names onto the *List of the Harmed*, avowing that after drilling operations began in their area, they became ill. Numerous published research documents by professional scientists working in Pennsylvania and around the county have documented a wide range of pollutants and increased health problems associated with deep shale gas industry activities. Below are a few examples.

Research from the Colorado School of Public Health indicates that persons who live within ½ mile of fracking operations have an increased risk of disease-- both cancers and non-cancers-- due to exposure to toxic chemicals. Dr. John Adgate, Colorado School Public Health, found that the chronic health risks near drilled areas were greatest (in order of prevalence) for neurological disease, hematological disease, respiratory effects, and developmental effects. Several doctors in trying to determine causation of health problems in patients have found chemicals used to frack in their patients' blood.

Researcher Elaine Hill, Cornell University, found decreased birth weight and apgar scores for babies of mothers who experienced their pregnancy near frack operations. The research on the effect to developing babies is staggering- a 25% increased prevalence of low birth weight if the mother lived within 1.5 miles of a gas well. Dr. Currie of Princeton looked at the Pennsylvania birth records from 2004 to 2011 of infants born within 2.5 kilometers of frack sites, and found the likelihood of

low birth weight increased by more than half. The chances of a low apgar score doubled.

Researchers Bamberger and Oswald list many instances of animals with neurological, reproductive, and acute gastrointestinal problems after being exposed to fracking chemicals. Their report describes how scores of animals died over the course of several years. In northern central Pennsylvania, 140 cattle were exposed to fracking wastewater when an impoundment was breached. Approximately 70 cows died, and the remainder produced only 11 calves, of which three survived.

A preliminary study has already shown a statistically significant difference in aquatic life between streams in areas of no drilling and streams where nearby wells are numerous. "As the density of well pads increased, the number of types of stream insects decreased," said Jerry Mead, a senior biologist with the Academy Of Natural Sciences.

Research out of Duke University found that water wells within 1 mile of fracked gas wells had 17 times the methane as reference sites. Another Duke University study found methane 6 times higher and ethane 23 times higher if a home was within a kilometer of a gas well. Dr. Warner of Duke University expressed concerns about natural pathways that might allow gases from gas wells to put drinking water supplies at risk. Kevin Schug of University of Texas found elevated levels of arsenic and selenium in water closest to gas extraction sites. Avner Vengosh of Duke University, found that brine from Marcellus shale contains bromide and radium which is radioactive and those pollutants appeared in streams receiving waste water that was treated.

The Texas Commission on Environmental Quality analyzed fracking fluids. Associated health problems included: 65% of the chemicals were associated with serious health effects, 94% with skin, eye, and respiratory harm, 93% with gastrointestinal problems, 87% with respiratory system damage, 83% with brain and neurological effects.

Many of the chemicals used to frack are known carcinogens, neurotoxins, and endocrine disruptors. Many, such as the BTEX group, have long been known to be linked to disease.

40% of frack chemicals have been found to be endocrine disruptors. A recent University of Missouri study done by a team of researchers, including Susan Nagel, head of the Endocrine Disruptors Group, found that water samples collected from sites in a drilling dense region of Colorado exhibited more estrogenic, anti-estrogenic, or anti-androgenic activity than reference sites. Disrupting the endocrine systems of our born and yet unborn children is serious business with the potential to lead to a multitude of diseases and developmental disruption. Yet in the state of Pennsylvania, we have well sites located within 2 miles of at least 190 day care facilities, 223 schools, and 5 hospitals.

The EPA is aware of the risks. "A confidential Environmental Protection Agency draft document on the environmental impacts of the oil, gas and coal industries was obtained by the New York Times. It shows that federal authorities are concerned about public drinking water supplies especially in the region of the

Marcellus Shale. "As oil and gas development encroach on suburban and urban areas, human health and environmental impacts are expected to escalate. The document cites waste disposal as the main "bottleneck for the industry." It raises concerns about the high number of abandoned wells in Pennsylvania.

In the document, federal officials also cite the risk to drinking water supplies posed by wastewater carrying radioactive materials that may not be removed by conventional treatment plants. Nationally suspected environmental impacts are diverse; concerns exist with produced water disposal issues as they are impacting surface drinking water intakes in the Marcellus play, and air emissions issues.

"This study was provided to The Times by an E.P.A. official who said it shows that dilution of drilling waste does not always succeed in eliminating the health risks posed by that waste. The study is marked confidential and was conducted on behalf of the American Petroleum Institute in 1990. It found a potential increased risk of cancer among people who often eat fish from waters where drilling waste is discharged. The study is relevant because state regulators in Pennsylvania have said that dilution is effectively removing the risks posed by drilling waste that is discharged into rivers. Importantly, this study found an increased risk of cancer when drilling waste was dumped into a body of water that was larger than Pennsylvania rivers. Furthermore, state records indicate that the radium levels found in Pennsylvania wastewater are much higher than those used in this study. Radium, for example, was found in Pennsylvania at levels over 18 times the number used in the this study. It should be noted, however, that this study did not detail actual cases of increased cancer. Rather, it modeled potential increases in cancer rates as a result of radium-laced drilling waste being discharged into large waterways.

In a study by the Pennsylvania Department of Environmental Protection on Marcellus Shale wastewater discharge to the South Fork Tenmile Creek in Southwest Pennsylvania, state regulators concluded that even after treatment plants reduced the amount of hydrofracking wastewater that they were accepting, the water discharged from these treatment plants still had a negative impact on aquatic life in the streams that received the discharge."

Specific Comments

1. Water Data: The proposed regulations should require that all pre-drill data be made available to the public. In addition, pre-drill testing should use a consistent list of parameters, the full list of results being released to property owners. Finally, contaminated drinking water should be restored to meet the Safe Drinking Water Act standards. If the quality of water was superior to these standards prior to drilling, the operator must restore the water to that higher standard.

78.51 The proposed amendments state, "That the presumption of liability established in 58 Pa.C.S. § 3218(c) (relating to protection of water supplies) does not apply to pollution resulting from well site construction activities." Presumption should apply to site construction activities.

Over 161 letters of determination have been sent out by the DEP indicating that water sources were contaminated by fracking.

In just 2 years, from 2008 to 2010, the DEP recorded 241 violations of environmental regulations at well sites within 2 miles of day care centers and 40 violations within 2 miles of schools.

"States are playing roulette with public health", according to Nadia Steinzor of Earthworks.

Fererar et al. of the University of Pittsburgh School of Public Health, noted that, "Fracking doesn't only impact health when mistakes are made, it also impacts health when everything goes right. The results are alarming. Community members reported 59 health impacts and 13 stressors from the Marcellus Shale development. They complained of rashes and sores, headaches, and changes in vision, diarrhea and nausea, shortness of breath, and loss of sleep." And yet, instead of proposing meaningful regulation that would provide some small measure of increased protection for human health, we see minor changes in detail that will be of little real benefit to the public.

2. Pits: Pits, temporary or permanent, storing waste of any form including flowback water or contaminated drill cuttings, should not be permitted anywhere in the state of Pennsylvania. The standards state that residual waste including contaminated drill cuttings may be disposed of on site.

The US Department of the Interior, advises of pits: "Use of enclosed tanks and closed loop or semi-closed loop systems is environmentally preferable to the use of open pits and is to be encouraged by the BLM. Open production pits are to be strongly discouraged. Closed tanks and systems minimize waste, entry by wildlife, fugitive emissions that affect air quality, and reduce the risk of soil and groundwater contamination. In addition, the use of tanks instead of pits expedites the ability to complete interim reclamation. Costs may be reduced with the use of tanks, particularly when the pit requires solidification or netting."

Waste pits are banned in New Mexico. According to news articles: Antero in Colorado state does not utilize pits, but a closed loop system. Chief and Rex Energy have moved to all closed loop systems. Andarko Petroleum uses close loop systems in Pennsylvania. The EPA Star program recommends a closed loop system. But Pennsylvania's *new, proposed* regulations allow the continuance of frack pits, inviting further pollution and contamination of waters.

Presently DEP permits leakage of toxic chemicals onto residential properties and farmlands from the pits, the amount of leakage permitted being determined by the depth of the fluid in the pits. There should be no legally allowed leakage of fluids onto surrounding land areas.

The proposed regulations will not help to prevent flooding, spills, and leak violations that are commonly occurring.

Stating a required footage of freeboard provides little protection. Violations due to overflow of the required freeboard occur on a regular basis, companies repeatedly are charged with the same violations, and fines are limited or non-existent.

3. Disposal, Brine and Drill Cuttings: According to news articles: "Fracking industry truck drivers have been blowing the whistle for some time, saying that radioactivity alarms are going off "all the time." Workers report that the radioactivity levels are sky-high, even in empty trucks that have already dumped their load of drill cuttings at landfills. Mac Sawyer, a former fracking truck driver and environmental cleanup worker in the Marcellus Shale industry in Pennsylvania, has stated that sometimes "they just disable the alarm" rather than treating flowback or drill cuttings waste with the special care required of radioactive waste. Uranium and radium 226 are mobilized by fracking."

Disposal of brine, drill cuttings, and any residual waste should meet the standards of the US Resource Recovery and Conservation Act. Presently, the fracking industry is exempt from the regulation of hazardous substances that other industries must abide by. Those standards should be applied to all aspects of the handling of hazardous materials.

Because Marcellus shale is more radioactive than other shale plays, the drill cuttings can be more radioactive, as evidenced by alarms activated at waste disposal sites and the high measurement of radioactivity in a study downstream from the Josephine Treatment Plant in Indiana County which treats wastewater from oil and gas drilling. Radium levels of sediment samples collected in Blacklick Creek, downstream from the plant, were 200 times greater than background samples. Researcher Vengosh noted that levels exceed thresholds for radioactive waste disposal and pose "potential environmental risks of radium bioaccumulation in localized areas of shale gas wastewater disposal."

The storage of contaminated (to any degree) frack wastewater, or drill cuttings should be prohibited.

There should be no processing of drill cuttings on site nor should they be stored in pits. There is no mention that evidence of positive radioactivity or chemical toxicity tests preclude the storage of drill cuttings in a pit or on-site burial. The DEP should be responsible for testing of the chemical content and radioactivity of all frack waste.

Due to toxicity and radioactivity concerns, there should be no burial of drill cuttings on site.

Brine: No brine from hydraulically fracked wells should be used for road application due not only to salinity loads, but to the possible presence of toxic chemicals and radioactive particles that may be contained in flowback water.

Land Application: No wastewater or drill cuttings should be applied to land areas.

4. Condensate Tanks 78.56 (17): How will condensate tanks be monitored? All gas facilities including tanks, pits, wells, and compressor stations should have monitors designed and operated by a third party, functioning 24 hours a day, and recording findings that are directly available to the DEP and public.

Fumes from tanks must be recaptured so not to pollute the air.

The gas industry should not be responsible for conducting this monitoring but should be financially responsible for payment of the implementation and conduction of that process.

5. Fresh water: The term "fresh water" should no longer be used to define both uncontaminated previously unused water, and wastewater left over from fracking that is then recycled to be reused.

6. Abandoned Wells: There are thousands of abandoned wells in PA, increasing the possibility of the migration of methane and other contaminants from fracked wells up abandoned well bores to ground water. Those wells must be identified and sealed prior to any gas wells being drilled. Drillers should be financially responsible for protecting the waters of Pennsylvania via the identification and plugging process.

The American Nurses Association House of Delegates passed a resolution stating that frack chemicals now found in our water supplies have been linked to cancer and kidney, liver, and neurological damage. Enactment of rigorous regulation of the gas industry is imperative. Pennsylvania rushed to open its doors to hydraulic fracturing without having done its homework, without implementing even the most basic regulations for the protection of its environment and its people. The results of this negligence have been water contamination, air pollution, health problems, forest fragmentation, societal problems, property devaluation, and communities divided between those seeking easily gained wealth and those fighting to preserve the quality of life they once knew in their communities. We encourage you to provide meaningful changes to the Performance Standards that was written decades prior to the advent of the hydraulic fracking process.

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