

Oil And Gas

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## How much do we know about drilling horizontal wells?

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The Horizontal Well Control Act of 2011 required studies be conducted to gain a more profound understanding of all that's entailed in the natural gas drilling that's sweeping northern West-V. Those reports are coming due, and legislators are hearing from scientists who have been looking into the matter.

Two major reports are being discussed in Charleston this week. One looks at air and noise pollution, while another considers water use related to Horizontal Well drilling.

### 1. Air and Noise

Michael McCawley is the interim chairman of the Department of Occupational and Environmental Health from the School of Public Health at West Virginia University. He presented recommendations based on the air, noise, and light study he published this summer.

McCawley says the major surprise his study revealed were **copious amounts of benzene detected by his air monitors**. The monitors were set up at the current legal "set-back distance" of 625 feet from the center of drilling pads. His report notes that at one site, benzene levels were detected of up to 85 parts per billion. The National Institute for Occupational Safety and Health recommends workers regularly exposed to 100 parts per billion wear respiratory protection.

*So why worry about benzene?* Substantial quantities of epidemiologic, clinical, and laboratory data link benzene to **aplastic anemia, acute leukemia, and bone marrow abnormalities**.

"Now we suspect that the benzene may be coming, in fact, from the diesel engines because a lot of the fracking sites have a lot of truck traffic going in and out of them. And also during the actually fracking itself there are a number of diesel engines that are sitting in the pad being run at high rates," McCawley says.

Based on his findings, McCawley made suggestions to lawmakers this week.

### ***Control the emissions.***

McCawley says the current required "**set-back distance**" is a regulation that **should be abandoned**. The aim of the rule was to protect people in the vicinity from exposure, but he says an arbitrary number won't achieve that given the variability of topography and considering that pollution doesn't always come from the center of the pad.

To protect not only people within the vicinity but also workers on site from harmful emissions, McCawley submits that **monitoring real-time emissions is likely the smartest, most effective tool to employ**. Especially around sensitive areas

like houses, hospitals, schools, monitoring would allow high levels of pollutants to be addressed immediately by the people controlling the operation.

### ***Control the noise.***

“We were seeing short term exposures exceeding 100 decibels around some of these sites. 100 decibels is kind of the level of a rock band. You don’t want a rock band outside your bedroom window. Although the long term exposures were below 70 db on average for the sampling period that we saw, there were levels that exceeded 70 db for brief periods of time. But those brief periods of time can be a concern particularly if they’re disturbing sleep or if they’re really loud.”

An expert in public health, McCawley explains that **55 decibels is enough to interrupt sleep** which, in turn, **could result in hypertension, or high blood pressure**—already endemic in the state, especially in the northern panhandle.

**He says noise pollution needs to be taken into account when constructing these sites, and also when considering the traffic patterns to and from them.**

## **2. Water use**

Water use is another area of concerns for legislators. Evan Hansen, president of [Downstream Strategies](http://downstreamstrategies.com/) (<http://downstreamstrategies.com/>), conducted a study on water use in hydraulic fracturing operations in and around the state. He and his colleagues set out to analyze water-use data provided by natural gas drillers to the Department of Environmental Protection—data operators are required to provide as per the 2011 law.

Hansen says, the average Marcellus well in WV injects about **5 million gallons of water into wells as fracking fluid**. 8 percent of that comes back up. He says the DEP and industry should be applauded for adopting new recycling practices as about 75% of that flowback is now being reused. He says the remainder is disposed of in deep well injections.

“Even though about 3/4 of the flowback water is being reused and recycled, which is great, that’s only substituting for 10 percent of the water withdrawals. So while great progress has been made in the areas of recycling, that’s not taking care of the vast quantities of water that still need to be withdrawn from WV streams.”

Hansen adds that tracking this waste water should continue to be a priority. **WV already sees 100-million gallons of waste water each year** and in PA, across the border where the industry is significantly more developed, they see nearly a billion gallons of waste. Each year.

Hansen also sees several areas of improvement, regarding data collection and reporting requirements.

- Fix mistakes identified in the database, and make data entry less error-prone to prevent future mistakes
- Ensure data gets reported completely and within appropriate timeframes
- Make data available and searchable online so that researchers and public have access
- Streamline the efforts of DEP offices of Oil and Gas and Water Management regarding wastewater

Hansen says his biggest concern is that WV law only requires operators to report flowback water. It’s a different story in PA where **flowback water only accounts for 38% of reported waste**.

*“In WV, because only flowback fluid is reported, and the other types of waste are not reported, we still don’t really have a handle on how much waste is being generated and where it’s going. So we’re still operating with some uncertainty about what’s going on in the real world and that’s not a great place to be if you’re trying to get the right policies in place to protect water resources,” Hansen says.*

Hansen says his report will be made available on the 30th of October. That day he will also conduct an online webinar explaining his finding that is open to the public.