



**Senate Energy and Public Utilities Committee
Proponent Testimony in Support of Senate Bill 315
Provided by Ohio Department of Natural Resources Director James Zehringer
March 28, 2012**

Chairwoman Jones, Vice Chairman Balderson, Ranking Member Schiavoni and Members of the Senate Energy and Public Utilities Committee:

Thank you for the opportunity to testify as a proponent to Senate Bill 315. I am Jim Zehringer, Director of the Ohio Department of Natural Resources (ODNR). I have separated my testimony into two components: drilling and injection. We at ODNR have come to find that individuals are frequently confusing steps in the drilling process with steps in the injection process and vice versa, not realizing that these two programs serve very different purposes in oil and gas development.

THE NEED FOR SENATE BILL 315

Ohio is on the verge of significant shale exploration and extraction. To provide perspective on where our state stands regarding the development of this new horizontal drilling industry, let me share with you some numbers you may find interesting:

- Currently, there are 47 horizontal wells drilled in Ohio;
- ODNR estimates that by the end of 2012, we will have approximately 250 horizontal wells drilled;
- By the end of 2013, approximately 750 horizontal wells will be drilled;
- By the end of 2014, approximately 1,500 horizontal wells will be drilled; and
- By the end of 2015, approximately 2,250 horizontal wells will be drilled.

I want to assure you that we are currently well positioned to deal with current levels of oil and gas development. However, in light of this enormous potential growth in drilling activity, we have a responsibility to put in place regulatory safeguards and staffing that will bolster citizen confidence and protect our environment. Failing to do so would jeopardize the substantial economic impact of this emerging industry before it gets started.

What we are proposing in Senate Bill 315 are common sense measures that incorporate many industry best practices. We have the benefit of studying the successes and missteps of those who have gone before us. We've learned what works and what does not.

Let me say this plainly: if Ohioans lose confidence in our ability to protect public health and safety, this potential boom will fizzle.

PROACTIVE APPROACH

The Kasich Administration believes there are two critical elements of a successful regulatory program. First, we must have codified, clear and transparent regulations. Second, we must have the appropriate

number of competent and trained personnel to enforce those regulations. Part of the justification for this legislative proposal is the belief that government agencies should not regulate by “agency policy.” Rather, our regulations should be clearly codified providing the industry and public with a predictable path forward. As Director, I have sought input from a number of my counterparts who have already experienced the impact of horizontal drilling in their respective states. Those would include input from North Dakota, Pennsylvania, West Virginia, Arkansas, Texas and Colorado. They shared with me a number of “lessons learned,” such as:

- Have regulations in place prior to the establishment of the horizontal drilling industry;
- Have properly trained staff on board before full-scale drilling and associated activity commences;
- Address public concerns regarding road conditions and water protection; and
- Properly regulating this emerging industry will be an enormous undertaking, even if our regulatory structure is fully in place. However, the consequences of being asleep at the regulatory switch will be disastrous.

Included with this testimony is a regulatory gap analysis for your review. This analysis was created as a result of ODNR staff thoroughly and meticulously examining every single step of the regulatory process involved in the permitting, drilling, production, servicing and ultimately plugging of a horizontal well in Ohio.

HISTORY AND BACKGROUND

HYDRAULIC FRACTURING

Vertical drilling, commonly considered the more “conventional” form of drilling, began in Ohio more than 150 years ago. Approximately 80,000 vertical wells have been hydraulically fractured in Ohio since the method was introduced in 1951. Fast forward to present day, there are more than 64,000 oil and gas wells currently in production across the state.

These facts are important because so many individuals do not realize that there is little difference in the hydraulic fracturing processes between the vertical wells of Ohio’s past and the horizontal wells of our future. ODNR’s Division of Geological Survey conservatively estimates between 3 to 5 billion barrels of oil and 3 to 15 trillion cubic feet of natural gas reserves may lie within the Ohio portion of the Utica formation. The oil and gas industry once thought there was enough natural gas in the United States to last 10 years. Now, by combining two time-tested technologies, it is believed the United States has enough natural gas to last more than a century.

Although horizontal drilling is a relatively new technique in Ohio, it has been used extensively in several other states for the past decade. Horizontal drilling began in Ohio on June 14, 2011, when the Buehl well, located in Harrison County in the Utica shale formation, started production.

Hydraulic fracturing occurs when a mixture of water, sand and chemicals, known as “slurry” is pumped thousands of feet below the earth’s surface to fracture and release previously unobtainable natural gas and oil. Typically, water and sand make up 99.5% of the slurry, while the remaining .5% is a combination of chemical additives, some of which can be found in everyday household products, which are added to make the fracturing fluid more lubricated. In a typical shale well in Ohio, there will be 4 to 6 cemented casings (steel pipes) isolating the hydraulic fracturing fluids or produced oil and gas from the underground sources of drinking water. The wells are constructed in this manner to ensure protection of

Ohio's aquifers. The natural gas and oil are then collected and separated into different containers upon reaching the surface.

Vertical drilling will remain an important component of our thriving industry in Ohio. But by drilling horizontal wells, exponentially more oil and gas can be collected from a single well, therefore creating a smaller footprint. This contrasts with the multiple wells that would need to be drilled vertically, one next to the other, to collect that same oil and gas that is vastly spread across a geologic formation. For example, a 640-acre drilling unit could be developed by 16 vertical wells, each with its own pad, access road, and pipeline. That same 640-acre unit could now be developed with 4 to 8 horizontal wells using a single pad, access road, and pipeline, thereby reducing the surface footprint.

UNDERGROUND INJECTION CONTROL (UIC) PROGRAM

Once the Utica shale formation has been hydraulically fractured, the oil and gas naturally seeps through the cracks, back into the production casing, and flows back to the surface. After the hydraulic fracturing process is completed, some of the slurry remains trapped thousands of feet deep underground, while the rest flows back with the extracted oil and gas. The water that returns to the surface over the first few weeks is called "flowback fluid" and contains primarily salt, making it a brine solution. That brine is then separated from the oil and gas and primarily disposed of in two ways: 98% of the brine is safely disposed through underground injection and the remaining 2% is spread over roads for dust and ice control subject to local government approval.

The brine solution that is safely disposed of through injection back into brine-bearing or depleted oil and gas formations deep below the surface is performed under proper regulation by ODNR and guidelines created by the United States Environmental Protection Agency (USEPA). The USEPA sets class distinctions for different types of injection wells used nationwide.

Class I	Inject hazardous wastes, industrial non-hazardous liquids, or municipal wastewater beneath the lowermost underground sources of drinking water.
Class II	Inject brines and other fluids associated with oil and gas production, and hydrocarbons for storage.
Class III	Inject fluids associated with solution mining of minerals beneath the lowermost USDW.
Class IV	Inject hazardous or radioactive wastes into or above USDWs. These wells are banned unless authorized under a federal or state ground water remediation project.
Class V	All injection wells not included in Classes I-IV. In general, Class V wells inject non-hazardous fluids into or above USDWs and are typically shallow, on-site disposal systems. However, there are some deep Class V wells that inject below USDWs.
Class VI	Inject Carbon Dioxide (CO ₂) for long term storage, also known as Geologic Sequestration of CO ₂ .

Courtesy of: <http://water.epa.gov/type/groundwater/uic/wells.cfm>

The wells used to dispose of fluids associated with oil and natural gas production are considered Class II by the USEPA and are not the same wells used during the hydraulic fracturing process. In order to ensure the quality of Americans' drinking water, Ohio expressly prohibits brine from being treated or released in surface water or stored in pits. By injecting the brine deep underground, Class II wells prevent surface contamination of soil and water.¹

In Ohio, the Class II deep injection well program began in the 1960s. States are given the ability to request primacy over the USEPA for Class II wells as long as strict federal requirements are met. Therefore, ODNR requested and was granted primacy by the USEPA in August 1983. The following month ODNR became the regulatory authority over the Underground Injection Control program in Ohio. Now, thirty years later, ODNR continues to meet and oftentimes far exceeds those regulatory standards held by the USEPA. Since 1983, more than 202 million barrels (42 gallons per barrel) of brine have been

injected back into depleted oil and gas reservoirs or deep geologic formations without one single instance of groundwater contamination. Currently, Ohio has a total of 177 Class II injection wells, many of which have been in existence since 1984. According to the USEPA, there were 144,000 Class II injection wells nationally in 2010. Class II disposal wells remain the most proper and environmentally safe method for disposal of brine, as determined by the USEPA.

Comparison of Ohio's Class II brine injection regulations with USEPA regulations	
Ohio Division of Oil and Gas Resources Management	United States Environmental Protection Agency
Unannounced inspections every 11-12 weeks.	One inspection done per well each year by EPA consultant.
Continuous mechanical integrity monitoring or monthly mini-tests to demonstrate continuous mechanical integrity.	Demonstration of mechanical integrity at least once every five years.
Injection volumes greater than 200 barrels per day require a ½-mile area of review of all other wells. Less than 200 barrels per day is a ¼-mile radius.	All Class II wells shall be cased and cemented to prevent movement of fluids into or between underground sources of drinking water.
Maximum allowable surface injection pressure is set by formula within the Ohio Administrative Code. Calculated injection pressures are well below pressures needed to initiate or propagate fractures.	Injection pressure at the wellhead shall not exceed a maximum calculated pressure to assure that pressure during injection does not initiate new fractures in the confining zones adjacent to underground sources of drinking.

A COMPREHENSIVE LOOK AT ODNR'S REGULATORY PROCESSES

Since accepting the role of Director of ODNR in November 2011, I have made it a primary mission that the Department perform a comprehensive review of the regulatory authority over hydraulic fracturing and the Underground Injection Control program from the Division of Oil and Gas, particularly with the higher volume of oil and gas drilling that Ohio anticipates. We completed this review by crafting a timeline that outlines all of the steps in the drilling process from the time a well is conceived until it is plugged. We then inserted every point in the process where the Division serves as a regulator. A copy of that timeline is included at the end of this testimony.

In addition to reviewing our own regulating authority, we also did a comparison analysis with other states. We felt it was important to compare our standards with states that either border Ohio or have significant involvement with hydraulic fracturing.

MAKING A GOOD REGULATORY FRAMEWORK BETTER

SB 165 of the 128th General Assembly was a bipartisan bill that thoroughly overhauled Ohio's oil and gas regulations and created a firm foundation for proper oversight of the oil and gas industry in Ohio. However, there are certain aspects of the horizontal drilling process that were not fully or adequately addressed. SB 315 addresses those remaining regulatory issues.

By creating a drilling timeline and state-by-state comparison analysis, we have been able to see exactly where our regulatory authority is strong and also where we can make it even more effective. While ODNR is confident in our current regulatory program, we are always open to making a good regulatory program better and safer.

In working with numerous interested parties, we were able to come up with a list of recommended reforms to the Division's regulatory program to further encourage the safety of drill operators, regulators, and Ohioans who live or work near drilling or injection areas. Many of these reforms can be achieved through the rulemaking process. In fact, we have already submitted our package of well construction rules to the Joint Committee on Agency Rule Review (JCARR). We look forward to working on these rules with the public and members of the committee. However, other ideas that are more overarching are reflected in SB 315. At this time I would like to lay out the main points of interest in this legislation.

PROPOSED CHANGES

KEY PROVISIONS RELATED TO HORIZONTAL FRACTURING IN OHIO

Senate Bill 315 makes the following key regulatory changes to the horizontal drilling process in Ohio:

- **Updates the reporting requirements for chemicals and fluids used to drill a well.** Under current law, well operators are required to disclose the chemicals used during the well stimulation process and report those chemicals to the Division. SB 315 puts in place the nation's first "cradle-to-grave" public reporting system. Operators would be required to report volume and chemical descriptions for every fluid used in every step of the drilling process, from the initial construction until the well is ultimately plugged. Additionally, the public currently has the ability to view hydraulic fracturing fluid compositions used at specific wells on www.fracfocus.org. ODNR is in the process of developing our own searchable database where the public can view the chemicals or chemical class used in Ohio. We also plan to build a link to share that data with FracFocus.
- **Requires the well operator to take water samples within 1,500 feet of a proposed horizontal well and disclose the results in their permit application.** Administrative Code regulations are currently in place that require permit applicants to take water samples within 300 hundred feet of a vertical well located in an urban area. This change transfers the vertical regulations from Administrative to Revised Code, in addition to expanding that requirement to also apply to horizontal wells.
- **Requires well operators to disclose where the water comes from that they will be using in the fracturing process.** When applying for a permit, operators would be required to include the source of water that will be used for production operations and whether the water will be drawn from the Lake Erie or Ohio River Watershed, in addition to the rate and volume of water that will be withdrawn.
- **Encourages horizontal well operators to enter into a Road Use Maintenance Agreement (RUMA) with the respective local government where they wish to drill a well.** Although the attainment of a RUMA does not impact whether or not a permit will be issued by the Division, ODNR hopes that this step in the permitting process will further cooperation between local entities and the well operators who will be using their roads.
- **Authorizes cooperative agreements with other state agencies.** ODNR would have the ability to call upon other state agencies to offer regulatory guidance on issues indirectly related to drilling. For example, the Department of Health could consult on sanitation standards for temporary housing located on the well site. In addition, the State Fire Marshal, who is a part of the Department of Commerce, could assist ODNR in evaluating fire suppression systems at well sites. Please bear in mind that although other agencies may provide consultations, ODNR will continue to have primacy over all oil and gas regulations.

KEY PROVISIONS RELATED TO UNDERGROUND INJECTION IN OHIO

There are currently 176 Class II deep injection wells in operation around Ohio. As you are aware, a series of twelve low-magnitude seismic events occurred along a previously unknown fault line in the Youngstown area. In December, I ordered that all injection activity occurring at one particular well in question, named Northstar 1, and four additional wells within a five-mile vicinity be halted until further assessments could be made in determining whether or not a correlation existed between Northstar 1 and seismic activity. After close scrutiny by state geologists and regulators, who performed 35 separate inspections of the well, I issued a preliminary report with detailed scientific data and a list of recommendations moving forward. The Revised Code changes below correspond with overall objectives recommended in the report to ensure protection of the health and safety of the citizens of Ohio. SB 315 makes the following key regulatory changes to the underground injection control program in Ohio:

- **Redirects 10% of the oil and gas funds collected through injection fees to the geological mapping fund.** ODNR would like to see 10% of the funding appropriated to its Division of Oil and Gas redirected to its Division of Geological Survey to allow for additional research of Ohio's geological makeup.
- **Strengthens the registration and certification requirements for brine haulers.** This change allows ODNR to better track and more closely monitor the activity of brine haulers and provide a first of its kind "cradle-to-grave" tracking of out-of-district brine coming into Ohio.
- **Prohibits the owner of an injection well to allow for injection without first obtaining a list of chemicals contained in the injection substance from the brine hauler.** This requirement not only allows ODNR to regulate Ohio companies who wish to inject fracturing fluid, but also out-of-district companies to disclose the chemicals contained in the fluid. No fluids should be injected into Ohio land until we know what chemicals the fluids contain.
- **Requires brine haulers to install electronic transponders.** With this change, ODNR would be able to verify the registration status of any brine hauler, thereby making it more difficult for unregistered trucks to move brine into Ohio.

IMPACTS OF COST RECOVERY FEES AND HOUSE REMOVAL OF SEVERANCE TAX PROVISIONS

There is one provision that we would like to work to remedy an unintended consequence of the House's removal of the severance tax provisions contained in House Bill 487. Specifically, Senate Bill 315 removes the current 10 cent per barrel Cost Recovery Fee on oil, and ½ cent on gas which has been in effect since 2010. However, by eliminating the Administration's proposal to modify the severance tax, the effective result is that the needed funding for the Department's regulatory program has been cut by nearly 50%. I would be happy to provide further details during the question and answer session, if needed.

CONCLUSION

ODNR is committed to maintaining a strong regulatory framework that will protect all Ohioans as well as our natural resources. We strive to be national leaders in safe and productive oil and gas exploration. ODNR believes that this legislation is proof that we can strike the right balance between growth in the industry and protecting Ohio's citizens and environment.

ODNR regulators are prepared to tackle the challenges of expanded shale production. I would like to take a few moments and allow them to explain in their own words what they do and why they do it.

Chairwoman Jones, Vice Chairman Balderson, Ranking Member Schiavoni and members of the Senate Energy and Public Utilities Committee, thank you for allowing me the opportunity to offer a very in-depth explanation of shale development in Ohio and the authority given to ODNR to regulate it. ODNR would be happy to answer any questions you may have at this time.