



**JACK SHANER, DEPUTY DIRECTOR, OHIO ENVIRONMENTAL COUNCIL
INFORMATIONAL TESTIMONY REGARDING OIL AND GAS WASTE WATER DISPOSAL
HEARING OF THE PUBLIC UTILITIES COMMITTEE – YOUNGSTOWN CITY COUNCIL
JANUARY 11, 2012 – YOUNGSTOWN, OHIO**

Chairman Ray, Vice-Chairman Swierz, and Council Member Rodgers:

Thank you for this opportunity to appear before the Committee and to share information and recommendations about the safe disposal of waste water from oil and gas production.

My name is Jack Shaner and I am Deputy Director for the Ohio Environmental Council (www.TheOEC.org).

OHIO ENVIRONMENTAL COUNCIL

The OEC is a non-profit research and advocacy organization dedicated to sound public policy to better protect the environment and conserve natural resources in Ohio. The OEC's membership consists of several thousand individual citizens and more than 100 state and local environmental-conservation groups. We are funded primarily by foundation grants and donor contributions.

The mission of the Ohio Environmental Council is to secure clean air, land, and water for all who call Ohio home.

SHARED GOALS AND RECOGNIZED RISKS

The OEC shares the goal of developing our nation's natural gas and petroleum oil resources—in a responsible way that protects human health and the environment and is most beneficial to the people of Ohio and America.

As with any industrial activity, the development of oil and gas – including the eventual disposal of waste water – involves risk. The people of Youngstown, of course, are well aware of one risk from the deep well injection of waste water: increased seismic activity (earthquakes).

The people of Youngstown are not alone with concerns about oil and gas production and the associated disposal of waste water and brine water.

UNITED STATES SECRETARY OF ENERGY ADVISORY BOARD SUBCOMMITTEE REPORT

Two months ago, the United States Secretary of Energy's Advisory Board Subcommittee on Shale Gas Production completed its report and issued recommendations. The Subcommittee was tasked by the Energy Secretary with producing a report on the immediate steps that can be taken to improve the safety and environmental performance of shale gas development.

The Subcommittee report readily acknowledges the economic benefits associated with America's substantial shale gas and shale oil resources and encourages their development.

The bulk of the report, though, emphasizes the serious risks involved in shale gas production and outlines a series of regulatory and industry reforms to better protect public safety and safeguard air, land, and water resources.

In its 180-Day Interim Report, posted August 18, 2011 and available on the U.S. Department of Energy website (<http://bit.ly/qRAxIz>), the Subcommittee warned:

Intensive shale gas development can potentially have serious impacts on public health, the environment and quality of life – even when individual operators conduct their activities in ways that meet and exceed regulatory requirements. The combination of impacts from multiple drilling and production operations, support infrastructure (pipelines, road networks, etc.) and related activities can overwhelm ecosystems and communities.

In its Final Report, posted November 11, 2011 and available on the U.S. Department of Energy website (<http://1.usa.gov/ymNXBq>), the Subcommittee concluded:

It is the Subcommittee’s judgment that if action is not taken to reduce the environmental impact accompanying the very considerable expansion of shale gas production expected across the country – perhaps as many as 100,000 wells over the next several decades – there is a real risk of serious environmental consequences and a loss of public confidence that could delay or stop this activity.

Finally, the Final Report makes a series of 20 recommendations for improved practices and safeguards. Whereas most of the recommendations regard the production process, the report does reference concerns (and recommendations—see the discussion, below, under OEC Recommendation No. 5) about the associated treatment and disposal of waste water resulting from oil and gas production:

But to ensure the full benefits to the American people, environmental issues need to be addressed now – especially in terms of waste water, air quality, and community impact. We believe that our twenty recommendations provide the basis for a pragmatic route forward and hope that they will be acted upon.

DEEP WELL DISPOSAL OF OIL AND GAS WASTE WATER

The production process for shale gas and oil involves the use of millions of gallons of water, sand, and chemicals to shatter the shale rock (Marcellus and Utica formations) and release the trapped oil and gas. A significant portion of these fluids along with brine waters in the rock formations comes back to the surface along with the oil and gas. This waste water must then be safely handled and disposed of.

According to the United States Environmental Protection Agency, waste water associated with shale gas extraction can contain high levels of total dissolved solids (TDS), fracturing fluid additives (which include a number of toxic constituents, including Benzene—which is known to cause cancer—Ethylbenzene, Toulene, Xylene, and diesel fuel), metals, and naturally occurring radioactive materials (including uranium, thorium, radium, and lead-210) (<http://1.usa.gov/wmtrYB>).

The State of Ohio requires disposal of oil and gas waste water and brine in underground injection wells. In 1983, the Ohio Department of Natural Resources received permission—or “primacy”—from the

United States EPA to permit and regulate the installation and operation of Class II wells. There currently are 177 Class II underground injection wells permitted in Ohio.

THE YOUNGSTOWN EARTHQUAKE

As you well know, on December 31, 2011, a magnitude 4.0 earthquake shook Youngstown.

According to state regulators at the ODNR, the Northstar No. 1 injection well in Youngstown Township, Ohio experienced a series of low-level seismic events over the past eight months. To his credit, ODNR Director James Zehringer asked the disposal well operator to cease operations on December 30, 2011.

Following a series of low-level seismic events this year in the area surrounding the Youngstown Township injection well, ODNR invited Columbia University's Lamont-Doherty Earth Observatory to position four seismometers in the area to capture more detailed information about seismic activity.

According to Director Zehringer, information obtained from the Columbia University scientists, and further analyzed by ODNR geological experts, indicated that an earthquake occurred on December 24, 2011 at approximately two miles below and one mile within the injection site. The ODNR indicated that it reached agreement with the well's owner to halt injections until the ODNR is able to further assess and determine any potential links with recent seismic events.

According to ODNR, the ODNR's seismic monitoring network has documented 10 seismic events occurring in 2011 within two miles of the injection well; each of these events, aside from the New Year's Eve 4.0 event, registered at 2.7 magnitude or lower.

FUTURE SHOCK: COULD THE YOUNGSTOWN EARTHQUAKE BE A SIGN OF THINGS TO COME?

The oil and gas industry suggests that the Youngstown event was an isolated one. Prominent research scientists disagree.

Researchers from the Lamont-Doherty Earth Observatory at Columbia University—who assisted ODNR investigators—have suggested it is no coincidence that the Youngstown earthquake was so proximate to the earthquake (<http://exm.nr/zLCv4T>). Scientists from Columbia University have stated that the depth of the New Year's Eve quake (approximately 1.7 miles) is different from that of a natural earthquake. Columbia scientists also have stated that the earthquakes in the area and the proximity in the time and space of the earthquakes matches operations at the injection well.

The Ohio Environmental Council acknowledges that Ohio has a long history of disposing of oil and gas waste water in Class I and Class II injection wells. However, we are deeply concerned that whereas there are 177 Class II injection wells, there are only 26 seismic monitoring stations in Ohio. We believe this presents a void in oversight and the hobbles the opportunity for early detection of seismic activity during and after the high-pressure injection of waste, underground.

RECOMMENDED STRENGTHENED PROTECTIONS AND REFORMS

In light of the Youngstown incident; the ramp up in disposal of waste water from shale gas development in Pennsylvania and Ohio; and, finally, the United States Department of Energy's urging to regulators and the industry to take action now to reduce environmental impacts from shale gas development, including from the disposal of waste water, the Ohio Environmental Council respectfully recommends the following reforms to Ohio law regarding the safe disposal of waste water:

1. STRENGTHENED PUBLIC NOTICE

The public has a fundamental right to comment whenever an industrial operation proposes to dispose of waste materials into the air, land, or water. But the public can hardly comment if they have little opportunity to know about a permit application. Under current Ohio law, when an applicant applies for a state permit for a Class II underground injection well, ODNR must post a public notice of the permit application only once in a newspaper of general circulation in the county in which the proposed waste well is located. This is one of the weakest public notice requirements in Ohio law. The OEC recommends expanding this to at least once a week for four consecutive weeks, as Ohio law requires for a coal mining operation.

2. STRENGTHENED PUBLIC COMMENT OPPORTUNITY

Under current Ohio law (OAC Sec. 1501:9-3-06(E)(2)(c)), the public has only 15 days to comment on a proposed waste water disposal well. Fifteen days is hardly adequate for the public to develop well-researched and well-informed comments. The OEC recommends a 60-day public comment period, consistent with many existing public comment periods in current Ohio law.

3. STRENGTHENED PUBLIC NOTICE AND COMMENT BY LOCAL JURISDICTIONS

Local jurisdictions also should have a meaningful opportunity to comment on proposed waste water injection wells. Current Ohio law, however, requires no official notification of local jurisdictions of such permit applications. The OEC recommends that the ODNR be required to notify and invite comment within 30 days of notice from affected local city councils, township trustees, county commissioners, private water companies, regional councils of governments, and local conservancy districts. Again, this same notification procedure is required of ODNR for a proposed coal operation.

4. OPPORTUNITY FOR PUBLIC HEARING

In addition to the opportunity to submit comments, the public should have the opportunity to request a public hearing to present information. For injection wells, only if a member of the public objects, and that objection is deemed “relevant,” is the Chief of the ODNR Division of Oil and Gas Resources Management required to hold a hearing (OAC Sec. 1509:9-3-06(E)(2)(c)). In that extraordinary circumstance, the hearing is far from public, as only the objecting citizen and the permit applicant are provided notice and opportunity to provide testimony. Ohio law allows a public hearing for most any other state permit. The OEC strongly believes the law should treat waste water injection wells the same way – with full opportunity for members of the public to voice their concerns.

5. RIGHT TO KNOW + CHAIN OF CUSTODY: ANALYSIS OF WASTE WATER

Current Ohio law requires applicants for Class I (hazardous waste) injection wells to submit a written waste analysis plan to the state for approval that describes the procedures to be carried out to obtain a detailed chemical and physical analysis of a representative sample of the injected waste, including the quality assurance procedures used. This law helps to keep hazardous waste well operators honest. The OEC recommends the same procedure for Class II (oil and gas) waste water injection wells. The OEC recommends expanding the law to ensure water testing at both the production well site as well as the disposal well site.

NOTE: The US Department of Energy Subcommittee report specifically urges the adoption of a systems approach to water management based on consistent measurement and public disclosure of the flow and composition of water at every stage of the shale gas production process. In particular, the Subcommittee recommended that shale gas companies and regulators manifest all transfers of water among different locations.

6. STRENGTHENED SEISMIC ACTIVITY STUDY BEFORE PERMITTING OF INJECTION WELLS

Current Ohio law requires applicants for Class I (hazardous waste) injection wells to submit a seismic reflection data survey before obtaining a permit. The required survey is used to determine the presence or absence of geologic features within or near the area around the well where the formation pressures may be increased due to the operation of the well. Geologic features include lateral stratigraphic changes, faults, fractures, and/or other structural irregularities. This law helps to ensure that Class I (hazardous) waste will be safely contained. The OEC recommends the law be amended to require this same procedure for Class II (oil and gas) waste water injection wells.

7. EXPANDED SEISMIC ACTIVITY MONITORING AT ALL CLASS II WASTE WATER INJECTION WELLS

The Chief of the ODNR Division of Geologic Survey has indicated his intent to purchase portable seismic monitors, similar to the ones Columbia University is using in Youngstown, for use elsewhere in Ohio. The OEC heartily supports this proposal. The OEC further proposes that an adequate number and type of seismic monitors be obtained and installed at all Class II waste water injection wells.

8. STRENGTHENED BUDGET AND STAFF FOR THE ODNR DIVISION OF GEOLOGICAL SURVEY

Successive Governors and General Assemblies have whittled away at the staff and budget of the ODNR Division of Geological Survey, and especially its Ohio Seismic Network. ODNR's current network consists of one part-time seismologist, 26 earthquake detectors, and a \$20,000 budget. The OEC recommends that this office be expanded substantially in Ohio's upcoming Budget Correction Bill, expected to be introduced yet this Winter.

9. REQUIRE GROUNDWATER MONITORING WELLS NEAR CLASS II WASTE WATER INJECTION WELLS

Current Ohio law requires no monitoring wells to detect any migration of waste materials to groundwater. The OEC recommends the installation and operation of groundwater monitoring wells—a sort of “defense early warning system” to detect any groundwater contamination.

10. REPEAL CURRENT OHIO LAW THAT RESTRICTS ODNR FROM ADOPTING ANY STANDARD MORE STRINGENT THAN FEDERAL STANDARDS FOR CLASS II WASTE WATER INJECTION WELLS

Incredible, Ohio Revised Code Section 1509.22 (D) restrains the ODNR from adopting any standard or safeguard governing Class II waste water injection wells from being more stringent than minimum federal standards. The State of Ohio should have the right to adopt safeguards that exceed minimum federal standards, if it wishes. The OEC vigorously recommends the repeal of this senseless law.

11. REQUIRE DRILLERS TO RECYCLE WASTE WATER; EXPLORE ALTERNATIVE USES OF WASTE WATER

Many oil and gas production drillers voluntarily recycle waste water for use in successive production wells. This is an efficient use of water and reduces the volume of waste water needing disposal. The OEC recommends the ODNR consider requiring this practice. The OEC also recommends that the ODNR explore alternative uses of waste water, such as recovery/harvesting and reuse of constituents in waste water that may have commercial applications.

CONCLUSION

The Ohio Environmental Council wishes to thank the Youngstown City Council, and especially Council Member Mike Ray, for organizing this evening's forum. The OEC would also like to commend State Representative Robert Hagan and State Senator Joseph Schiavoni for their concern and leadership on this critical issue. Thank you again for inviting us to participate, today. We would be pleased to provide further information and to participate in the development of any future legislation or reform efforts.

Jack Shaner
Deputy Director and Senior Director of Legislative and Public Affairs
Ohio Environmental Council
Desk: 614-487-5822
Cell: 614-446-1693
Jack@theOEC.org
www.theOEC.org