Early results from hydraulic fracturing study show no direct link to groundwater contamination

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Preliminary findings from a study on the use of hydraulic fracturing in shale gas development suggest no direct link to reports of groundwater contamination, the project leader at The University of Texas at Austin's Energy Institute said Wednesday.

"From what we've seen so far, many of the problems appear to be related to other aspects of drilling operations, such as poor casing or cement jobs, rather than to hydraulic fracturing, per se," said Dr. Charles 'Chip' Groat, a university geology professor and Energy Institute associate director who is leading the project.

Groat provided initial observations from the study, which the Energy Institute is funding, at a briefing in Fort Worth attended by local government officials, regulators, energy company executives, representatives of community groups and others.

The Energy Institute's final report, expected to be issued early next year, will include an analysis of reports of groundwater contamination ascribed to hydraulic fracturing within North Texas' Barnett Shale, as well as the Haynesville Shale in East Texas and Northwest Louisiana, and the Marcellus Shale, which includes portions of New York, Pennsylvania and several Appalachian states. Researchers also expect to include an evaluation of allegations of "fugitive" air emissions attributed to equipment leaks, evaporative losses from surface impoundments and spills.

"What we're trying to do is separate fact from fiction," Groat said.

The Energy Institute team includes experts from the university's Center for International Energy and Environmental Policy, Bureau of Economic Geology, Lyndon B. Johnson School of Public Affairs, School of Law and College of Communication. Representatives of the Environmental Defense Fund will review and comment on any recommendations included in the final report prior to its publication. A peer group also will review the team's findings.

Groat said the final report will identify existing regulations related to shale gas development and evaluate individual states' capacity to enforce regulations. Researchers also will provide an analysis of public perceptions of hydraulic fracturing, as derived from popular media, scientific studies and interviews with local residents.

"Our goal is to inject science into what has become an emotional debate and provide policymakers a foundation to develop sound rules and regulations," Groat said.

Hydraulic fracturing involves the high-pressure injection of water, sand and chemicals into a shale seam, which causes the rock to shatter, releasing natural gas. The process is conducted after a well bore has been drilled and lined with concrete to prevent interaction between the deep, gas-bearing shale and shallow freshwater aquifers. Hydraulic fracturing has been in use for decades but recently has come under scrutiny from environmentalists and others who fear it poses a threat to public health through groundwater contamination and air pollution.

Other preliminary findings from the study released at Wednesday's briefing:

-- Many allegations of groundwater contamination appear to be related to above-ground spills or other mishandling of wastewater produced from shale gas drilling, rather than from hydraulic fracturing itself.

-- The lack of baseline studies in areas of shale gas development makes it difficult to evaluate the long-term, cumulative effects and risks associated with hydraulic fracturing. Groat said researchers could recommend additional baseline studies, depending on final evaluation of data yet to be compiled.

-- Although some states have been proactive in overseeing shale gas development, most regulations were written before the widespread use of hydraulic fracturing.

-- Media coverage of hydraulic fracturing is decidedly negative, and few news reports mention scientific research of the practice.

At Wednesday's briefing, Groat also discussed two other Energy Institute initiatives related to hydraulic fracturing for shale gas development.

The first project would evaluate claims of groundwater contamination within the Barnett Shale in North Texas. As proposed, the research would entail an examination of various aspects of shale gas development, including site preparation, drilling, production, and handling and disposal of flow-back water. Researchers also would identify and document activities unrelated to shale gas development that have resulted in water contamination.

A second project, designed to be an extension of the current study, would involve a detailed field and laboratory investigation of whether hydrological connectivity exists between shallow groundwater aquifers and fractures created by hydraulic fracturing during shale gas development. The project calls for university researchers to conduct field sampling of hydraulic fracturing fluid, flow-back water, produced water, and water from aquifers and other geologic units within the Barnett Shale.

Provided by University of Texas at Austin