Expert panel deliberates hydraulic fracturing in shale gas development

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The use of hydraulic fracturing in shale gas development took center stage Friday as a panel of U.S. and Canadian experts discussed the contentious practice in a three-hour symposium hosted by the American Association for the Advancement of Science (AAAS).

The panel, moderated by Dr. Raymond L. Orbach, former Under Secretary for Science in the U.S. Department of Energy, addressed concerns related to the role of hydraulic fracturing in shale gas production, which has at once been heralded as a game-changer for North American energy supplies and a threat to drinking water and air quality.

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 communication between the deep, gas-bearing shale and shallow freshwater aquifers.

The practice, often used in tandem with horizontal drilling, has been in use for decades, but has come under scrutiny from environmentalists and others who fear it poses a threat to public health.

Orbach, now Director of the Energy Institute at The University of Texas at Austin, decried the divisive tone of public discourse over hydraulic fracturing, which he characterized as "driven largely by fear and emotion, rather than by science and facts."

Dr. Charles "Chip" Groat, a geology professor at The University of Texas at Austin and an associate director at the Energy Institute, presented findings from a new study of shale gas development in the Barnett, Marcellus and Haynesville Shales.

The study, which the Institute funded, found no evidence of a direct link between hydraulic fracturing and groundwater contamination.

"Many reports of groundwater contamination occur in conventional oil and gas operations, often caused by poor well-bore casing or cement construction," Groat said. "These problems are not unique to hydraulic fracturing."

Researchers also determined that natural gas found in water wells often can be traced to natural sources, and likely was present before the onset of shale gas operations, Groat added.

Other participants in Friday's AAAS symposium included Dr. John Clague, a professor at Simon Fraser University who studies earthquakes and other natural hazards; Dr. David Layzell, Executive Director of the Institute for Sustainable Energy, Environment and Economy (ISEEE) at the University of Calgary; and Dr. Danny Reible, an engineering professor at The University of Texas at Austin who studies the fate of contaminants and devises risk mitigation measures.

While panelists acknowledged numerous concerns related to hydraulic fracturing, and agreed that additional scientific research on the practice is warranted, the consensus view was that none of the problems identified thus far are insurmountable.

"Certainly, there are some trouble spots, especially with respect to surface issues, such as the handling of flow-back water," said Reible. "But most of these problems are manageable."

Dr. John Clague, from Simon Fraser University, said the re-injection of waste water produced from hydraulic fracturing likely triggered seismic activity in the Horn River area in northeastern British Columbia, but that the threat to Vancouver and other populated areas was "negligible."

Still, Clague said he supports a temporary suspension of shale gas operations until scientists complete additional research on hydraulic fracturing's effect on the environment.

The University of Calgary's Layzell said the public debate over shale gas development "raises the bar" about the impact of hydraulic fracturing on the environment.

"We need to ask ourselves, 'What is required to get hydraulic fracturing right?' " Layzell said.

Moreover, the issue presents an opportunity to share knowledge and build consensus on how to achieve a more sustainable energy future, he added.

Provided by The Energy Institute at UT Austin