Drill (Carefully) Baby, Carefully Drill

Often I preach, usually to deaf ears, the importance of hearing both sides of the story. It is with that thought in mind that I have decided to take my own advice and attend what was essentially a high-level industry dominated conference in Harrisburg on Marcellus Shale drilling. Fifty-percent of the presentations were given by Pennsylvania State University affiliated people who either work for or advise the gas drilling industry, and the remainder of the presentations were given by private concerns that make their money from the natural gas industry.

Gas drilling is progressing at a greater rate than was initially predicted in Pennsylvania. We already are up to 1 billion cubic feet per year, with an estimated capacity of 15 billion cubic feet per year. The gas is close to the cleanest, "driest" gas in the world and can go a long way towards providing energy independence and a clean environment to the United States. Pennsylvania natural gas is a resource that must be exploited until we have a breakthrough in fusion power; the chain reaction which powers the sun.

The industry, speaking to its own engineers, scientists and advisors is concerned about the migration of methane into water sources. This has already occurred, and there is still a substantial knowledge gap as to whether the gas produced below the level of aquifers will eventually seep into the fresh water system. No one in the industry will guarantee that this cannot and will not occur. What is necessary is close supervision and good monitoring skills.

The engineers explained that there are lots of ways that methane can migrate from its deep level into aquifers or cause mischief in other ways. After the well is dug, concrete and other materials are used to seal the well casing. Unless the work is done very carefully and correctly, cracks, damage, and other defects can occur. Likewise, the casings inside the well shaft must be placed with extreme care and expertise. Things go wrong, stuff happens, and the question is, who will be hurt and who will pay for the damage?

The experts also discussed at great length the problem of addressing the fracking water. A million gallons per well is needed to release the gas with approximately 10-20% of that water coming back up. What happens to the rest of that water? Will it stay in place forever? Will the cracks, deliberately created by the fracking process, connect with other fissures permitting that water to migrate to undesirable locations? What about the water that does come back up which is 7-10 times more salty than sea water? That water, which eventually is treated, contains radium and other radioactive heavy metals. The drilling also releases radon, a major cause of lung cancer. One of the presenters at the symposium gave a marvelous talk about the beginning efforts to monitor radioactive substances in the sludge, protect workers and protect the public as well. The problem is that there is only one such facility in the state and the program for checking the sludge and disposing of it is far from accepted industry-wide.

The third major issue after pollution of water by methane and radioactive sludge, not to mention the salty residue of water, is air pollution. Not much is known about this, but without question the Clean Air Act may come into play. Some of the Marcellus Shale operations could be major polluters of the air.

Questions dominated the Harrisburg Marcellus Shale gas conference. The questions came from extraordinarily well-informed participants in the industry itself. There also appeared to be attendees who had an environmental and public interest concern. Most, but not all of the speakers, admitted to a lack of knowledge and ignorance with respect to the repercussions to the environment and the public at large caused by the gas drilling industry. Even those who were the most staunch supporters of the gas drilling industry acknowledged the lack of a database with respect to the formation of gas present in Pennsylvania and with the high extraction rates which we will be seeing in the very near future.

All of the industry people acknowledged one important principle: for their own protection and that of the public, it is going to be necessary to obtain predrilling information about the air, the water, the condition of the land, and people who live near the drilling sites and work at those sites. That information will have to be honest, checked by a regulatory source, and then will need to be updated as a result of periodic monitoring and the information which flows therefrom. Well blowouts have already occurred and may be an increasing concern as multiple wells are placed on the same pad with several longitudinal lines being drilled.

Many landowners have expressed a fear that their gas may be accessed by well pads from other properties. This fear appears to be legitimate, although the industry is working on techniques to trace gas deposits. Can a landowner trust a well drilling company, with a substantial profit motive, to do this comprehensive testing and keep adjacent landowners informed? The answer is a throwback to the Cold War, "Trust but verify." The state will need to take the lead in regulating how gas is "tagged" with respect to its location of origin. While the gas companies claim that so long as they stay a certain number of feet away from another property they will not infringe the rights of an adjoining landowner, the subsurface conditions will ultimately dictate the travel patterns of Marcellus gas.

It was also clear at the conference that Utica Gas Drilling, a deeper formation, is not far behind. It is only a matter of time before deeper rock is exploited for its gas. The effect of drilling for gas 2 miles under the surface of the earth will also raise serious and substantial scientific questions.

So what is the answer? Drill for gas, work aggressively on alternative renewable non-hydro carbon alternatives, and develop a system of monitoring and safety which will assure the public and the workforce that safety is paramount.

Pennsylvanians have great experience with the exploitation of natural resources. Witness the history of both the timber and anthracite coal industries, which left Pennsylvania scarred and frequently impoverished. If all of the fair-minded and thorough regulation fails, or if $85,000 per month lobbyists like former Governor Tom Ridge are successful in smoothing the way for the gas industry to extract the resource from the earth without a great deal of concern about the long-term consequences, who will be left holding the bag? We have experience in the United States in answering this question thanks to Superfund legislation which addressed areas of the United States poisoned by PCB's and other carcinogenic chemicals. The gas industry advisors in Harrisburg, without reservation, admitted that bromide, which is extracted together with the gas, can combine with chemicals in naturally occurring aquifers to cause cancer. While little is known about the seriousness of this threat, the last thing we need in North Central Pennsylvania is another Love Canal.

The Superfund law crated a chain of joint and several responsibility for all those involved in the dumping process. The fund also created a specific "lock box" so that funds could be accessed to clean up the mess created by irresponsible companies.

The risk with Marcellus Shale is that the big companies like Appalachian Shell will eventually sell off their wells, as production drops. Those wells will be sold to wildcatters and other small companies that eventually will shutter their doors, become insolvent or go bankrupt. Without Superfund legislation and a guaranteed source of money, municipalities, residents and injured workers will be bereft of a remedy.

Even industry representatives and their advisors no longer say "trust me." It is universally expected in the industry that the legislature will find a way to put monies aside for the purpose of remediating damage caused by natural gas drilling. The landowners who get paid royalties for the extracted gas will receive tax benefits in the way of depletion allowance. The drilling companies will be able to deduct from their sales expenses in connection with land leases, royalties, drilling, advertising, and dinners at fancy restaurants. With both landowner and industry benefitting so tremendously from Marcellus Shale, should we not also protect the workers

and the public through regulation, monitoring, and a superfund treasury?

I thought the technical speaker would scoff at the question as to whether the lubricants utilized in the hydro fracking process could cause earthquakes. The serious answer is that "it is possible," and for that reason it is hoped that the drilling companies will look at seismic data where they drill. However, there is no requirement that such data be examined or that the lubricating effects of deep earth drilling in fault zones be taken into account.

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