By the late 1960s, a number of natural resource doomsayers were predicting the swift exhaustion of U.S. natural gas supplies. Indeed, in 1967, proved reserves peaked at about 293 trillion cubic feet (TCF), and production peaked at 22 TCF by the time of the 1974 OPEC oil embargo. But a funny thing happened after natural gas prices, which had been tightly regulated, were gradually decontrolled starting in 1978, with passage of the Natural Gas Wellhead Decontrol Act.

Although proved reserves continued to decline slowly for the next 15 years, reaching a nadir of just over 160 TCF in 1993, drilling technology continued to improve. By the early 1990s, the country was awash in gas, and the supply “bubble” persisted for the remainder of the decade. Since that time, proved gas reserves have continued to increase, and increase at a faster rate. In June 2009, the Potential Gas Committee released its findings of its most recent biennial review of gas reserves, and calling the increases in those reserves “unprecedented,” in part because of rapidly growing availability of so-called unconventional gas supplies, especially shale gas. Yet today, the vast supplies that shale gas promises are increasingly under attack, because of the potential air and, especially, water pollution issues that shale gas drilling critics have raised.

Shale gas is one of three major types of unconventional gas. The other two are coal-bed methane and gas found in “tight” sands. But it is shale gas that has garnered the most attention, because it is found in abundance across the continental United States. Of the major shale gas deposits, the most developed is the Barnett Shale, located in northeastern Texas. However, perhaps the largest of all shale deposits is the Marcellus Shale, a 54,000-square-mile area extending from New York through Pennsylvania, Ohio, and into West Virginia.

Although shale gas supplies are abundant, extracting gas from shale deposits is possible only because of advances in horizontal drilling technology and hydraulic fracturing, or “fracking.” Fracking injects water, sand, and chemicals under high pressure into drilled wells to fracture tightly compacted shale, thereby releasing the trapped natural gas. Fracking itself is an old drilling technique, having first been used in the 1960s to increase oil production. Moreover, fracking has been used in other types of unconventional natural gas production, including coal-bed methane.

There have been previous studies on the potential environmental impacts of fracking on underground drinking-water supplies. However, it is only recently that the tenor of these concerns has increased significantly. In mid-February, the U.S. House Energy and Commerce Committee opened an investigation to determine whether fracking can lead to “environmental and public health problems,” principally whether the water used for fracturing will contaminate drinking-water supplies.

And while the primary environmental focus has been on water quality, some are raising air quality issues, too. The city of Fort Worth, Texas, for example, claims to have measured extremely high levels of benzene, a carcinogen, in two of 94 drilling sites. Nineteen other sites were found to have raised levels of benzene, but not at high enough levels to be an immediate concern.
Thus, why the sudden increase in environmental scrutiny of hydraulic fracturing of shale gas deposits? The EPA’s 2004 study of groundwater contamination from coal-bed methane drilling found no evidence of any contamination. Given the relative impermeability of shale, it seems unlikely that shale gas drilling would somehow lead to groundwater contamination when coal-bed methane drilling did not.

Perhaps, therefore, the raised levels of environmental growling are meant to be yet another roadblock to increasing quantities of affordable, domestic energy supplies, whether fossil-fuel or renewable. Or perhaps, finding the road to its carbon cap-and-trade program blocked, Congress has decided to pursue another environmental wild goose chase. But if environmental concerns are allowed to cripple shale gas production, our energy future is going to become that much more expensive.

NOTES
4. For example, in 2004, the U.S. Environmental Protection Agency issued the results of a study (begun in 1997) of the potential impacts from fracturing of coal-bed methane deposits on underground water supplies. The report concluded that the “EPA did not find confirmed evidence that drinking water wells have been contaminated by hydraulic fracturing fluid injection into CBM wells,” and recommended no further regulatory action. See (2004, June). Evaluation of impacts to underground sources of drinking water by hydraulic fracturing of coalbed methane reservoirs. Report No. EPA 816-R-04-003. The complete study can be downloaded from http://www.epa.gov/oigwdw000/uic/wells_coalbedmethanestudy.html.
5. Groundwater refers to underground water resources, rather than surface water resources like rivers and lakes.
7. See my previous column, (2009, February). Renewables, becoming cheaper, are suddenly passé. Natural Gas & Electricity, pp. 30–32.