

FRACKING

food&waterwatch

AND THE FOOD SYSTEM

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New drilling and fracking techniques have made it possible to extract oil and natural gas from shale and other dense rock formations that were previously inaccessible. While such drilling and fracking has been a boon for the oil and gas industry in the United States, it has been a nightmare for Americans exposed to the pollution that accompanies shale development. The expansion of modern drilling and fracking across the country has caused widespread environmental and public health problems and created serious, long-term risks to underground water resources, all of which affect farming and our food.

Fracking takes place primarily in rural agricultural areas, and many farmers have leased their land to the oil and gas industry. Examples of fracking's negative impacts on agriculture and the food system are emerging. Water contamination from toxic fracking chemicals has sickened and killed livestock, and accidents and spills have contaminated cropland across the country.¹ These incidents could affect consumer confidence in the food produced in these areas. Furthermore, the large quantities of water required for fracking poses a future challenge to agriculture, and the process may contribute to global climate change, which may further strain freshwater resources.

Farmers, whose livelihoods depend on the health of the land, face especially stark choices. Many have leased their land to gas companies with the promise of gas royalty payments and minimal ecological impact.² Given the risks associated with fracking, however, there is much at stake. Organic farmers could lose their premium prices if industrial fracking fluid pollutes their crops or livestock, and farm sales could be diminished if pollution threatens livestock,

crops or farmland. In contrast to the legacy of environmental pollution that shale development leaves behind, any economic gains from drilling and fracking disappear as the flow of oil and gas declines and drilling and fracking operations move elsewhere.³

What Is Fracking?

Hydraulic fracturing, more commonly known as “fracking,” is the process of injecting a mixture of water, sand and chemicals into wells at high pressure to crack dense rock formations and release oil or gas.⁴ Advances in drilling and fracking technology have made it possible to extract oil and natural gas from shale and other impermeable rock formations.⁵

Conventional natural gas drilling targets limestone and other rock formations through which gas flows readily.⁶ In contrast, unconventional natural gas development targets natural gas held in shale, tight sandstone and coalbed formations, which restrict the flow of natural gas unless they are fracked.⁷ Similarly, fracking is essential to free “tight

oil” from otherwise impermeable rock formations so it can flow into a well.⁸ The combination of advanced fracking and horizontal drilling technologies has made it feasible to extract large quantities of shale oil and shale gas.⁹

After drilling, developers inject millions of gallons of fracking fluid to crack apart the rock and prop it open so that the gas can be released.¹⁰ Depending on geology, between 25 and 75 percent of the millions of gallons of fracking fluid used for each well returns to the surface as wastewater.¹¹ A large volume of salty water containing naturally occurring contaminants is also typically produced at each well as wastewater. Combined, these wastewaters contain the toxic chemicals added to fracking fluid, as well as any radioactive materials and other pollutants leached from deep underground.¹²

Because natural gas is a relatively clean-burning fossil fuel compared to oil and coal, it has been touted as a potential bridge fuel for addressing global climate change and transitioning to a future powered by low-carbon renewable energy resources.¹³ However, recent studies have demonstrated that increased development of shale gas may actually accelerate climate change because large amounts of methane, a potent greenhouse gas that makes up 90 percent of shale gas, leak during fracking.¹⁴ On a global scale, drilling and fracking result in significant greenhouse gas emissions,¹⁵ which threaten the climate on which we depend.¹⁶

Emissions such as volatile organic compounds, benzene and toluene can be discharged during fracking and are harmful to public health.¹⁷ These compounds mix with emissions from heavy-duty truck traffic, large generators and compressors at well sites to form ground-level ozone.¹⁸ And water contamination from fracking can and has gravely impacted farmlands, putting our food sources in peril.

Effects on Agriculture

Water Contamination

There have been many documented cases of contaminated water affecting livestock. Livestock have consumed contaminated water from wells, springs and ponds, causing illness, reproductive issues and death.¹⁹ Documented incidents have occurred due to accidents, leaks and spills that result from negligence, but also as “a consequence of normal operations.”²⁰ In other words, fracking is incompatible with livestock production.

Further complicating the issue, gas companies are not required to disclose the chemicals used in fracking, and there are no common procedures for isolating livestock exposed to chemicals from the food chain.²¹ The animals might be quarantined for a time or not slaughtered for human consumption, but dead animals sent to a rendering plant could be used for livestock or pet feed.²²



An overview of livestock exposure to contamination from fracking found that cows are most likely to be affected, with the most common exposure from contaminated wells and springs.²³ Cows exposed to fracking fluids have experienced difficulty breeding and higher rates of stillborn and deformed calves.²⁴ In northwestern Louisiana, 16 cows died after drinking water that was contaminated with chemicals used in fracking. Chesapeake Energy, the company involved, refused to disclose further information about the chemicals, stating the information was “proprietary.”²⁵ In a Pennsylvania case, 28 beef cattle were quarantined after encountering fracking fluid leaking from a wastewater holding pond.²⁶ Of the 11 calves born from those cows the following spring, only three survived, a very low survival rate. Follow-up analysis of the dead calves was inconclusive as to whether fracking fluid was the cause of death.²⁷

In two cases, only part of a herd of beef cattle was exposed to fracking wastewater. In each case, many of the exposed cattle died, and those that survived experienced problems breeding, while the unexposed cattle experienced no unusual problems. In one herd, the exposed cattle experienced high numbers of stillborn and stunted offspring. These two cases “approach the design of a controlled experiment, and strongly implicate wastewater exposure in the death, failure to breed, and reduced growth rate of cattle.”²⁸

Agricultural Production

Penn State Extension analyzed the impacts of fracking on dairies in the Marcellus Shale region of Pennsylvania, where many farmers have leased their land for fracking, compared to other parts of the state. The study found declining numbers of dairy cows in areas where fracking was common. In counties with over 10,000 dairy cows, those with over 150 Marcellus shale wells experienced a 16 per-

cent decline in total dairy cows on average between 2007 and 2010, compared to a 3 percent decline in counties with no Marcellus wells. Researchers speculate a variety of explanations, from farmers using their royalty monies to retire to farmers feeling “forced out” due to the negative effects of wells. Regardless of the reason, a decline in dairy herds yields a negative economic impact on neighboring communities.²⁹

The chemicals that hurt livestock hurt rural residents as well. Water contamination has been identified in over 1,000 cases near oil and gas drilling sites.³⁰ In the first case documented by the federal government, the U.S. Environmental Protection Agency found that well water in Sublette, Wyoming, contained several chemicals associated with fracking,³¹ including 1,500 times the level of benzene considered safe for drinking.³² Benzene exposure leads to leukemia and other illnesses.³³ Multiple residents complained of contaminated wells and mysterious illnesses across the area.³⁴

Water Use

Besides contamination, fracking poses a potential source of competition with agriculture for access to fresh water. Modern fracking requires millions of gallons of water for each well, and widespread shale development can compete with essential water needs.³⁵ In Colorado alone, fracking used 4.5 billion gallons in 2010 and is projected to use 6 billion gallons by 2015. In a recent state auction of water rights for 8 billion gallons of water, gas companies acquired 750 million gallons for fracking.³⁶ While the majority of water in the sale went to agriculture,³⁷ fracking increases pressure on water demand in a parched region.

Consumer Confidence

As the public becomes increasingly aware of the dangers of fracking, people may grow more skeptical about consuming food from areas where intensive fracking is taking



place. For example, the Park Slope Coop in Brooklyn, New York, a retail food cooperative owned by more than 16,000 members, purchases almost \$3 million of New York State-produced food products each year. “If the air is fouled and the animals are drinking water that contains poisonous fracking chemicals, then products from those animals are going to have poisons. We would have to stop buying from them. There is no doubt in my mind,” said the manager of the coop.³⁸

Fracking Hurts Rural Communities

When farmers and other rural landowners lease their land for fracking, the gains are only temporary, while the damage can be long lasting. Fracking proponents typically do not account for the long-term economic damage and the significant erosion of communities’ quality of life that can outweigh any benefits.³⁹ New oil and gas wells bring fleets of trucks that crowd and damage rural roads and carry potentially hazardous wastewater. New York estimated that if the state allowed shale gas development, each well would require between 890 and 1,350 heavy-duty truckloads.⁴⁰ Noisy drilling rigs operate 24 hours a day, seven days a week.⁴¹ Scenic vistas are replaced with a landscape of gas wells, which lowers property values and harms tourism and recreation industries like hunting and fishing. In Wise County, Texas, properties with gas wells have lost 75 percent of their assessed value.⁴² Natural gas rigs devalue not only the property where they are located, but also the value of neighboring properties.⁴³

Many of the purported economic benefits are just a mirage — energy companies based elsewhere typically do not buy drilling and fracking supplies from local businesses, and shale development jobs typically go to transient workers who move from shale play to shale play.⁴⁴

Employment, construction, housing demand and even royalty payments are significant at first, but diminish quickly as well productivity declines and drilling and fracking operations move elsewhere.⁴⁵ Almost all of the jobs associated with shale development come during the drilling and fracking stage, but it takes less than one year to prepare a well site and conduct the drilling and fracking.⁴⁶ This means that industry employees, most of whom are transient workers with shale development experience, just move from new well to new well as the number of drilled wells increases.⁴⁷

Recommendations

The rapid expansion of shale gas development and fracking in the United States has resulted in significant environmental and public health problems. Fracking has become an ongoing public health and environmental experiment. Many of these problems are inherent to the practice and cannot be avoided through regulation.

Instead of believing the false promises of the oil and gas industry, we should invest in economic development in rural communities that safeguards our food and water, and we should develop policies that allow farmers to make a fair living farming on their land, instead of making them feel forced to lease it for polluting energy production.

Endnotes

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