

FRACKING AND THE FOOD SYSTEM



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The oil and gas industry likes to promote fracking as a boon to farmers and rural communities, but the dream often turns into a nightmare. Fracking has polluted water wells, sickened people and livestock, and reduced available farmland — proving that fracking and a healthy food system are not compatible.

Fracking takes place primarily in rural agricultural areas, and many farmers have leased their land to the oil and gas industry. Since the fracking boom emerged a few years ago, we have seen countless negative impacts on our food system. Fracking fluid spills have sickened and killed livestock and contaminated cropland across the country.¹ These incidents go hand-in-hand with fracking, hurting farmers and affecting consumer confidence in the food produced in these areas. Furthermore, fracking consumes an enormous amount of water and also releases methane, a greenhouse gas,² which fuels climate change that may strain future water availability in key agricultural regions.

Farmers, whose livelihoods depend on the health of the land, face especially stark choices. Many who own the rights to the oil and gas beneath their land have leased it to drilling companies for the promise of royalty payments, which they can use to pay down debt or invest in their farming operations. Others who own or rent the surface land but not the minerals beneath have seen well pads, roads and pipelines cross their land with no compensation or recourse. Either way, the problems that fracking brings to communities — competition for land and water, environmental damage, human health impacts — far outweigh fracking's economic benefits, and persist long after the drilling companies leave.

Effects on Agriculture

Water Contamination

There are numerous documented cases of fracking contaminating drinking water sources.⁹ A draft study by the U.S. Environmental Protection Agency (EPA) surveyed several incidents across the country. Fracking fluid spills at drilling sites have reached surface water. Poorly constructed wells have allowed natural gas to infiltrate aquifers. Faulty pipelines have spilled toxic wastewater into surface and ground water sources.¹⁰ In some regions, contamination may be widespread. In a Texas study, nearly 70 percent of tested water wells located near an oil or gas well tested positive for chemicals associated with exploration, suggesting that drilling may have led to contamination.¹¹

This is problematic because nearly all rural residents in the United States rely on groundwater for their drinking water, and many farmers also use it to irrigate crops and raise livestock.¹² Contaminated groundwater not only puts these communities' health in jeopardy, but also impacts their livelihoods. There have been many instances where groundwater contaminated by fracking poisoned livestock, causing illness, reproductive issues and death.¹³ However, there are no common procedures for isolating livestock exposed to chemicals from the food chain;

What Is Fracking?

“Fracking” is short for hydraulic fracturing, the process of injecting a mix of water, sand and chemicals into wells at high pressure to crack rock formations that hold oil or natural gas. Often combined with horizontal drilling techniques, fracking is used to extract oil and gas from shale and other “tight” rock formations.

Fracking companies use hundreds of thousands to millions of gallons of water to frack a single well.³ For decades, companies have experimented with chemical additives to maximize oil and gas production. Fracking generates enormous volumes of salty, radioactive wastewater that can be difficult and costly to dispose of.⁴

the animals might be quarantined or not slaughtered for human consumption, but dead animals sent to a rendering plant could be used for livestock or pet feed.¹⁴

An overview of livestock exposure to fracking fluids found that the most common exposure came from contaminated wells and springs.¹⁵ Cows exposed to fracking fluids have experienced difficulty breeding and higher rates of stillborn and deformed calves.¹⁶

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, whereas the unexposed cattle experienced no unusual problems. According to researchers, 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.”¹⁷

Pets are also victims. In Pennsylvania, a two-year-old boxer had to be euthanized after lapping up fracking wastewater that was intentionally spread on the nearby road.¹⁸

Frustratingly, without baseline testing of water wells *before* drilling takes place, it is difficult for farmers to prove that drilling contaminated their water.¹⁹ Baseline testing is not necessarily required by drilling companies, and adequate testing is expensive for farmers to conduct themselves.²⁰ Additionally, there are at least 692 unique ingredients that have been used in fracking fluids,²¹ but baseline tests typically only screen for a limited number of contaminants associated with drilling.²²

Air Pollution

Drilling, fracking, venting, flaring, wastewater storage and other activities at well sites generate hazardous air pollution. One peer-reviewed study analyzed air samples near fracking sites in five states; nearly 40 percent of samples tested positive for toxic chemicals, such as cancer-causing benzene or formaldehyde, above federal safety standards.²³ Hydrogen sulfide, a deadly gas, was found at levels up to hundreds of times what is considered to be life-threatening.²⁴

Studies have long noted concerns related to the effects of toxic emissions associated with oil and gas activities on livestock, including a 2001 study that linked flaring with stillbirths and calf

mortality among cattle.²⁵ Fracking is bringing these and other airborne health risks to new regions. In December 2015, six cows were found dead together inside the Cimarron National Grasslands in Kansas, which also houses an oil field with fracking wells.²⁶ A seventh cow died apart from the group, and a veterinarian confirmed that the cows died from toxic inhalation.²⁷ The Grasslands issued an emergency closure on four sections of the park while they investigated the incident.²⁸ This investigation may provide evidence of toxic air pollution associated with fracking.

Fracking also contributes to ground-level ozone (the main component of smog), which can cause respiratory issues, especially among sensitive populations such as those with asthma.²⁹ Fracking has caused ozone levels to spike in some rural areas — at times exceeding those of smoggy urban areas like the Los Angeles Basin.³⁰ Ozone pollution also reduces crop yield and makes plants more susceptible to disease.³¹ According to the U.S. Department of Agriculture (USDA), “ground-level ozone causes more damage to plants than all other air pollutants combined.”³²

Agricultural Production and Farmer Livelihood

The rise of fracking in the Marcellus Shale region of Pennsylvania correlates with a sharper decline in dairy farming. A Penn State Extension study found that in counties with more than 10,000 dairy cows in 2007, those with more than 150 Marcellus Shale wells experienced a 16.3 percent decline in total dairy cows on average between 2007 and 2010, compared to a 2.7 percent increase in cows in counties with no Marcellus wells.³⁴ Researchers speculate a variety of explanations, from farmers using their royalty monies to retire, to farmers feeling “forced out” due to the negative effect of wells. Regardless of the reason, a decline in dairy herds may have a negative economic impact on neighboring communities.³⁵

Farmers also compete with oil companies for water and other agricultural inputs, including in the semi-arid West, where water is already scarce.³⁶ Using the FracFocus database, the U.S. EPA estimated that the fracking industry used an average of 44 billion gallons of water annually between 2011 and 2012.³⁷ (The actual volume is likely higher because not all states require companies to report to FracFocus.) Farmers can also face increased

But Isn't Natural Gas a “Bridge Fuel”?

The fracking industry and its supporters long touted natural gas as a “bridge fuel” to a future powered by renewable energy, since burning natural gas releases less carbon dioxide than burning oil or coal.⁵ However, studies suggest that an abundance of natural gas may increase consumption of gas, potentially negating these climate benefits.⁶ Additionally, natural gas is mostly methane, a potent greenhouse gas. Methane emissions from fracking can offset reductions in carbon dioxide that come from burning natural gas instead of oil or coal.⁷ The “bridge fuel” theory may sound promising, but in reality, the industry wants to maintain our dependence on natural gas.⁸

costs for inputs like land and labor due to increased competition with the drilling industry.³⁸

Fracking also reduces available farmland. In the Marcellus gas fields of Pennsylvania, well pads and supporting infrastructure (including roads and pipelines) have an estimated footprint of nearly nine acres per well.³⁹ When this infrastructure covers farmland, it limits the available space for growing crops and raising livestock.

Oil and gas drilling wastewater is increasingly being used to irrigate crops, including in California where water is scarce. In 2014, half the water used on 45,000 acres in one agricultural region in California was supplied by oil companies.⁴⁰ California regulations require wastewater to be treated before use as irrigation, but do not address drilling wastewater specifically.⁴¹ Studies have shown that drilling chemicals can persist in wastewater even after treatment; one study detected methylene chloride — a toxic chemical that affects the nervous system — in treated wastewater at 5 to 11 times the allowed limit in drinking water.⁴²

In April 2015, the Central Valley Regional Water Quality Control Board ordered drilling companies with wastewater ponds to test for chemicals related to drilling and to disclose the results to state regulators.⁴³ One test sample from a Chevron wastewater pond detected benzene, a cancer-causing component of crude oil, at levels nearly 500 times California's allowed limit in drinking water.⁴⁴ However, in other parts of California, irrigation with fracking wastewater may be occurring without additional testing. The extent to which contaminants in the wastewater are being absorbed by plants and entering the food chain remains unknown.

Fracking wastewater is full of toxic materials and salt, and surface spills can be deadly to vegetation.⁴⁵ One North Dakota farmer notes that the industry's wastewater spill from over 50 years ago contaminated 80 acres of her land, and that land remains unproductive to this day.⁴⁶

Transportation

Communities living near oil and gas patches know how drilling booms significantly increase truck traffic. A synthesis of five national and regional studies found that each well development requires an average of 2,200 truck trips.⁴⁷ This contributes to traffic jams and wreaks havoc on roadways — as much as \$13,000 to \$23,000 in costs for each well, according to a Pennsylvania study.⁴⁸

Farmers also compete with drilling companies for cargo shipping capacity. In North Dakota, the rise in oil transport by rail has caused a backlog in shipments of grain, costing farmers money when they cannot get their crops to market.⁴⁹

Consumer Confidence

As the public becomes increasingly aware of the dangers of fracking, people are more skeptical about consuming food from areas where intensive fracking is taking place. In 2015, a bill was introduced into the California legislature that would have required the labeling of food that was irrigated by oil and gas wastewater, but the bill died before making it to the

Farmer Profile:

"We're living in the middle of hell."

Steve and Jacki Schilke's cattle ranch is situated in the heart of the North Dakota fracking boom. Since 2008, dozens of fracking wells were drilled within three miles of the Schilke ranch, and the industry also built a waste disposal pit near the family's home. The Schilke's watched their dog and cattle fall ill, and Jacki herself began to suffer health issues. The state health department found a toxic chemical in their well water, and independent air testing found toxic chemicals in the air, both of which likely contributed to these health issues. The couple began shooting their sick cows to avoid sending potentially contaminated animals to market, hurting their ranch income.³³

floor.⁵⁰ Currently there is no requirement to label such crops, creating public concern over potential exposure to a host of toxic chemicals.⁵¹

Fracking also threatens consumer confidence in organic agriculture, as current USDA organic standards do not explicitly prohibit the use of fracking wastewater for irrigation.⁵² This has raised concerns that some organic produce might be irrigated in fracking wastewater.⁵³

Fracking companies are finding additional ways to infiltrate our food system. In February 2016, Antero Resources announced that it would begin deriving food-grade salt from fracking waste.⁵⁴ Such salt could contain radioactive materials and therefore be harmful to health.⁵⁵ However, table salt is considered safe by the Food and Drug Administration (FDA) under the "Generally Recognized as Safe" rule, meaning that companies can process and market salt without FDA review.⁵⁶ A professor at the University of Cincinnati College of Law petitioned the FDA for an expert opinion in this matter, hoping that the agency will conclude that salt derived from fracking waste will have to undergo an FDA review before entering the market.⁵⁷

Fracking Hurts Rural Communities

When farmers and other rural landowners lease their land for fracking, the gains are temporary, while the damage can be long-lasting. Scenic vistas are replaced with a landscape of drilling pads, which harms tourism and recreation industries like hunting and fishing. Traffic accidents and fatalities double or even quadruple.⁵⁸ Home values sometimes increase but can also decline due to fears over contamination of private water sources.⁵⁹

Even after weighing the additional revenue that drilling brings in, local communities sometimes suffer a net loss from oil and gas development.⁶⁰ This is because communities must improve roads and other infrastructure worn away by heavy use and also increase spending on emergency, sewer and social services.⁶¹ Additionally, even when the local economy benefits from fracking, these benefits are not evenly distributed across the community, leaving some residents with increased economic insecurity.⁶²

Fracking can also impact a farmer's ability to get financing and insurance. In 2013, Rabobank announced that it will no longer provide loans to farmers who have active shale gas leases, due to its policy of not investing in fossil fuel extraction with unknown risks.⁶³ In 2012, Nationwide Mutual Insurance (which provides agricultural insurance) issued a statement clarifying that "fracking-related losses have never been a covered loss under personal or commercial lines policies," citing the difficulties in assessing the risks associated with fracking.⁶⁴ Similarly, traditional homeowners insurance doesn't cover earthquakes, a problem for residents of Oklahoma where fracking wastewater disposal is linked to a surge in earthquakes.⁶⁵ Even homeowners with earthquake insurance have had their claims denied when the earthquakes were assumed to be human-induced.⁶⁶

Negative impacts are not isolated to communities with active oil and gas wells. Each well requires up to 10,000 tons of sand for use in drilling, and frac sand mines exist in the upper Midwest where fracking is not even taking place.⁶⁷ These mines can consume an enormous amount of water and expose nearby communities to harmful silica dust.⁶⁸

Additionally, the United States is crisscrossed by 2.5 million miles of pipelines carrying oil, natural gas and other hazardous materials.⁶⁹ Accidents are occurring at a rate of nearly two per day,⁷⁰ putting farmland and drinking water in danger, including in areas without oil and gas drilling. In one major catastrophe in North Dakota, a pipeline spilled 1 million gallons of fracking wastewater onto the Fort Berthold Indian Reservation.⁷¹

Recommendations

The rapid expansion of oil and gas fracking in the United States has created significant environmental and public health problems. Many of these problems are inherent to the practice and cannot be avoided through regulation, which is why fracking should be banned.

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. We should also develop policies that allow farmers to make a fair living farming on their land, rather than resorting to leasing their farms for polluting energy production.

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Food & Water Watch works to ensure the food, water and fish we consume is safe, accessible and sustainable. So we can all enjoy and trust in what we eat and drink, we help people take charge of where their food comes from, keep clean, affordable, public tap water flowing freely to our homes, protect the environmental quality of oceans, force government to do its job protecting citizens, and educate about the importance of keeping shared resources under public control.

