

Living with Oil and Gas and Practicing Community Conducted Science

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SHALE TEST

Abstract

Deborah Thomas is an activist, citizen scientist and Wyoming resident. In this paper she describes experiences gleaned from local efforts to effect positive change and resistance to shale gas development in her own community. Meeting the challenges of development requires collaboration among community members, including farmers, rural residents, city dwellers, non-profits, doctors, scientists, and academics. Creation of and access to scientific information are crucial.

Keywords

shale gas development; scientific information; citizen science

Nineteen years ago, while riding horseback across a state section of land adjacent to our property, my husband, Dick Bilodeau, and I came across two acres that were surveyed and flagged. After multiple requests to state and local authorities, we found the section had been leased to an Oklahoma based gas company.

Since then our family and neighbors have lived with oil and gas development. For six years our small rural community learned how drilling, fracking and production are conducted. Huge trucks and service vehicles that supported the development, where fewer than ten vehicles a day normally traveled, suddenly overcame our narrow dirt roads. Our small tight knit

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community was invaded by a constant parade of transient workers who came and went from the rigs at all times of the day and night. They drove at high speeds around blind corners, making it very dangerous for children, pets, and livestock. The wildlife we shared the drainage with were driven away by the industrial lighting and deafening noise from the rigs. Choking dust, poisonous waste pits, spills, leaks and toxic emissions became the norm. Then, in 2006, our worst nightmare occurred. The fifth gas well drilled in our neighborhood blew out. After spewing over 100 tons of hazardous air pollutants, benzene, and methane into our air and being evacuated for three days, Windsor Energy left us with contaminated groundwater aquifers and toxic plumes that contaminated drinking water wells.

The State of Wyoming fined Windsor Energy \$2,812.50 for the blowout, while the monitoring project to identify and track contamination plumes in our water has cost millions. For ten years groundwater, Line Creek and private drinking water wells have been monitored. However, the company who contaminated our water has conducted no remediation. Instead, they have depended on natural attenuation to clean up their mess. Their preferred method has not worked, and they have now requested that the state of Wyoming release them from all financial responsibility and liability.

From 2000 to 2014, most of my time and energy was spent encouraging decision makers to change laws and pass regulation that would protect my community and the countless others I worked with as a community organizer. In Wyoming, roughly 75% to 85% of our economy is based on extractive industry. Here and in a growing number of places where extraction is happening, government doesn't want to kill the golden goose. Consequently, trying to rein in industry and its impacts is not easy.

I've spent countless hours attending community, industry, and government meetings; helping impacted residents learn what their situation is, and attempting to educate decision makers. We've lobbied at local, state, and federal levels, with great hope that our harrowing stories would be heard and acted on.

It's no surprise that the first people to recognize impacts in their communities are those who live there. We recognize subtle changes in our air, water and environment before they become a massive obvious mess. We also recognize changes in our family's health, which is when we need to know and understand what is causing them. Only then can we, and our doctors, make educated decisions to stop health issues from worsening and becoming more serious.

If the source of these changes is coming from oil and gas development, it doesn't take long to understand that if you want to change your impact, you must either move or get smart

fast. The industry is not required to listen to or address your concerns, and so the journey begins.

Our families, jobs, and responsibilities are set aside and neglected as we spend more and more time trying to make industry and government accountable in our communities. Filling state and industry coffers is the priority for decision makers, while our concerns are too often set aside as hysterical imaginations. After all, we all use oil and gas...where would we be without fossil fuels heating our homes and fueling our vehicles?

Few of us have experience dealing with industrial development. That rapidly changes, as do your priorities, when you live with oil and gas. What begins as protecting your property and family's well being quickly changes as you recognize saving the planet and your children's future is at stake.

Speaking the diverse languages of chemists, scientists, geologists, petroleum engineers, lawyers, doctors, regulators, educators, journalists, and politicians becomes a priority. As your property is ruined and your children become sick, you start looking for help wherever you can find it. Out of the chaos and desperation, unexpected alliances are created. Farmers, rural residents, city dwellers, non-profits, doctors, scientists, and academics recognize their commonalities, while they attempt to understand, document, and mitigate the impacts from the industry causing the chaos.

In Wyoming, we began looking for information, but found little to no documentation tying oil and gas activities to the impacts we were experiencing. Very few state, federal, or university studies had been done. Those that had yielded inconclusive findings about how development was deteriorating air quality, clean water, or human health. We knew it was affecting us, so decided to conduct our own studies.

We were lucky. Usually operating on a shoestring, communities and non-profit organizations seldom have staff time or funding to do projects like the one we conducted. But because I was supported by the grass roots non-profit organization I worked for during the first two years of the project, I was paid to do much of the organizing. Along with other impacted residents, we conducted the fieldwork, while the sampling equipment and analysis was paid for by community members, universities, and other non-profit organizations.

With Global Community Monitor's Bucket Brigade, we used tedlar bags and formaldehyde badges to sample air. Shale Test provided a FLIR gasfinder camera to see VOC emissions and summa canisters to collect air samples where emissions were seen. While interning with me, Cait Kennedy used real time monitors from Drew University to track particulate matter at compressor stations. Through collaboration with Sara Wylie at Northeastern University, we used photo paper film canisters to identify how the deadly neurotoxic, hydrogen

sulfide gas moves across landscapes and through communities. Finally, we worked with the Coming Clean network, Commonweal, Shale Test, and Subra Company, to collect air samples while we tested our bodies to see if the same chemicals would be found in both.

The resulting data has been published in two reports, a peer-reviewed science journal, and will also be represented in an interactive website later this year. Our suspicions and anecdotal evidence were legitimized by the data we collected.

Although our findings are very important and the projects ultimately worthwhile, working in toxic environments under harsh weather conditions is not easy. Protective gear is expensive and not available for some of the exposures we faced. Project planning, equipment, and analysis are costly, as is staffing, training, and conducting the projects. Even when sampling equipment is available, it can be difficult to operate correctly. Proper protocols and chain of custody must be followed, and time constraints are difficult to meet. For example, in order to be valid, some samples must be delivered to the lab and analyzed within 24 hours. All of these factors, along with the substantial costs and difficulty of collecting samples in rural areas, make the projects very difficult and nearly impossible in some cases.

Interpretation of the data is extremely important, yet an expertise that most community members and decision makers don't have. Protection can only be achieved when test results are identified and understood. Expertise from scientists and professionals is extremely important, yet often hard to find.

The need for medical help, legal aid, and technical assistance is overwhelming for most people living with oil and gas development. Very few experts in the private sector understand the industry, or the toxic impacts from it, which makes finding consultants difficult and expensive.

In addition, new laws in extraction heavy states are making it more difficult to collect and use data. An unprecedented Wyoming law, passed in 2015, made it illegal to use resource data collected on all lands other than landowner approved private land. More than $\frac{3}{4}$ of our testing was done on public land adjacent to our private property and along public roadways where we travel to work and recreate. Projects like ours became illegal. The law took away the fundamental human right to clean air and water, and stopped us from protecting our families and our health.

Following several years of litigation, the Wyoming legislature revised the statutory provisions to apply only to private lands, making public lands accessible for testing again. But during the litigation our community projects were put on hold, along with the funding that had made them possible. In short, it stopped our testing.

The debate over what's safe has been at the forefront of how oil and gas development moves forward. The precautionary principles that protect air, water, and public health are seldom included in assessments of how and where to drill and produce oil and gas, while laws passed and enacted are based on economic, rather than human and environmental, health. Research projects such as ours are beginning to become more frequent, but community partnering remains a challenge. The projects provide data about what is being leaked, spilled, and emitted from oil and gas sights, and also furnish health care providers with the information they need to diagnose and treat illness caused by the toxic chemicals and processes used during development.

Also very important is providing impacted people with information to make educated, rather than emotional, decisions about what they should do. The quandary for many is whether they should stay and fight for their land, lifestyle, and what they believe is right, or move on and try to start over. I've learned there is no right or wrong decision.

As hydraulic fracturing increases the number of people being impacted, concerns grow and new regulations are written to address future development. However, the old conventional fields, which are becoming more toxic and dangerous as the plays age and infrastructure crumbles, are seldom addressed. We began to recognize that the horrible impacts from old plays are the tip of the iceberg. Fracking, as it increases the rate of development and the areas being developed, will be responsible for vast contamination that will impact our planet for hundreds of years, if not forever. The hits to air quality, water, the natural environment, and human health may never recover, and as the shale formations are fractured, so are the communities where it is occurring.

Unfortunately, time is running out to protect human health, the other animals with whom we share the planet, and the environment. Clean air and water are disappearing at unprecedented rates while we increase our dependence on the industry that ruins these resources we need to survive. I am hopeful that more scientific information, along with legal aid and consideration of the anecdotal evidence from people on the ground, will create the change we need. Citizen science will be more important in the future, and laws, like Wyoming's data trespass law, must be overthrown.

In the Line Creek drainage of Wyoming, my family has decided to stay. We will continue to fight for less oil and gas development and more protection from its impacts. Our mission is to protect the beautiful place we live in and hope whoever comes next will do the same.

Author Biography

Deb is a 4th generation Red Lodge, Montana, native. She and her husband Dick Bilodeau raised their family in Clark, Wyoming, on the Eastern side of Yellowstone Park, along the Beartooth Front of the Rocky Mountains. Deb began working on oil and gas issues in 1999 when a drill rig began operations 600 yards from her home. She organized the Clark Resource Council (CRC) and the Pavillion Area Concerned Citizens (PACC); both effective affiliates of Powder River Basin Resource Council. She has raised the awareness of local, state and federal elected and appointed government officials and developed strong working relationships with impacted residents, Tribal members and other stakeholders affected by fossil fuels development.