



# Shalefield Stories vol.2

*Personal & Collected Testimonials of Life in America's Shalefields*



**This publication is dedicated to the memory of Terry Greenwood.**

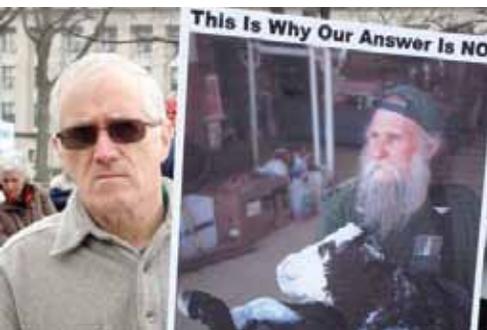
Terry's story was in the first edition of the Shalefield Stories and he was one of the first people in South Western Pennsylvania to speak out against the dangers of drilling. In March of 2014, after not feeling well for two months, Terry went to the doctor. They did tests and found he had numerous inoperable brain tumors. He went through extensive radiation and chemotherapy, but eventually, the cancer took over. He passed away on June 8, 2014, just three months later.

His last personal appearance was in Coshocton, Ohio. He came using a walker because he was too weak to walk on his own. Terry had spoken to people all over the country about the harmful effects of fracking. He was insistent on telling his story in hopes others would listen. He said he would never quit fighting to stop the toxic gas industry from contaminating our environment. Terry Greenwood was a brave, humble and kind farmer who only wanted to work his land and live quietly in the beautiful countryside that he felt obligated to protect.

Terry would surely want us to remember him by his favorite quote, "Water is more important than gas." Everyone who knew him misses Terry Greenwood, but he will never be forgotten. We continue our work in his honor.

# Shalefield Stories vol.2

*Personal & Collected Testimonials of Life in America's Shalefields*  
2015



## Table of Contents

---

### *Personal Stories*

Charles E Bevins III	7	Lisa Finely-Deville	27
Sandra Ballew	8	Bill & Mary Ann	29
Shirley Eakin	10	Lisa White	31
Greendeer Family	12	Paula S.	32
Victoria Trinko	13		
Randy Moyer	15	<i>Abbreviated List of the Harmed</i>	33
Jill Antares Hunkler	16	<i>Timeline of a Shale Play</i>	35
Julie Barr	17	<i>Natural Gas Development</i>	42
Michele Beegle	19	<i>Fracking in the Coalfields</i>	44
Kim McEvoy	20	<i>An Open Letter to Gov. Tom Wolf</i>	50
Ron Gulla	22	<i>“Bomb Trains” Threaten Our Community</i>	51
Erin Sethmen	24	<i>The Cost of Shale Fuels</i>	52
Suzanne Bastien	25	<i>Shale Boomtowns</i>	53
Kelly Henry	26	<i>Resources</i>	54

### Welcome to Volume 2 of Shalefield Stories

*Shalefield Stories* is a volunteer, collaborative project by concerned citizens. This publication provides a voice to individuals and families who have been impacted by the recent oil and gas development in their area. Our aim is to educate the public and our representatives through our first-hand shared experiences, testimonials and the most up-to-date information and research. We collaborate with public health researchers, environmental organizations, and grassroots groups to provide support and aid to affected individuals and families in Western Pennsylvania through our non-profit organization, *Friends of the Harmed*, a project of the Thomas Merton Center. Donations collected from the distribution of this book help provide that assistance.

We would like to thank everyone and every organization that helped us spread these important testimonials across the country to raise awareness and counter the industry’s claims that this process is perfectly safe.

Over the last year and a half, we distributed over 5,000 copies of *Shalefield Stories, Volume 1* and \$15,500 dollars in direct aid, in the form of water, air scrubbers, and emergency testing. The families that we serve are grateful for the concern and generosity shown by our volunteers and *friends* around the world.

- Friends of the Harmed

## *Your Donations = Direct Aid*



All the donations we receive for this publication are and will be used to help those directly in harm's way. An example of our direct aid is to a 90-year-old resident who everyone affectionately calls "Me Ma". She lived with contaminated water for 6 years after drilling started in her area. They knew they had good, clean water for decades prior to the gas development. They were frustrated and disheartened after years of pleading with the Pennsylvania Department of Environmental Protection and local officials for help. They felt as though the DEP worked for the industry, not for them.

Friends of the Harmed raised money, through donations, and organized volunteers to bring Me Ma clean, safe water and a medical-grade air filter.

"The spills keep happening with no end in sight; just illness and more casualties. But the water buffaloes sure eased my mind, and the clean air machine is wonderful." said Me Ma. "No more itching after bathing. So many people cared about an elderly woman like me. Thank you for answering my prayers."

To continue these direct aid efforts, please visit [FriendsoftheHarmed.com](http://FriendsoftheHarmed.com) today to make your tax deductible donation. ***Thank you!***



# Personal Stories

The Friends of the Harmed would like to thank the many brave families who have shared their stories with the hope of helping others.



**Charles E. Bevins III** 1988-2011

*Story by Charles' Mother Nancy Heinrich Bevins:*

As people skeptical of the gas industry, we are used to bad news. We shake our heads knowingly when we hear about another illegal dumping of frack waste. We scribble pages of statistics, as the scientific community publishes newer findings of the dangerous health risks related to horizontal drilling. We pass reports, through social networks, of semi-truck wrecks, explosions, and the destroying of country roads. It is very easy to find ourselves in a frack pit of despair, apprehensive that the next article will be the one to finally knock us permanently on our backs, but there is a less talked about risk in fracking circles.

It is an aspect many ignore. After all, no one is forced to put on a hard hat, just as no one is forced to sign a lease with a gas company. If the industry can lie and deceive a landowner, couldn't they just as easily lie and deceive an employee? Or worse, poison, endanger and threaten them? Even injure or kill them?

On May 1, 2011, my son and his coworkers were hurriedly erecting a drill site in Smyrna, NY. The site was extremely hazardous. All wheel drive vehicles were sinking into the mud and ruts were thigh, even waist-deep. Supervisors requested, then demanded, more mats to cover the work area. The company answered that they were too expensive and pushed the workers to continue. As a result, Charles E. Bevins III, my sweet, sweet boy, was pinned and crushed between an industrial-sized forklift and a building, when the weight of the forklift, on the unstable ground, gave way. The remote, hidden location, which affords so many drilling sites less scrutiny, was not mutually beneficial to my son. The sprint to the Syracuse hospital took over an hour. I'm told the last thing his coworkers heard him say, as they loaded him into the ambulance was, "Am I gonna die?" My only son, 23 years old, died repeatedly, until the doctor could no longer revive him.

My only son died with no family or friends at his side, to hold him and comfort him. Every night when I go to bed, my thoughts are haunted with what his last thoughts must have been, how scared he was, his pain. When my son's body was brought back home, we buried him on our property, after keeping him at home one last night. He went into our soil, where he had grown up the last 14 years of his life. We buried him among the trees he had cut and planted, the fences he strung and repaired, while the sheep he trimmed and fed overlooked from the meadow. Our family dogs laid quietly among us as we said goodbye and filled his grave with earth. He was supposed to grow old in the house he helped build, not be buried in the woods, a stone's throw from the back door. Life became observed, not lived.

The corporations he worked for sent flowers and representatives to his viewing. I found a short paragraph on one of their websites about sending their condolences and how committed they are to worker safety - this sandwiched between paragraphs about earnings and upcoming events. As far as the news, a local channel did a very short piece acknowledging his death and an ongoing investigation. After many months, OSHA found the companies at fault, and slapped them on the wrist with a whopping \$4,900 fine.

In the four years now following the loss of my son, our eyes have been opened to the substantial amount of injuries and deaths caused by this dangerous industry. We read more and more articles about rig workers injured or killed by electrocutions, explosions, and traffic accidents. Our research also unveiled the unregulated, inhumane hours they are forced to work, and the unsafe environments they are subjected to. After speaking with his coworkers, it became apparent that all the regulations in the world would never make drilling safe. This is an industry known for cutting corners, racing against public opinion, and ignoring scientific evidence. Their blatant disregard of these things will continue to leave environments, communities, and especially workers, at risk.

Our family will never be the same. We settled with the companies he worked for because we live in a town with a large number of drilling and supporting businesses, some owned by other residents of our county. We knew we would never get a fair trial. Our grandchildren will be taken care of, but they will always long for that part of their lives that is missing - their dad. When we are at community events, or even family gatherings, I can see the hurt on their faces as they watch other children interact with their fathers, and my heart breaks into a million pieces again.

I spent the first three years after our son's death hating the gas industry, railing against them with the angry fury only a broken-hearted mother can know. Not just because their incompetence took him, but because people in our state are fighting for their water, their land, and their lives. I became a bitter, angry person, until I realized how it was affecting everyone around me and getting our cause nowhere. I took a few steps back, and I decided if I was going to survive, I would have to go forward in a positive way. We rid our home of any gas-powered appliances, replacing our stove and water heater. We now heat our home with wood in the winter time. I began looking into solar and other alternative ways to power our home. I am hoping to join with others in our area to organize a solar co-op, which enables people to buy systems in larger quantities, bringing the cost down. In the next election I will work sacrificially to support and promote candidates who want to lead our country into a new era of sustainable, clean energy as many other European nations have already done. It is only a matter of time until fossil fuels will be obsolete. I believe we will very soon be watching this unfold before our eyes. As disasters involving the oil and gas industry seem to erupt daily: train derailments, oil spills, and pipeline explosions scientific evidence can no longer be ignored, and public disapproval is growing.

I hope and pray that any workers in this dangerous industry think long and hard about their lives. Is it worth being away from your children for weeks at a time? How long do you think your marriage can survive the stress? Deaths of workers in the oil and gas industry are the highest of any other American industry - 27.5 deaths per 100,000 workers, compared to 3.9 for all other American workers. Think about your children, your wife, your mom and dad, your siblings. The world is changing, energy is changing, and gas is on its way out. Jump this sinking ship, for yourself and those you love.

*- Nancy Heinrich Bevins*

“My name is Sandra Ballew, *my land has been destroyed by fracking* and I would like to see the industrial process *banned.*”



## Sandra Ballew

*Cleburne County, AR*

**Exposure:** Well pad and waste pit on property **Harm:** Surface water contamination: radiation detected. Soil contamination: pipeline spill, illegally constructed and operated waste pit, trash left on property, waste pit buried on site, suspected illegal dumping of waste water. Loss of property value and at least \$15,000 worth of hardwood **Human Health Impacts:** Burning eyes, trouble breathing **Animal Health Impacts:** Dead birds

In the early 2000's, an acquisition company in Florida contacted me to buy my property. They wanted the land I owned in Heber Springs, Cleburne County, Arkansas. I couldn't figure out why. None of us had heard about fracking yet. I owned 40 acres that I had gotten from my dad. In 1954, when I was just a few months old, we moved to Portugal. My dad was stationed there in the United States Air Force. Before that he had served in the United States Army. When we came back to the U.S., we lived in four different states during the remainder of his service. We never lived on base. We always rented land with property so we could farm and raise cattle.

Dad built a small house that he made from knotty pine he took right from the land. We had a dirt floor and cast iron stove for heat and cooking. There was no electricity. We used an artesian well for water. We stuffed some hay mattresses and slept there. We worked clearing and fencing the land. When my dad retired from the Air Force we moved to the only place we had ever really called home, Heber Springs, AR.

We had almost every kind of animal there you could want, plus 50 to 100 head of cattle at any given time. That's how I was raised. I am lucky to have grown up that way. I learned to play dominos by an oil lamp with my grandmother and I can cook on a wood stove.

Now I live in North Little Rock, but I kept the property. I had the best of both worlds. I created a trust so that the land would never be sold. I consider it my heritage. It was to go to my daughter and her children and their heirs forever. My daughter remembers it as land where she spent her summers. She remembers it as land that she walked and rode horses on; she fed cattle, chickens, and peacocks there with her grandpa. She remembers us gathering there as a family. That is where she fell in love with the country.

I knew we would not be ready to move back up north for several years so I started looking for a productive use for the land. My father raised birds until his death in 1987: exotic chickens, peacocks, quails, and turkey. In his honor, I worked with the US Forestry Commission to create a bird and wild animal refuge on the land. I planned to name it after my dad, and it was to include native plants and a two-acre pond for the wildlife.

I didn't want anyone on my land. The gas companies have been pestering me to drill but I kept turning them down. According to my deed, I own my mineral rights. It says clear as day, "for all claims whatsoever." One company sent me a \$200 draft (\$5 an acre) to allow them to do seismic testing on my land. In 2006 and 2007, at least three companies offered to lease my mineral rights. One was for \$20,000 plus royalties. I turned them all down. I didn't want anyone on my land. One landman threatened me. He said that if I didn't sign, he'd use forced pooling to take it from me anyway. In Arkansas, they need just over 50% of the mineral owners to lease and the rest are forced into it. Two of my brothers signed leases at that point. I still refused. This is my ancestral home. This is my land.

The history of mineral rights in Arkansas is complex. The laws have changed over the years and some of the paperwork has long been lost. Because of all this, documentation is essential. When I first started getting letters, I went to the courthouse several times. There were landmen everywhere. The County had the records sitting out in the courthouse. The County allowed landmen to take the papers out of the books and take them out into the hallway to copy them. I raised a concern about that because no one was watching them and a document could easily disappear.

I was there in 2014, to do more research. Some of the records had gotten so bad over the years that they couldn't be read any longer. Some had been converted to microfiche years ago. When I asked to see the original books, I was told that they were not available due to their poor condition. I was told by the first landman that contacted me that his company had bought the title company that held the microfiche for researching deeds. I asked them to research my records but they refused to research mineral deeds. The last landman I dealt with told me they don't care who owns the rights. Really? If you own both the surface and minerals, then you get to decide whether or not they can place a pad on your land. If you don't own your mineral rights, you don't have any rights at all. They can dig up your land and put a pad and pipelines on it without your permission. That's what happened to me. The land was already leased and there was no going back on that.

In 2010, a drilling company told me they were going to drill without my permission. They said that even though I paid for my mineral rights, I don't own them. They said that the person I bought them from didn't rightfully own them and therefore had no right to sell them to me. According to them, I bought a faulty deed. Supposedly, they found a deed from 1912 that proved the mineral rights had been separated from the surface rights. I don't remember ever seeing that deed. I wanted to fight them in court, but it is nearly impossible to find a lawyer in this area that isn't in the pocket of the industry. Our local officials aren't any better.

The Arkansas Supreme Court ruled that several mineral deeds held by County officials were null and void because of the manner in which they were sold. In 2012, three residents sued the Cleburne County Circuit Clerk claiming that deputy clerks in her office had illegally notarized oil and gas leases. According to the filing, one of the deputy clerks admitted to routinely illegally notarizing gas leases without the landowner present as a courtesy to landmen. The case made it all the way to the State Supreme Court.

The industry came onto my land in July of 2011, without my permission. For the next three years, I cried more than I didn't. I felt betrayed by my county and my government. It is devastating to know that you can have something for 40 years or more and someone who had never even set foot on it can come in and take it from you.

Before I knew that they were even there, they had bulldozed my trees and then burned them. My land had at least \$15,000 worth of hardwood. I didn't even have a chance to use what they cleared for timber or firewood. They completely transformed our land. They built up the land to make a flat area for the pad and frack pit. Now there is a steep slope where water runs from their operations straight down to the stream. It used to be quiet here. During drilling processes, noise can be heard in every corner of my land. The stream on my property is a tributary of Big Creek, which empties into Little Red River, our premier class trout stream. Downstream there is a 25 foot waterfall that empties into a pool. We used to swim there, but since they started drilling, the stream started to dry up.

There were times on my land I could barely breathe. I found dead birds on the levee for the frack pit. A few yards away, there was a dead buzzard lying in some fluid on the ground. The fluid smelled awful. It burned my eyes and made my nose run. When they were done with the pit, they buried it with some of the fluid still in it. The Arkansas Oil & Gas Commission and the Department of Health ran water tests on the stream and frack pit. The results showed low levels of radiation.

On February 29, 2012 the Arkansas Department of Environmental Quality (ADEQ) cited the company for violating the Arkansas Water & Air Pollution Control Act and the Federal Clean Water Act. They had illegally constructed and operated a pit on my land without a permit from the AOGC. This had gone on for at least four months

until I filed a complaint. In the inspection notes, the ADEQ inspector noted, "[drill] cuttings are outside the reserve pit on the production pad side as well as some small oil-based spills on the production pad." I was told by the company that the pit was only to hold fresh water. During the fall of 2011 we had a hard rain. After that, you could see that the rain had pushed the drill cuttings and fluid out of the pit.

During the summer of 2012, a waste hauler was investigated for illegally dumping waste water on leased sites in the area; mine was one of almost 20 suspected sites. Results from soil samples indicated chloride levels greater than 3000ppm when compared to background levels. Again, the company was found in violation of the Arkansas Water & Air Pollution Control Act, and the Federal Clean Water Act. When a representative sat at my daughter's table, he told us that they hire many subcontractors and can't be held responsible for what they do.

I found plastic bottles, cigarette butts, batteries, and beer cans on my land. I called the police and was waiting for the officer to call me back for direction when a woman from the drilling site approached. She said that they were about to blast and that I needed to turn off my phone. I explained I was waiting for an important call and I asked her to give me a few minutes, then I would comply. She threatened to have me arrested. This was the first of two separate occasions they threatened me. The second time was in January of 2012. I should have the right to call the police about illegal activities taking place without being threatened with arrest for criminal trespassing on my own land. I spoke to the sheriff and he told me they had gotten a lot of complaints, but their hands were tied. I said his officers gave the impression they were on the side of the industry, and not for the people.

We're near the New Madrid Fault and have had increased seismic activity since all this fracking started. There have been several earthquakes in the area. In February of 2011 there was a 4.7-magnitude earthquake nearby that could be felt as far away as Memphis, Tennessee. After that, they shut down two wastewater injection wells.

In 2014 I settled with the company for damages caused until that point. The agreement also granted them surface use through, across, and over for the purpose of drilling. I felt that I had no choice. They had already done the damage. Once I accepted money, I became liable for damages caused to others as a result of their activities on my land. In the contract, they agree to represent me if a lawsuit is brought against me.



Sandra's land cleared of trees, photo courtesy of Sandra Ballew

For example, if something were to explode on my land and it damages my neighbor's land or if a worker were injured on my property, they would defend our combined interests in court. We are now business partners. The fact that now I can be sued is another reason I didn't want to settle with them, but I really didn't want to lose everything in my life and not have anything. The guy who was negotiating the settlement with me asked at one point, "What can I do to make you happy?" "You don't have to do anything," I said "just leave my land." I didn't want their money. I just want what used to be mine.

When I started this I was a simple country girl who didn't know anything about this stuff. I thought I owned my land and I could refuse anyone to go on it. I thought the constitution applied to me. I thought the right to enjoy peace and quiet on my own land and the pursuit of happiness was the truth. It is not! I've called and written my elected officials. None of them have come out to see me in person or talked to me about my situation. We're fighting wars in other countries while our land is being taken from us right here and no one wants to listen.

We had planned to all move up there together but my daughter doesn't want to now because of the fracking. She doesn't want to live in a toxic environment with strangers coming in and out all the time. I don't blame her. Since the fracking industry has moved into our community, it has destroyed our beautiful countryside. The well sites are ugly, loud and intrusive. They ruin your peace and quiet and your privacy. In my case they actually stole my land by force! I feel like my heart, mind and soul have been raped as well as my land. Now walking my land is extremely hurtful for me. I often ask myself, what do I own? Do I even own the roots to my grass? A landman once told me that selling your mineral rights was no different than selling the motor in your car. I beg to differ. You can never put the land back after it's been fracked. If we don't have clean water, air, and soil, we have nothing.

- Sandra Ballew



Drill Rig, photo courtesy of F.O.H



**Shirley Eakin**  
*Washington County, PA*

My name is Shirley Eakin. Our family has lived here in Avella PA for 59 years. We never had problems with our air or water, until they started drilling for gas in the park behind our house. In the middle of 2008, my husband and I both got sick. In January of 2009, I finally went to the doctor. Afterwards, I found out that many people in the village had the same symptoms: headaches, skin problems, fatigue, heavy limbs. I went to a skin specialist with a rash. They didn't know the cause. We knew that the water had changed, as did our neighbors nearby. In September of 2009, we were told not to drink the water by the DEP because it was not safe, but that it wasn't the industry's fault, so we would not be provided with a water buffalo or potable water. So, we still bathed and washed clothes with it. We didn't really have a choice and we were never told not to use it, just told that we shouldn't drink it. Then, two years ago, we watered the garden from the well, while there was a drought. It killed the whole garden. Everything the water touched in a matter of days died.

We stopped gardening after that, afraid of what we would grow. We wouldn't want to eat it anyway. There are still brown spots in our yard, from where there was mysterious white foam that came up from the earth that killed our grass. This happened 2 different times, both while they were drilling in the park. Just from walking through the grass, the rubber soles on my husband's shoes fell apart within a matter of days. Other people in the neighborhood have had the same thing happen to their shoes. Now, our fruit trees and pine trees are dying, too. Water wells are collapsing now throughout the village. Never in all of our years has this ever happened. But since the drilling began, our well has collapsed at least once a year for the last 5 years. I know we are not the only ones having these problems in the area.

To make matters worse, my husband has asbestosis. No, a gas company did not cause it, but the air here is polluted now and it wasn't before. It makes his life much more difficult because he is much more sensitive. You can't breathe fresh air anymore. It drains every bit of energy you have. DEP and the EPA have made many trips here. We had two TV stations, film crews, and even elected officials. We are anxiously awaiting our first visit from the PA Department of Health after six years of complaints. So many say they are sorry, but what can we do? How do our problems get fixed? They say they don't know where the pollution is coming from. It is as if they don't care what is happening to us, after they leave.

One night when the air was very bad, I called and reported it to NRC (National Response Center) at 4:30 a.m. on Friday. They contacted the DEP, but the DEP said that they do not work at night or on the weekends. They always come long after the problem and then say it doesn't exist. Our air is worse at night and yet they can only come in the day, because they told us they are not allowed to have overtime.

In 2011, I went to the hospital. My heart wasn't beating fast enough to keep blood flowing. No reasons why were given and I was released. Yet, I continued to have the same symptoms for years: dizziness, fatigue, headaches, and skin rashes. In October of 2014, I went into the emergency room again, for the same reasons. I was nauseated, had a terrible headache, and I felt like my whole body was numb. One doctor says, "Go home. It's just a migraine." The other doctor said, "Go home. We can't find anything wrong with you." Finally, another doctor says, "Lady, if you go home you're dead."

They transferred me to another hospital in Pittsburgh to put a stent in, but when they did the procedure, they determined that there was no blockage. No one knew what was going on. It took days and days of testing before they figured out just what the problem was. A week later I had open-heart surgery. A benign tumor grew in my heart the size of a lime. I had to have it removed with part of my heart wall. It's strange because so many people around here lately have had tumors and cysts. The doctor told me I was one in a million, never saw something like this before in someone's heart. I know that I'm one lucky person to be here. They can't say what caused my problems, but I couldn't come home, until we could make some changes, because I was bathing and washing in that water, still. I had been for years, but this was the last straw. Our son gave us a water buffalo. His friends helped to change pipes and install it. Now we have to buy our water, which is very expensive and difficult for anyone to afford. But since we have started using it, our rashes and skin problems that we have suffered with for years have almost completely gone away, in only 6 months time.

Sadly, after my release from the hospital and my rehab from the surgery, I came home only to find out we have more traffic from a new drill pad and another impoundment that I can see from my living room window. With the air monitors, we can show that the air is polluted. With pictures and soil tests, we proved that the soil is polluted. It doesn't matter though. We do not have any "pre-drill" tests so we can't prove any harm. How are my husband and I going to get better if we can't get good air to breathe? Why were they allowed to do this drilling if the people were not protected first?

Recently, I left for four days. I should have stayed for longer. I didn't have headaches. I felt good. Since I came home, the headaches and weakness are back. We have lost friends and relatives from this pollution. They have us surrounded. The people whose land they are using deserve the royalties that they receive. For the millionaires they made - Horray! I know they won't stop drilling. I once heard that, "it's a small area - we don't count," but we need help! EPA, DEP, Department of Health, please, just one honest government worker, doctor, gas company: Speak the truth! The long-term effect is here now!

The gas companies would rather pay the fines, and the local officials would rather make a turkey habitat and beautify the park behind us with the impact money they receive from industry, than give us help with water and air, even though they are aware of the problems around here. The impact fee does not help those that have been impacted the most. Not one of the representatives from the government agencies, or gas companies, or lawyers, or council

people who know something is wrong would take a drink of our water. We did offer it.

My ribs still hurt, our eyes still burn, and we still cannot take a deep breathe of good air. Our eyes, teeth, skin, and vital organs have all been affected after years of exposure. Money is needed to pay for the water we buy to fill our water buffalo. We need air cleaners for our home. This was not how we imagined retirement. Our retirement is not golden, it's rusty.

I have some family who work for the gas companies. They need the work. They earn good money, but at what price? They want to earn good money while they are young so they can retire young. I just hope they are healthy enough when they retire to enjoy life. For us, it's everywhere. They have ruined our town. We feel like prisoners in our own home.

Our nephew gave us a sticker. "Water and air is life. Don't frack it up." On the surface they say they reclaim the land. You don't realize what's going on underneath. When the leaves come back you'll forget the tanks they hide. It affects everyone in different ways. When it happens to you, and eventually it will, maybe you'll realize gas companies are taking a lot from this area. They may have brought some good paying jobs for some, but at what cost to all of the others? I read in the paper how we should be thankful for natural gas. There are people for it around here. It's not that I'm against the jobs or the workers, but if you had to live in our small village for 7 years without clean water, what would you do?

- Shirley Eakin



Patch of grass killed by "foam" photo courtesy of F.O.H

ANALYSIS PARAMETER	CONCENTRATION	DETECT	RESULTS	UNITS	METHOD
Chloride (Cl)	4.0		25.7	mg/kg	SW 4500-C1
Moisture (Soil 1:1)	1.00		26.40	%	SW 2540 G
pH			4.85	Units	SW-846 900
Soil Temperature (°C)			20.70		EPA 4500-
Sulfate (SO4)	40.00		338.0	mg/kg	EPA 425.1
Surfactants (MSAS)	0.250		3.234	mg/kg	SW-846 7
Arsenic (As) (G)	2.0000		12.844	mg/kg	SW-846 7
Barium (Ba) (F)	10.00		194.6	mg/kg	SW-846
Calcium (Ca) (F)	50.00		1519	mg/kg	SW-846
Iron (Fe) (F)	5.000		32658x	mg/kg	SW-846
Magnesium (Mg) (F)	5.000		22262	mg/kg	SW-846
Manganese (Mn) (F)	3.000		1395	mg/kg	SW-846
Selenium (Se) (G)	2.5000		<2.5000	mg/kg	SW-846
Sodium (Na) (F)	30.00		50.91	mg/kg	SW-846
Sodium (Na) (F)	5.000		9.92	mg/kg	SW-846
Strontium (Sr) (F)	5.000		92.31	mg/kg	SW-846
Zinc (Zn) (F)	0.500		<500.0	mg/kg	SW-846
Oil & Grease [Gravimetric]	500.0		<500.0	mg/kg	SW-846
VOC [Scan]					SW-846
Dichlorodifluoromethane	0.0350		<0.0350	mg/kg	
Chloromethane	0.0350		<0.0350	"	
Vinyl Chloride	0.0350		<0.0350	"	
Bromomethane	0.0350		<0.0350	"	
Chloroethane	0.0350		<0.0350	"	
Trichlorofluoromethane	0.0350		<0.0350	"	
1,1-Dichloroethene	0.0350		<0.0350	"	
Ethylene Chloride	0.0350		<0.0350	"	
trans-1,2-Dichloroethene	0.0350		<0.0350	"	
cis-1,2-Dichloroethene	0.0350		<0.0350	"	

Soil test listing presence of contaminants. photo courtesy of F.O.H



## Greendeer Family

*Monroe County, WI*

**Harm:** Surface water contamination: silica & silt in water.  
Air contamination: Silica. Loss of property value

We need to realize that all our steps should be sacred. There are some of us that don't live to make money. This land is all ours and we're all related. The non-native outlook is that we have property lines, and I can do whatever I want on my land. But the native outlook is, that no matter if you live 20 or 30 miles away, you're still related to me. You're still my neighbor. You're still my sister. You're still my brother. At that distance, your activity still affects me. We are related. Everything here is sacred. We're related to the trees. We're related to the birds. We're related to the animals. We cannot keep extracting stuff without a price. Nobody just goes out to get plants that are native, and just picks it. You say a prayer for that plant and, if you want, you sing a song for that plant so that it will come back. The frack sand industry does what it wants to make money

I grew up around the Tomah, Wisconsin area all my life. I went to grade school here. My school bus was a 1956 Ford Woodside. I grew up with the sacred religious grounds on the property, and doing medicine dances, feasts, weddings, different things like that. I used to run all over the place in the woods, in the 40 acres that we lived on. When I was young, that was my playground. Before the silica sand mines came to Wisconsin I used to just love being in the woods. I remember a time when I saw a mountain lion and two wolves that ran across the field. Now, that's a silica mine. Talk about losing something that's sacred. It's amazing to see these animals out in the woods. You used to be able to hunt deer, go walk around in the woods, and now there are no woods. They plowed all the trees down. They didn't even use the wood. They put them in piles and just burned them. It's terrible. The Ho-Chunk passed a resolution against the sand mine companies, and the tribal Department of Natural Resources (DNR) responds to all complaints from tribal members. Once in a while the Wisconsin Division of Natural Resources levies a few weak sanctions for non-compliance. But overall, the frack sand industry does what it wants to make money. And none of it helps us. There is something going on in this water.

When I first noticed the sand mine industry coming in, I didn't really know what it was. I just saw them plowing down lots of trees, putting them in piles and burning them. I noticed changes when the animals started moving around, taking different routes, moving

in the woods differently. The animals were acting different. They stayed away from these areas where the sand mines were. An elder told me that he saw a change in the birds - where and when they were feeding. I noticed it, too. The deer moved totally away from the sand mines. There were no grasslands for them to feed on.

I started to see silt in the streams. The Lemonweir River, right nearby, is getting filled with silt from the sand mines. Some of the silty water has reached our land. It used to be dry back there but now it's like a river. We've lost a good 10 acres square to the water. If you look at the leaves, they have white and gray residue with sand particles on them from the mine that's about a quarter of a mile away. The water rises and falls. In April of 2015, you could see residue up the tree trunks at least a foot. You could see something in the swirls of the water that was not normal. It's not just plain sand. The water has a yellowish white residue floating through it. I've been here all my life, and I've never seen this, or anything like this at all. It's pretty scary. There is something going on in this water, and it's settling down, but it's still there. It's all over the place. I'm seeing it in all the water that's running back into the woods.

I noticed a lot of changes in the driving habits of people. They wanted to stay away from these big trucks constantly going down our roads. In some areas of Wisconsin, a sand truck goes by at the rate of one a minute. My sister, who lives near a sand mine, was totally afraid of having these trucks coming at her. She was actually swerving to miss these trucks. And the damage - how many trucks does it take to wreck a township highway in eight weeks, and who pays for that? The township does. The mines don't pay for the damage.

That's the problem with a mine, there are too many variables. Like many industries, the real effects show after they've left the area. What I see as the big change is that there is nothing left. These mines come in and build these berms so you can't see what they're doing. I don't know what they are trying to hide when they do this. They put the trees in piles; they scrape off the top layer of soil. It is really hard for me because I eat native foods and native plants. To see them just destroy the plants is really heartbreaking. They're allowed to destroy this stuff just to make a buck for themselves. They claim they will restore the land, but I haven't seen them restore a mine site yet, so I don't believe that they actually can. I mean who wants a bunch of little ponds around. To me we have enough water around that is sacred. If they're going to use it all up who's going to make a pond out of it. It's just going to be a hole in the ground.

The sand blows constantly. I actually have video of the mine sites at nighttime, when they're blowing the dust around. I have a loading site video. I have also seen loaders, the dust blows out the loaders, and you see it blowing off the trucks. You can actually hear it bouncing off your windshield if you're behind a frack sand truck going down the interstate. This is dangerous stuff. This frack sand dust is actually as dangerous as asbestos. It's gonna take a while for it to show up, but I'm sure there's gonna be people 20 or 30 years down the road that are gonna have problems with this. I was actually part of a report, a health impact assessment for Crawford County, at a mine down in Bridgeport. These mines have already hurt my heart, and do you say I have only ten percent of my soul left after the mine leaves? You can't put a number on this. One mine even came to my sister and asked her if they could check her water so that way she has good crops. She's not even a farmer. They wanted to check her aquifer so that way they could try to get in behind her or get into the land that she owns. These places are really pretty exploitative.

*- William Greendeer*



Running Valley Creek, sand laden water

## Victoria Trinko

Chippewa County, WI

**Exposure:** Silica (frac) sand mine. **Harm:** Ground & surface water contamination: silica & silt runoff. Air contamination: silica. Loss of property value. **Human Health Impacts:** Asthma due to environmental conditions. **Animal Health Impacts:** Suspected illness in cattle.

My name is Victoria Trinko. I reside in Bloomer, Wisconsin. I am a retired speech clinician raising 14 head of beef cattle on the 80-acre farm my father bought in 1936. I have been the clerk of the Town of Cooks Valley since July of 2001. The Town of Cooks Valley is about 35 square miles with a population under 900.

In the spring of 2008, the then township chairman told me that they had discovered silica sand in the area and that we would be getting mines. I commented that that would be a good thing. He told me that it remains to be seen. Our neighboring township had already started an ordinance. We used their ordinance as a model, tweaked it a bit and The Non-metallic Mining Ordinance was passed in July, 2008. The Board made some changes to it in December, 2008.

Our aim when drafting the ordinance was not to stop mining in the Town of Cooks Valley, but to protect the health, safety, and welfare of the citizens of our town. We wanted to have a say concerning possible impacts on our community regarding the hours of operation, lights, blasting, and the number of trucks hauling hourly and daily. We wanted to ensure reclamation of the land would



Sand loading station, WI photo Henry Boschen, Provided by The FracTracker Alliance on FracTracker.org

occur, understand how deep they would dig, and if it would affect groundwater.

Opposition to our Non-metallic Mining Ordinance began in November of 2008. A group of citizens with silica sand located on their properties attempted to nullify all of our ordinances by voting to revoke our village powers at the special meeting of the electors for the budget. This item was not on the agenda, so the motion was invalid. In early April 2009, the same group of citizens circulated a list of people for write-in votes to replace the current board on the ballot saying that the board and I had embezzled \$60,000. Also in April of 2009, the same group of citizens, this time with a lawyer, reopened the annual meeting after it had been adjourned and the board had left. They again tried to revoke village powers. but it was defeated.

Their lawyer started coming to all of our meetings and requesting large amounts of paperwork. He wanted our mileage reports, insurance reports, and other things. He was keeping us very busy and it was distracting us from what we were doing. In October of 2009, four citizens in the town sued the Town of Cooks Valley. We were taken to court and the judge in Chippewa County ruled our Non-metallic Mining Ordinance invalid. Our Chairman, with 20 years experience, became a specific target of slurs and innuendo by this group. He died in 2010, working on town business up to four days before his death. Our present Chairman had an unenviable position to step into. After the ruling in the Chippewa County Court, we appealed the decision and this case eventually went to the Wisconsin Supreme Court where our Non-metallic Mining Ordinance was ruled valid by unanimous decision in February of 2012.

While our ordinance was in litigation, three sand mining companies began operations in the Town of Cooks Valley. Since the Supreme Court's ruling, we have been working on the permitting process with these three sand companies. On October 16, 2013, we completed the permit process with the third company for the Chippewa Sands mine site. This mine, located within a half mile northwest of my farm, started construction and operation in the spring of 2011.

- On July 11, 2011, I notified the company about the dust billowing from the Chippewa Sands mine site. I was told a water truck would be on site in the next week and a new road was being built.
- On October 10, 2011, I again complained about dust blowing off the sand mine site. I was often in my fields that summer and fall and could feel dust clinging to my face and gritty particles in my teeth.
- In April of 2012, I developed an intermittent sore throat and raspy voice. In September of 2012, I visited my doctor who referred me to a pulmonary specialist. In October 2012, I was diagnosed with asthma

due to my environment and started on an inhalant and nasal spray to alleviate my breathing symptoms.

- In November of 2012, my daughter arrived home from Australia and said our home smelled like I had just swept the garage. She developed a cough, sore throat and a raspy voice within two weeks.

- In early January of 2013, I purchased a HEPA home air filter for \$1000, which

runs 24/7 to keep the silica sand dust out of my home. I have not opened my windows since the fall of 2012 due to the silica sand blowing through the air. I used to have the luxury of cooling my house by opening my windows at night. Since I could no longer do that, I used my air conditioner, which brought in the outside air and silica dust. The air conditioner has become counterproductive.

- On July 5, 2013, the wind blew out of the southeast and dust began rising out of the sand mine from all the mine site areas, creating an atmosphere so thick it obscured the bluff across the road from my home. Thankfully, when the wind is from the south I can be outside without symptoms occurring. When the wind is from the west, north, or northwest, I need to wear a protective mask while outside for any length of time. Working near the road while the trucks are hauling sand and even with a south wind, I develop a sore throat and raspy voice. I worry about my cattle, too. Some of them have developed a cough.
- While on a vacation for a month during the summer of 2013, my symptoms lessened and disappeared. The last days of my vacation, I did not need to take my medication. While driving home from Eau Claire after my trip, within a mile of the Howard sand mine, my throat started swelling. By the time I arrived home, it was sore and my voice was hoarse.
- In February 2015, I purchased three more air purifiers which have improved my voice quality.

Others in the Town of Cooks Valley have told me that their visitors have complained about the health impacts, including friends of mine from California who got nose bleeds while visiting me for five days.

There have been some jobs created in the area. At first they were mostly filled by people from Texas, but then later local people got jobs, mostly trucking. As oil prices have dropped, so has employment. Fifty-five people have been laid off in the different mines in the area. Owners with two or more trucks can only run one truck to allow other owners of trucks to operate. Most of the sand is trucked to trains to be hauled out of the area. We had four train derailments in the area in the first four months of 2015.

A former town supervisor, who has a filter on his well, used to have to change it every four months. Now he's doing it every week and it's still plugging his water heater. Another individual, who is closer to the mine, has sand seeping into his well water. He also has

fractures in his basement wall from the blasting at the mine. The sediment from the piles and operation has run off into nearby fields. One of the companies had a serious storm water breach that fouled a tributary of the Red Cedar River. This occurred during the wet spring of 2014. The company is seeking permission to build additional storm water ponds, that will contain flocculants to settle the sediment faster. The treated water will drain into local waterways after some of the sand has settled out, but it still won't be clear. I don't feel it is right that even though the milky water is within the Department of Natural Resources (DNR) standards, it is not the clear water we had in our streams prior to this industry operating in our town.

Sand mine companies moved into towns because we were vulnerable, with no zoning or prior knowledge of the extensiveness of this industry. When I asked where this will stop, a company representative told me that it operates as a free market. Slowly, towns have been working to protect their citizens from the hazards of these mining operations. When they first came into town to sell it, they told us that they would reclaim the areas once they had been mined. They promised trees, grasslands, and forests. They tried to reclaim one of the hills across from me and it didn't work. The hill is still bare. And this isn't the only site where reclamation has been a problem. They've tried pasture and prairie grass, but neither have really worked. I believe that reclamation is just a pipe dream.

The gas and oil companies have had exemptions from the Clean Air and Water Act since 2005, due to the "Halliburton Loophole" championed by Dick Cheney. Having protection from revealing the chemicals and hazards of this industry at the federal level, companies expect and demand limited oversight at the state and local level. State requirements are woefully lacking in depth to control the hazards of this industry. The oil and gas industry has acted with impunity in regards to the safety and health of employees and residents of communities where they extract sand or conduct hydraulic fracturing. Studies concerning the health hazards, the economic impact on communities, and water and air pollution contradict the claims of this industry. This industry hired the same public relations company to advertise the safety of silica sand and fracking that was retained by the tobacco industry to sell the notion to the public that smoking was not harmful. This public relations strategy indicates we are being sold a tainted bill of goods.

*- Victoria Trinko*

Chippewa Sand Mine photo courtesy of Jim Tittle





## Randy Moyer

Cambria County, PA

**Exposure:** Wastewater, flaring, abatements, responsible for hauling, emptying & cleaning waste water tanks and mats **Harm:** Wastewater improperly categorized as residual waste. Industry dishonesty/disregard: Not provided proper training or safety equipment, workers not informed as to contents of wastewater. Loss of income **Human Health Impacts:** Severe swelling of the face, lips, tongue, extremities, and genitals. Severe pain in spine and back. Burning rashes, dizziness, lung impairment, kidney & liver problems, irregular heart rhythm, memory loss, swelling of digestive tract and extreme heartburn, constant ringing in the ears, blurry vision

I’ve been driving trucks since 1994. In August of 2011, I started driving for a small water-hauling outfit in East Freedom, Blair County Pennsylvania. Every day was different. Some days I’d carry mud, but most days I’d haul wastewater from fracked wells to treatment plants. They’d lower the pH and then I’d haul it back to the wells for another frack job. I didn’t know exactly what was in the brine. It was an endless parade of trucks on those back roads. Some nights there would be 350 trucks just for one pad.

On the pads, it was common for them to set up a makeshift containment pit out of sheets of plastic and a pipe frame - kind of like an above-ground pool. This was to hold the wastewater after it flowed back from the well. We’d use our trucks to drain them out, and once they were almost empty, part of the job was to get in there and squeegee out all the dirt and mud. Others would spray in hot water, and I’d squeegee. The more they sprayed and the longer I stayed in, the wetter my feet got. It would soak through my boots. Some guys would go in there in their bare feet to avoid getting their boots wet.

We weren’t told what we were dealing with. We weren’t given MSDS sheets (Material Safety Data Sheets) or any training on any of this stuff. They didn’t provide any specialized equipment or gear because they don’t want to scare the public. The only thing we were

required to wear was a flame-resistant coat. If the public sees guys in HazMat suits, they’re going to start to ask questions. The drilling companies would rather endanger the public and the workers than answer too many questions. We just followed orders. If you asked too many questions, you were labeled a tree-hugger and you were gone. They don’t want any tree-huggers.

Sometimes we’d go in the tanks. They’d use the super sucker to clean them out. In there, you would wear a hard hat and goggles but no mask. In the tank, you’d spray hot water to clean out the frack fluid. You couldn’t see but an inch from your nose because of the steam. Eventually all the drivers are going to get sick like I have. It’s all airborne.

*“We weren’t told what we were dealing with.”*

I had to stop working in November of 2011. I was too sick. I have a hard time breathing, and I use an inhaler. I get dizzy and my vision is blurred. Sometimes I go into a room and forget why I’m there. I get migraines so bad I can’t think. If I get anywhere near a frack site or a compressor station I throw up. This stuff gets into your eyes and ears. My tongue, lips, and limbs all swelled up. I’ve had three teeth snap off. The first two broke while I was eating garlic bread and spaghetti. I have burning rashes all over my body that jump from place to place. My heart acts like a pumping station for this junk and moves it throughout my body. It moves up my arms to my chest and then down to my genitals and butt. There were days this past winter when all I could do was lay on the floor in my house with the doors open to cool me down. My skin felt like it was on fire.

The first time I went to an emergency room was straight from a well pad. I showed a supervisor the rash on my chest and he sent me. Since then, I’ve been to the emergency room 10 more times and have seen over 40 specialists in PA and WV. One told me I had bed bugs. Another said it must be a food allergy. It only took me four months on the gas rigs to get this stuff in me, and now, no one seems to know how to get it out.

On my best day, I have two good hours, and then I’m spent. I’ve got two tractor-trailers sitting at my brother’s place that I’ll never drive again. I can’t go back to driving a truck. I tried to get workman’s compensation from the company, but the judge denied it in 2015. I’m not going to let them get away with it. I’ll appeal.

I’ve heard stories of other guys that have it like I do and have taken their own lives. I’m a fighter. That’s how God made me. I go to church 3 times a week. No matter what I’m going through, God is still King, and he always will be. If He brings you to it, He’ll bring you through it. I just pray he gives me enough time to see my seven-year-old grow up a bit.

- Randy Moyer



## Jill Antares Hunkler

Belmont County, OH

**Exposure:** Wells, pipelines, compressor stations & transfer stations **Harm:** Ground & surface water contamination, evacuations **Human Health Impacts:** Headaches, asthma-like symptoms, rashes & insomnia **Animal Health Impacts:** Fish kill = 70,000 fish

My name is Jill Antares Hunkler, and I live in Belmont County, Ohio, near the Village of Barnesville's Slope Creek Reservoir where I have lived for 30 years. I have been experiencing the hazards of fracking and witnessing the path of destruction and contamination caused by this polluting industry. My family and I live in close proximity to fracking sites and have experienced negative health impacts including headaches, asthma-like symptoms, rashes, and insomnia due to the industry's invasion of my ancestral homeland.

The first warning signs of the shale industry invasion came with the arrival of the leasing land agents. Area residents formed long lines outside the local high schools to sign over the mineral rights before educating themselves about the potential threats involved with the industry. Landowners and farmers, who had been struggling financially for years, were suddenly being presented with significant amounts of money that they did not refuse. The industry preached of safe development, large royalty checks and independence from foreign oil and gas supplies.

The fracking infrastructure, including pipelines, compressor and transfer stations, began developing rapidly. Injection wells for the radioactive and chemically laden waste were among the first secretive projects to be completed, and Ohio was accepting out-of-state, toxic fracking waste.

Belmont County had entered into a secret contract with a company that had been permitted to take fracking drill cuttings, mix it with coal ash, and use it as fill for an industrial park site one mile from our Village of Barnesville.

I organized a group, Concerned Barnesville Area Residents (CBAR). We gathered factual evidence and presented it to local and county officials, initiated a successful petition drive, placed full-page bulletins, wrote numerous editorials outlining the hazards of the project, and organized a town hall meeting. As a result of the

community's voicing of its opposition to the project, the company withdrew and is not operating in our county. This was a big victory, showing what concerted, informed community action can achieve.

In March 2014, at a Village of Barnesville council meeting, I witnessed a Gulfport Energy representative presenting contracts to the council. The village had already agreed to lease the surface and mineral rights to Gulfport. The contracts being presented to the Village called for the locating of two fracking well pads within 500 feet from the shoreline of Slope Creek Reservoir.

Our now respected and powerful group of concerned area residents began campaigning for the protection of the reservoir and the abandonment of the fracking wells within the watershed. Another successful petition drive resulted in 2300 signatures, which have been submitted, to Gulfport and the Village, requesting that the company relocate the pads and abandon operations in the Slope Creek Watershed.

In the autumn of 2014, Slope Creek Reservoir, drinking water supply for 10,000 people, had been depleted from excessive fracking industry withdrawals. Due to public pressure, the Village ceased allowing Gulfport to withdraw water from the reservoir.

This led to fears among the industry about the availability of the water essential for their drilling activities. Another fracking company, Antero Resources, had entered into a five-year contract with the Village for water withdrawals, installed a barge for transporting equipment and a floating pump on the reservoir.

Subsequently, Gulfport Energy filed a lawsuit against the Village of Barnesville over their contract with Antero for water withdrawals. The lawsuit states that the Village has given priority rights to Antero for the water over Gulfport.

This lawsuit has led to international media coverage as a David and Goliath story between these large oil companies and the small village of Barnesville over the fight for water. In a local news interview, I stated, "I am grateful to the Village of Barnesville for ceasing water withdrawals last fall when the water levels became alarmingly low." I then addressed Gulfport, "Don't sue our Village. It is our water. You are a guest here. Respect us, our way of life, and our natural resources."

ThinkProgress ran a story over the water disputes involving Slope Creek with the headline, "600 Million Dollar Fracking Company Sues Tiny Village in Ohio Over Water Usage." This alerted Al Jazeera America of the situation and in March of 2015 they came and interviewed me and aired my story, tied in to the Slope Creek water dispute and lawsuit, on their 24-hour cable news station.

In April of 2015, Al Jazeera America returned with their crew to film the local Source Water Protection Plan meeting where the Village of Barnesville, in cooperation with the Ohio Environmental Protection Agency, presented their draft plan to the residents for public comment. In the packed room, Barnesville area residents raised concerns over the fact that major potential threats from shale gas development had not been included in the plan.

The Al Jazeera America news story, which aired later that week, shows me asking the following questions, "Who decides what is included in this protection plan? Is it the community?" "The Mayor of Barnesville responded by saying that the purpose of the meeting was to hear the concerns; he didn't specifically answer the question. So, we are left to wonder and worry what the Village will decide.

*"I never imagined that my quiet country way of life would disappear."*

Most of my Slope Creek neighbors have already signed their mineral rights over to the industry, but based on my research and observation of irresponsible drilling practices, I have refused to lease my mineral rights to Gulfport. As I told Al Jazeera America, "I could use the money. I have a leaking roof, and my water system is not working, but I value clean air, water, the trees, the land, the animals and their habitat more than money."

Gulfport has informed me that if I do not enter into an agreement with them to lease my minerals by June of 2015, they will file an application for forced unitization with the Ohio Department of Natural Resources for my mineral rights. There will be a hearing before the Chief of the ODNR Oil and Gas Commission where Gulfport and I will both be given an opportunity to present our cases. The ruling in such cases most often favors the industry, even to the extent of declaring that no royalties will be paid to the forced unitized mineral owner until the well has paid for itself 200 times over. The unit in which my property would be forced into will have a well pad located less than a quarter mile from my home, and within a half mile of the of Slope Creek Reservoir dam. There have been documented cases of the fracking process causing smaller earthquakes in Ohio. This is particularly concerning as possible earthquakes caused from this drilling site within such a short distance of the reservoir could compromise the dam's integrity and threaten those who live downstream.

When I first took up the battle many said: "You are wasting your time. You can't stop this industry because they have all the money and the power influencing local, state, and the federal government." Fortunately, we did not listen to such defeatists; instead many concerned residents joined together in truth and achieved a great victory by stopping the radioactive fracking waste facility from being built a mile from our village.

It is my greatest hope that others will be inspired by this story and become informed and work together to take action against harmful and irresponsible shale development. It is not a choice whether to share my story in protective efforts for the land and life-giving water. It continues to be a responsibility that I wholeheartedly accept to help ensure a healthy and protected Mother Earth.

*- Jill Antares Hunkler*

To see Jill's entire testimonial, go to our website [ShalefieldStories.org](http://ShalefieldStories.org)



Slope Creek Reservoir photo courtesy of Max A. Burkhardt



## Julie Barr

*Trumbull County, OH*

**Exposure:** 5 Injection wells **Harm:** Ground & surface water contamination, waste water spill/leak, contaminated ponds & wetlands. Industry dishonesty/disregard: Failure to inform family of contents of spill, no ongoing monitoring of well water. Loss of Property Value. **Animal Health Impacts:** Dead fish & wildlife.

I have lived in my home for 14 years in Vienna, Ohio. When we moved to what was our dream home, it was country living at its best. We could not have asked for better neighbors: people who cared about one another, people you could count on, and you would think, would look out for you and your family. Today, I have 5 injection wells almost in my backyard. There is no more sitting outside in the evening after a hard day at work. Now, all you hear is the beeping from truck after truck, at times reaching 20 within one hour, all coming to dump brine and waste from hydraulically fractured wells. No more quiet. No more peace. No more waking up in the morning just to watch my children sleep. Now, I have to run and test our water before they get up, so I feel it is safe for them to brush their teeth and take a bath. About two years ago, my nextdoor neighbors passed away, and their children and grandchildren took over the land. At first, not much changed. Then, my old neighbor's grandson's company opened an injection well in the field. Our quiet country life was no more.

One day my family was almost hit by one of the trucks pulling out of the dump site. We were shook up and always on alert after that. Then my biggest fear came true. Right before Easter, there was a leak or a spill, and it was really big. It spread over a mile of wetlands and ponds. We found out on our way home because of all the police and equipment at the end of the street. We were very concerned. At first we got no answers, just what we were able to see - many dead fish and other wild life. I began to cry looking at all the death around me, and then it hit me: my kids and our water! I called the house and told our sitter not to let the kids drink or bathe in the water. No one could tell us what was leaking or from where it was coming. All I was told is that everything was okay, and they didn't THINK anything was wrong with my water. It was only after the spill that we found out there was not one, but five injection wells operating in the field by our house! The Ohio Department of Natural Resources (ODNR) took a water test for us, but the cleanup was still ongoing for weeks afterwards. There was never any monitoring, or follow up to assure us our water would be

**“My name is Julie Barr and I am calling for a *stop to hydraulic fracturing and injection wells.*”**

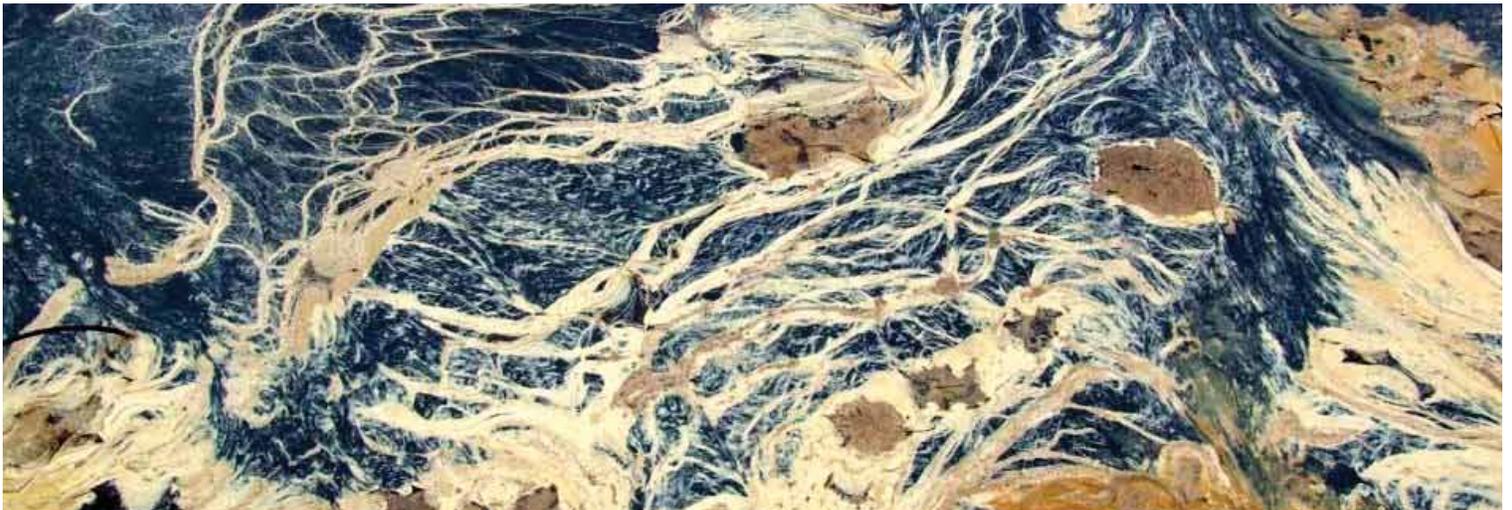
safe, by the state or regulatory agencies. They never told us what was spilled or how. Almost two months later we still do not know what the substance was that killed all of the fish and contaminated the ponds and wetlands.

When catastrophes strike, where do you look but to the county and state government, EPA and ODNR? Well let me tell you, that’s not the place to start. I didn’t get answers, just more questions and concerns. Our local trustees called a meeting to help the community get answers. Questions were asked, but not much was answered. They did try to help, but their hands were tied. We still have not had many answers about what happened and honestly, I don’t think we ever will.

***“They never told us what was spilled or how.”***

While I was worrying about my water, I found out the same family that owned and operated the injection wells had illegally tapped into city water. Upset, I called and talked with the news and local newspapers about it, and they investigated and reported it was true. Just last night, we were informed by our neighbors that the land behind our house, which we have used and taken care of for the last 14 years, is not to be used by us anymore. We are not even to cut the grass. They obviously don’t care about my daughter who has bad allergies to weeds. Because I talked about what happened, I fear my family may now be punished. Our quality of life is now forever changed. You may say, “just move.” Well, if you don’t have money and your home has now lost its value, how can you? Our neighbors can keep making millions on the backs of their neighbors without a care! In the meantime, I will continue to check my water daily and pray that maybe one day we can get away from all of this. Please keep fighting to stop fracturing and injection wells. I know I will!

***- Julie Barr***



Injection well spill over wetlands, photo courtesy of Protect Mahoning Valley



## Michele Beegle

Bedford County, PA

**Exposure:** Storage field, pipelines, several gas wells (2 less than a mile from property), compressor station (2/3 miles from home) **Harm:** Ground & Surface water contamination: arsenic, strontium, & man-made anionic surfactants. Air contamination: benzene, toluene, formaldehyde, arsenic, carbon dioxide & propane. Inaction of the DEP. **Human Health Impacts:** blackouts, cataplexy, pre-cancerous uterine, sterility. **Animal Health Impacts:** Death of 2 cows

We've lived on our land since 1983. It was given to our generation by my father-in-law. I loved it here. It was quiet. If you saw more than one car all day something was going on. We could sit on our porch and be out in the yard, and only hear birds singing all the time. We never worried about what we were drinking or breathing. Our three children were born and raised here. Back then everyone got along with his or her neighbors. Everyone was family. We kept an eye out for everyone. You could count on people. Now there's a division between people.

In 2014, we applied for a second mortgage. We wanted to update the furnace and bathroom, and put in a pool for the grandchildren and my husband, Robert. The water therapy is good for him. He suffers from severe back pain and neuropathy that was caused when a tree fell on him in January of 1988. We applied for a \$15,000 loan. Our credit was excellent and our home had recently been appraised at \$125,000. We didn't expect a problem. Our home and our credit is all we have. Robert doesn't believe in credit cards. "If you can't afford it, you don't need it," he always says. We had previously taken out a loan on the house to help pay for our youngest daughter to go to nursing school. We've never missed a payment on the house and we paid off our last car loan early. We went straight to Hometown Bank of Pennsylvania. We have banked with them for the last 10 years. We filled out the paperwork and were initially approved. A few days later, Carol at the bank called us. She explained that the attorney had looked at the loan and it was too big of a risk for them. Since the water well was contaminated, the property wasn't even worth the \$33,000 we still owed on it. They said it was worth nothing. We tried three other banks, but the result was the same. At first, they would approve us, but as soon as they saw the tax assessment that said "contaminated well," they turned us down.

Our water well was dug on September 15, 1989. It is a 118 ft. artesian well. When it was dug they tested the water. The test showed traces of sulfur and iron so we had a filter installed to filter them out. Once a year, our contractor, George comes out and changes the filter. Gas drilling started in our area around 2002. Pennsylvania General Energy Corp (PGE) drilled five production wells. We were lied too from the start. We were told these wells would last for 10

to 15 years. The one they drilled on our land only lasted 2½ years. Then PGE sold to the company Steckman Ridge, a spin-off of Duke Energy. It has become a real-life nightmare. This company has plans to put in 23 wells, for storage of gas. The Spectra Energy facility (known as Steckman Ridge) is a 12-billion cubic feet, underground natural gas storage reservoir with a 5,000 horse power compressor station, 13 injection/withdrawal wells and related pipeline infrastructure in Monroe Township, Bedford County. The compressor station is LESS than 0.66 miles from our property, and the wells are 1,713 feet and 4,402 feet away. We are downhill from the first. In 2007, George came out to change the filter on our water well. I remember him telling us that the water "wasn't right." He recommended testing it. Two or three days later the lab called us and told us not to use the water to drink or bathe. The results showed arsenic levels of 0.034 mg/l. According to the EPA, the maximum "safe" level is 0.010 mg/l. The PA Department of Environmental Protection also tested the water and found similar levels. After that, water tests became a way of life. In July of 2008, the DEP tested the water again. The level of arsenic was 0.0225 mg/l. Strontium was detected at 0.529 mg/l.

### *"After that, water tests became a way of life."*

In December of 2009, the arsenic spiked at 0.0719 mg/l. Strontium was at 0.230 mg/l. Our water was also tested using methylene blue active substance (MBAS), which detects the presence of man-made anionic surfactants (such as a detergent or foaming agent) in a sample of water. Our results showed 0.20 mg/l. The DEP seemed indifferent to our plight.

In November of 2010, the DEP down played the high arsenic levels, saying that the level wasn't as high as it is in rat poison. As you can guess, that didn't make us feel any better. When the field agent came to our house he told us that this would be the last time the DEP tests our water because we were wasting the taxpayers' money. The results he sent us from the test didn't even contain results for arsenic or strontium. In May of 2013, a professor from Duquesne University came and tested our water. The arsenic levels were higher than ever at 0.076 mg/l.

Others in the area have also had their water tested. Their water also had arsenic in it. Who knows how long we'd been drinking poisoned water. In 2007, Spectra Energy/Williams built the Steckman Ridge compressor station 2/3 of a mile from our home. We have experienced numerous problems since then. There were 40 blow offs between 2009 and June 2011. A blow off is what they call it when they vent gas, benzene, toluene, formaldehyde, and other toxic chemicals into the air. According to the Bedford Gazette, Spectra Energy is legally permitted by the DEP to emit 50 tons annually of volatile organic compounds and 25 tons of hazardous air pollutants.

The first BIG emergency shutdown was in August, 2009. The DEP issued two Notices of Violation in 2009 for Spectra Energy's "unlawful conduct" during the first year of operation at its Steckman Ridge compressor station in Clearville, PA. Spectra Energy's "unlawful conduct" violated air quality and clean stream regulations of the Pennsylvania Code. They received a \$22,000 fine, but never came out to clean up our property. We were given \$25.00 to go get something to eat. We really thought it was a joke after oil rained down on all of our property. We had oil all over our cars and garden.

We always had a garden and a small barn for beef cows, pigs, chicken, and turkeys. It was cheaper than the store and you knew what you were eating. Once the compressor station went in, it all went to crap. Our cows just dwindled away. The first one died within a few months. Then there was a second one. We'd never lost a cow before, except during birth.

Not long after a blow-off in August 2009, I was working out back in the garden when I blacked out. It happened a second time one morning while my youngest daughter was getting ready for school. I was in the bathroom. When I fell, I landed in front of the door. It took my daughter five minutes to force the door open so she could help me. With time, they became more frequent and lasted longer. I've broken every rib except one from all the falls. For safety reasons, I lost my license for a while and I'm not allowed to shower. I've been to see specialists in Altoona, Johnstown, and Pittsburgh and none of them can tell me for sure what is causing the blackouts.

Once it happened while I was in the doctor's office. The doctor told me that it was cataplexy, as a result of toxic exposure. Now I'm on medication that makes it better, and I will be for the rest of my life, although it increases my risk for Parkinson's disease.

On the evening of March 9, 2013, I was outside with the kids when we heard snapping and popping sounds. I thought they were firecrackers. Robert's brother, who lives up the hill next to a compressor station, called and said he could see smoke coming from the station. My brother was at our house that night. He was trained as an electrician in the Air Force and said it sounded like electrical fire. Soon the sound turned into a rush of air like a jet engine. We called 911 and fire trucks from the nearby town of Everett were sent out. Robert and I have a scanner and were listening to the trucks coming in. I could tell by the radio chatter that they were heading the wrong way, so I called 911 and helped them get here. About 3 hours later it was over. According to the newspaper, the first responders couldn't get in to the facility because no one had the key. Initially Spectra said that only a small amount of air leaked out of the facility due to a faulty valve. Through our own efforts, however, we now know that Spectra Energy's uncontrolled leak in this latest incident amounts to 431.5 thousand cubic feet of natural gas vented to the atmosphere over a two-day period. That is enough natural gas to power five homes in the Northeast for a year. Hardly a "small volume" as Spectra Energy officials claimed. Moreover, documents from the DEP reveal that the uncontrolled release was tied to a malfunctioning electronic level switch in a dehydration unit. Another lie.

My oldest daughter gave birth to our first grandson in 2011. She was 27 at the time. After he was born, she was diagnosed with a pre-cancerous uterine and had a hysterectomy. She had never had any health problems before this. In January of 2012, she went in for surgery. I remember the surgeon telling us in pre-op that he was going to try to save her ovaries but that if he saw anything that looked suspicious he would have to remove them too. If the surgery went any longer than two hours we would know that he had found more. I kept up hope until two hours and 15 minutes into the surgery, and then I knew. He had found more cancer cells on her ovaries. In September of 2012, my husband was diagnosed with sterility. His testosterone levels were so low they didn't even register on the test. A few months later, my son turned 27. He and his wife were trying to have their second child. It had been seven years since his first child was born. Previously healthy, he was tired all the time. After several tests in February of 2013, they determined that he was sterile. The doctor said that someone his age and in his health should have testosterone levels around 1,000. His were under 200.

When it was just me, I could keep my mouth my shut. But now that my children are suffering too, I won't be quiet anymore. I don't care what they do to me, but don't mess with my kids. It is frustrating to know that you have worked your tail off your whole life, and now your land is worthless. Robert's brother is selling and leaving. They are robbing us of the land that Robert's father left us.

- Michele Beegle



## Kim McEvoy

Butler County, PA

**Exposure:** Multiple wells in the area. **Harm:** Water contamination: arsenic, ammonia, manganese, black water, dry well. **Human Health Impacts:** hair fell out, muscle pain, fatigue, possible arsenic poisoning. Inaction from the DEP

I bought my home in 1996. I lived in a small, rural, woodland community in Butler County, Pennsylvania. I worked hard for 50-60 hours a week for a part of the American Dream: a home. But my dream was taken from me when my crystal clear water turned black. I never paid much attention to the drilling. That is, before we had problems. In February of 2011, I noticed my well water had a grayish color to it. At that time, the only change in my environment was the introduction of Marcellus Shale gas drilling in my neighborhood. The rumbles of the constant truck traffic and work on the wells invaded my quaint and quiet country home. I could smell the chemicals in the air when the wells were flared. It felt like I was living next to an airport.

In April of 2011, a man came to my home. He told me he was testing water in the neighborhood. I was happy to see him because of the troubles we were having. I waited anxiously for my results. While we waited, sometimes the water would run clear for a while but then it would turn black again. When the water was clear, my husband and I would still shower in the water. By May, we started to get sick. Sometimes I would have to stop the shower to sit on the bed, so I wouldn't pass out. My hair started to fall out and my fingernails grew funny. My boyfriend complained about aches in his legs, headaches and sinus pain. I started talking with my neighbors and some of them were experiencing the same problems. I really started to worry when the animals wouldn't drink the water.

In June, we contacted our Township Supervisors and a water well company. They advised us to call the company drilling nearby, so we did. When I called them, I asked why they had tested the water before and what it showed. They called it a "pre-drill" test to see what the water was like before drilling and fracking started. They were preparing to drill the Bricker Well about 4,500 feet from my home. This made no sense to us. Eight months earlier, in October of 2010, the same company started work on the Gilliland Well. It was only 3,500 feet from my home but they never came by to do any water testing then. In June of 2011, the gas company sent out a company to test the water again, and this time arsenic, ammonia,

**“My name is Kim McEvoy. *I had to leave my home after I lost my water.* I am calling for the DEP and our politicians to be responsible to the people of Pennsylvania, not the corporations.”**

and manganese were above the maximum contaminant levels, in addition to other contaminants. When I started to ask questions, the gas company insulted me and said maybe it was the leaves from my trees that made my water turn black. Why, after 16 years of living there, would the leaves now make my water black? Did the trees just get angry and ruin my water? Why was other people’s water going bad too? And now they were saying that this was what my water was like before the drilling began? This was simply not true. Our water was fine before, and it had been for all the years we had lived here, but now my water was so bad that it began to eat away the porcelain in the toilet, and we could not use it anymore. After a lot of complaining, we were finally given a water buffalo by the gas company.

***“My faith in our government is gone.”***

In the beginning of July, some neighbors that were having the same kinds of problems gave me the phone number of the PA DEP. I gave them a call, but the DEP was no help whatsoever. The agent said he was unaware of our situation when I called, and when they finally came out to our home, they said they could not test our water because our pump had been taken out of the well and put into the buffalo. They said they could not get enough water for a proper sample. No one seemed to care what had happened to change our water, or whether or not it was safe. Our local officials did little to help, too. Other neighbors were now getting water buffaloes. We contacted the Department of Health and they referred me back to the DEP. I wrote to Governor Corbett and went to my township meetings, but only to get no help and no solutions. Only after we went to the local news with our story in August did the DEP and officials pay attention to us. They came back to test our water, but by then, it was too little, too late.

For five months, while we had the buffalo, our health improved and I did not have to boil water on the stove to bathe my 3-year-old daughter. The problem wasn’t fixed, but it was better than the way we were living before. But then, the DEP came back and said

it wasn’t the fault of the drilling. And just like that, people came and took the water buffalo away. They later told the media that they did a thorough investigation, but in our opinion, they did not. Even though our earlier tests in the summer, from the gas company, showed elevated levels of arsenic, even above the maximum contaminant level, the results that they provided to us later did not show whether or not they even looked at the arsenic levels or tested for it. They provided us with the controversial “Suite 942” results, which only showed the results for a limited number of contaminants instead of all the results. Again, they said the results were similar to background levels and they stuck to the same story: there was no difference from the water tests before. The entire time we felt that the DEP was working for the gas company and never once did we feel like they cared about our health and safety, or that of our young child. They were only there to say that it wasn’t the gas company’s fault. Never once did they try to figure out why suddenly dozens of families in the area had lost their water supply.

They had my water buffalo removed on January 16, 2012. After hooking up my well, my water ran black for a day and then after two days it stopped completely and I only had limited water. What water we had was brown or black, had sediment and a rotten smell. We had to fend for ourselves. My husband took showers at work and would bring home 20 gallons of water for us to flush the toilet and wash our hands. I had to buy water to cook with, paper plates and plastic cups because we couldn’t wash our dishes. We went out to eat a lot. We went from healthy and homemade food to a life of fast food. For months we would have to walk, even in the snow, a half a mile to a hunting cabin to do laundry, get water, and take a bath. For over seven months, all we ever thought about, day and night, was water. That was what we lived for: finding water and paying for it ruled my life. The cost and time became so much I even had to pull my daughter out of preschool. You need water to survive and we were living day to day in survival mode.

My home was not a fancy home but it was my home. It was something I worked hard for. We loved living in the Woodlands. In the summer of 2012, over a year after the problems began, the EPA contacted us and said even though our water test showed elevated levels of methane, arsenic, iron, sodium, chlorides and manganese, they were not very different from the “pre-drill” tests. The water must have been like that before and since they do not regulate water wells, they did not “anticipate further examination of our complaint.” Our problem remained the same- we had no legitimate pre-drill tests that actually showed what our water was before the drilling began, and without it, they were only going to refer to the testing the gas company did, after the problems already started. We hit a dead end. We were left with no choice but to walk away from our home. My good credit is gone. My faith in our



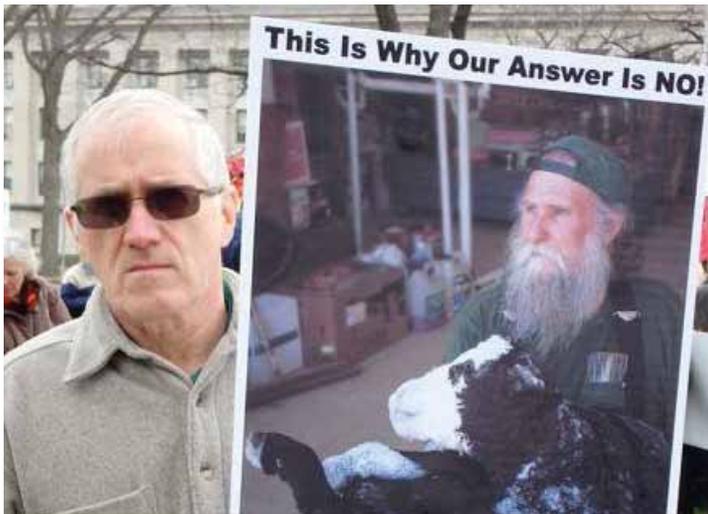
Life without running water, McEvoy’s home. photo courtesy of F.O.H

government is gone. We had no choice. Our lives were on the line and I had to do what was best for my daughter.

I was quoted in the paper saying, "I would rather have bad credit than be dying because my water is so bad...It's crazy you have to choose credit or water. I'm choosing water." It takes time to heal from the emotional trauma of losing your American dream. Since the drilling, my veteran husband has suffered from PTS. "It's frustrating when you are a veteran and the government you served goes and tells you to fuck yourself," he says. He doesn't like to even hear talk about what happened to us. He usually leaves the room because it is too stressful for him. God's gift of water is really not free. Now I share my story when and where I can because we feel luckier than most that aren't able to pack up and leave. There are many families still living in that same hell, in the same place, and nothing over the past three years has changed.

Now we live in the suburbs of Butler. I have water to cook with and bathe in again. But even now we can see the drill rigs getting closer and closer. They are even drilling by the schools and next to homes. Although I am unsure exactly what happened to my clean water, what I do know is this: After 16 years of clear, clean water, my water turned black and that made my family and I ill. Some tell me that all these consequences are temporary. That we must sacrifice to spur economic growth, and that the oil and gas industry will "get it right" if we just give them time and room to work without over regulation. To me, this could not be farther from the truth. While some people temporarily benefit from the oil and gas industry, my family and I have lost so much, including our rights, our health, and our property. They are leaving scars on our land, on our communities, and on our health. Scars that will last for generations.

- Kim McEvoy



## Ron Gulla

Washington County, PA

**Exposure:** Well pad and waste pit on property **Harm:** Ground & surface water contamination: water filters that were usually changed every four months were being changed every week. Air contamination: furnace filter was filled with black soot. Soil contamination: garbage buried on-site. Theft of personal property. Fecal matter left on ground. Loss of property value. Loss of income: lost all ability to farm on his property **Human Health Impacts:** Stress and insomnia **Animal Health Impacts:** Fish kill

My name is Ron Gulla. I once owned a beautiful farm in Hickory, Pennsylvania. As an individual with six years work experience in the oil and gas industry, I thought I understood the business, but I was wrong and therefore deceived, along with everyone else. At the time of signing the lease, no one knew that this was a different kind of drilling. When nearby landowners and I signed our leases in 2002, no one knew of any exemptions (the industry is exempt from the Safe Drinking Water Act and the Clean Air Act.) We didn't know about the Halliburton Loophole. When the exemptions went into place in 2005, property owners with leases should have been informed. If I had known this kind of stuff could happen, I never would have signed a lease. The leases should have been rewritten

or voided. Mt. Pleasant Township saw the beginning of horizontal drilling and fracking in the Marcellus Shale around 2005. Although some officials may have known, the landowners were never informed of this type of drilling, until we saw it happening all around us. I witnessed so many issues that I was unfamiliar with, even with my background and work experience. They turned the 2.5 acre pond on my property into their sediment pond. Whenever I questioned these issues and practices, the industry and DEP personnel were extremely rude and unaccommodating. The industry operated on intimidation. They have intimidated everyone and have taken advantage of this rural area. Foolishly, I thought the DEP was going to help.

The following are experiences I had on my property and explains how they were handled by the DEP:

**February 2006** - I met a man from the DEP on my farm. He did what he called an "inspection from his vehicle." I told him of the problems, past and current. Equipment operators, service rig hands, and others expelled feces on my property numerous times. There was garbage left all over my land. 8 ft away from my garage, I picked up paper that I discovered had fecal matter on it. Other property owners complained of the same type of abuse. Large amounts of storm water and silt run-off caused the silt fences to collapse. There was mill slag dumped on my property. There was no soil-and-erosion plan in place. Water and mud were running from the location, then down the stream and directly into the pond. The silt was very deep, approximately 20 inches deep on the location road. I told them that fish in the pond would die due to the extreme soil runoff and pollution coming from drilling location, but the DEP inspector had no comment on this matter and didn't seem to care. Water ran down to the house by way of the site. The asphalt driveway is now washed out, and my well water muddied when it rained. The DEP inspector agreed that the location road was a real mess and difficult to drive through. He complained to me that he was overworked and the DEP was understaffed. He went on to say he would look into these problems, yet the results and his efforts were appalling. Nothing happened.

**July 2006** - All the vegetation in the 2.5 acre pond died. Even the cattails turned yellow and died. While fishing, a friend and his daughter noticed the devastation. I observed that the color of the pond water wasn't right. It turned dark and black. The bottom of the stream, which comes from the pond overflow, looked like black velvet. It covered the whole bottom of the stream. I showed this to DEP and industry personnel, but no one had any answers for

me. I saw black water coming from the toe of the pit locations, and running directly into the pond. The water in the flow pits was leaking and remained full for several weeks before they were pumped out. I called the company to ask what they did to the pond and asked if they tested the pond water. The response was, "What are we going to compare it to?" He told me that they didn't do a predrilling water test of the pond. A water test should have been done as a baseline since the pond is approximately 300 yards from a well site. He admitted to me that he thought the liner leaked, but nothing was done.

When the pond became contaminated I called the DEP. I walked around the pond with a different DEP person this time and told him how disgusted I was about my property being destroyed and not getting any relief. He told me he couldn't determine where the contamination was coming from. He did tell me that my farm "was a textbook case of what not to do." He said that he had an album full of photos of my farm that the DEP reviewed in their meetings. He also said that my name has been brought up numerous times during DEP meetings, and that the roads and locations were poorly constructed. Every time it rained, water and silt slid down the hill and into the field causing extreme erosion. I showed him where the acid from frack trucks spilled all around the property.

**September 2006** - Pond water sampled by DEP.

**January 2007** - Received letter by mail from DEP, which states that the pond contamination did not result from drilling practices.

**May 2007** - There was a fish kill in the pond from the silt and contamination. Up until this point, I went to Mt. Pleasant Twp Supervisors and the local agriculture extension office to complain. I was told the same thing: "Call the DEP."

**July 2007** - I took pictures of the mess after the company drilling moved out their rig. DEP happened to drive onto the location. I spoke to him about the letter I had received regarding the pond. DEP rep typed the letter and it stated that the pond contamination wasn't the result of the drilling practice. I needed to get to the bottom of this situation, and told him that I wasn't going to be insulted or lied to anymore. DEP tested the water but wouldn't test the mud at the bottom of the pond. I told the DEP rep that whatever had contaminated the pond would be at the bottom. The rep said that he wasn't authorized to get a mud sample. He seemed very nervous and said that the letter was written under the direction of his boss. I told the DEP rep I wanted a meeting with his boss. He said he would organize such a meeting. This meeting never occurred. This was the last time I spoke to that specific DEP rep.

**August 2007** - While the well on my property was being fracked there were approximately 15 frack tanks parked alongside the stream. They had been backed in, off the driveway. One day my mother and I noticed fluid coming out of a pipe as we drove up the driveway. Someone unscrewed the plug at the end of the flow pipe on a tank. What we witnessed was the flow back from the well running out of the tank directly onto the soil and into the stream. I guess this is where the exemption of the Clean Water Act comes into play. I called the DEP rep on his cell phone and left a message. I called for 2 days and left messages with no return call. This is not unusual for them as I found out from people having the same problems as myself.

**September 2007** - Finally the DEP rep came out with another rep and introduced us. One said to the other, "Wait until you see this place, and after this there's another location, messed up, on another farm up the road." This comment referred to when fluid from the

flow pits went into a stream that runs into a neighboring property. We walked around the pond and up the road when one said to me, "This is the worst group of people I have seen in the oil and gas fields." I agreed and told him this was the worst nightmare I have ever experienced, and that my property and family have not been respected. I have never had so many lies told by so many people. The rep just shook his head while walking around and observing all the problems. This new DEP rep said that he would help me as much as he could. I called the new rep several times following this meeting, due to continuing problems on the property. When I finally reached him, he said that there were so many problems created he had a difficult time keeping up with all the calls. Unfortunately, all of the problems on my property exist to this day. The pond vegetation has never grown back since it was contaminated. Garbage was buried on location by a contractor and they never cleaned it up. Why should my farm be treated like a landfill? They even pumped contaminated water from my pond to a neighboring pond for fracking purposes. The DEP told a concerned neighbor that the water was being pumped into a plastic lined pond. That was not true. What was going on? My property, pond and life have been destroyed. It's

***"If I had known this kind of stuff could happen, I would never have signed a lease."***

outrageous that someone can come onto your property and do all this destruction. There have been so many instances of insult to the property and me personally. My wife and I are currently in litigation because of these lies. We were deceived and baited with a different piece of property in Hickory, Pennsylvania, only to discover that the land had already been leased. Obtaining legal representation has been difficult and not without trials and tribulations. Overall, I could never understand what was going on. Nothing was getting resolved and I was puzzled and frustrated. After learning of the exemptions, the puzzle all came together and many questions were answered. Questions of why I couldn't get help, relief, support from attorneys, DEP, industry personnel, and even judges. I learned one of the DEP reps went to work directly for the drillers. How do you as a landowner stand a chance legally when the industry wrote the Oil and Gas Act? And yet, the burden of proof is upon the landowner against the powerful company.

The industry is polluting our air, land, and water. I knew that one day other problems would surface, and now it is beginning. There are many issues to speak of, but most important to me is that water wells are now contaminated. The corruption and lies are out of hand. There are many other situations out there like mine. There are other unhappy property owners who have experienced the corruption and lies and can not get relief. Industry throws money around to convince people that it is safe, when in truth, it is not. There is so much evidence to prove that there is nothing safe about this industrial activity being in our neighborhoods and communities. Our children are exposed to danger. Their health, home, their air and the water they bathe in are jeopardized. Our children, our future, our country are at risk. Where will we be without water and clean air?

**- Ron Gulla**



## Erin Sethmen

Washington County, PA

My name is Erin. We live in Washington County, across the street and next door to an ever-growing gas processing facility. My husband and I are parents, attempting to protect our babies and family from the hazards inflicted upon us by the industry and our township. The property has been in our family for more than 60 years, which, for our family, is three generations. It used to be a quiet and peaceful rural neighborhood. Now our area is tainted with flare stacks, multiple compressor stations, rigs and oil-tanker traffic, a monstrous cryogenic processing plant, and countless well pads that risk our physical well being, mental health, property, and environment. We are just a small sampling of people exposed to the impacts of gas development. Considering the gas industry is a multi-billion dollar one, our little township seemingly looks to improve its image and income instead of helping residents that are in harm's way.

Never did we believe the township's selfish decisions would impact our daily living to such an extreme. Air scrubbers, ambient air testing, inhalers, speck air monitors - these devices need to be on hand and referenced, prior to letting our children go outside to play. We have had multiple evacuations, three in the last year alone. There have been explosions, fires, and gas leaks. The first evacuation occurred in May, 2014. My husband and I were not together. He was home with one of our daughters, and I was out with the other, at dance class. We were informed by a friend who overheard on the police scanner that there was an emergency at the facility across the street from our house. In a panic, I called my husband. He was at home with our daughter and my aunt. They had heard a 'boom' but didn't understand what was happening. My aunt tried to drive away and couldn't because the road was blocked. She came back to the house and told my husband. He saw the police and fire trucks blocking the road with lights blazing, so he walked down the road to talk to the officers, who then told him they

did not know exactly what was happening. They were trying to find out whether they should evacuate. My husband could see gas spewing uncontrollably straight into the air. He knew it was time to leave, even if they weren't sure. I called Chartiers Township supervisors to find out the location where the families would be evacuated and was told they would have to call me back because they didn't know. There was a lot of confusion. We spent many stressful hours not knowing exactly what was happening. We ultimately found out they determined it was not an explosion, but the facility had been struck by lightning. An "act of God." No one was at fault. "These things happen." However, after this event, we felt no more secure in knowing what we should do if ever anything happened again, and it did. The second evacuation was Christmas Eve, 2014. There was an explosion at the gas-metering station that sits less than 150 feet from our in-laws' house, which is right next door to our house.

They were enjoying their holiday, when they heard something hissing loudly outside. My father-in-law said it sounded as if something had been leaking prior to the explosion, and he believed the flare, which was more than 30 feet high that night, ignited it. There was a big explosion, so big it shook the house. My mother-in-law thought the neighborhood was blowing up. It was at least 15 minutes or more before there was a response, and after that, they were evacuated by local authorities. We were at my parent's house for the holiday when we heard about the event via text from a friend. My in-laws called and were terrified. They didn't want us to come back to the house, but we had to make sure they were okay. We were also worried about our home. My husband went back into the chaos, found them, and then spent a few hours that night sitting at the fire department waiting for the all-clear to go back home. The Pennsylvania Department of Environmental Protection was supposed to have a thorough investigation. According to its quote in our local paper: "State Department of Environmental Protection spokesman John Poister told the Pittsburgh Post-Gazette it was caused by over-pressurization that allowed gas to leak or escape from the station." He said the DEP and state Public Utility Commission "are investigating." However, we were never able to get any information about what happened that night - not about whether or how the problem was fixed, and we tried all routes we could think of with the DEP. Our local officials knew nothing either. No one seemed to be able to even tell us exactly when and how the site was permitted. Who is in charge when there is a problem? The DEP? The Public Utility Commission? Federal Energy Regulatory Commission? Pipeline and Hazardous Material Safety Association? How will we know when the problems have been addressed? And yet, before we got any answers to any of those questions, the station was up and running again, about a month later.

On Feb. 11, just two weeks or so after the facility came back online, there was another emergency situation. This time there was an ethane



Before the facility, 2007



Phase 1 of construction, 2010

release at the facility next to my in-laws. The same place that had the fire before. Again, my family was not properly evacuated. I found out there was a problem when I was driving down my street and saw the tell-tale lights and the road blocked. I immediately called my husband who was still inside the barricade. I told him what was happening. He knew there was a problem around him and was walking toward the barricade when I called. We were left to self-evacuate again, ahead of the situation in comparison to the responders. It was terrifying. My family has never once been evacuated properly.

Who are our advocates? DEP? Not quite. After multiple complaints you realize DEP stands for “don’t expect protection.” No return phone calls or updates for emergency situations are common. Fingers are pointed to another agency, so on and so on. EPA? PUC? PHMSA, no not them either. Policies or procedures are not shared or understood. I have had no luck or feedback.

- Erin Sethman



My name is Suzanne Bastien. My husband’s name is Mark. We live a mile and a quarter from a cryogenic gas processing plant. We have had many new gas wells drilled near our home since the development of the Marcellus Shale. I would like to see a halt to hydraulic fracturing and stringent regulations imposed on the processing plant. We have lived in our home for 22 years and moved to the area because of its rural tranquility. The last 7 years have become increasingly more

unbearable. The first well that was drilled on our street came with a steady flow of truck traffic, night and day. The second well that we could see from our house was even worse because of the noise and the bright lights. The worst thing happened about 5 years ago, when the processing plant started construction. We were told at a planning meeting, before the plant went in, that they would have one 50 ft. tower and an office building. Now it has so many towers, holding tanks, and gas separators that are too numerous to count. They even have their own electric plant.

Our problems began with the flaring and the “controlled” release of gas, which resulted in plumes of thick, black smoke. Some days it would be released every five minutes, off and on all day. On humid days it would burn your eyes and throat; it would make you nauseated. They don’t seem to be releasing as much during the day, now that they have installed new controls on the flares, but we smell weird odors at night. There are many days when we smell weird odors that smell like chemicals. Our country air is gone.

A recent article in the news stated that these processing plants can release up to four times more emissions than previously thought, but these plants are not regulated because of the loopholes exempting the oil and gas industry from the same air standards that relate to other plants. It has us very concerned about our health and our animals’ health. In two years time, we’ve had three cats develop cancer, two of them with rare forms, who had to be euthanized, and one whose leg had to be amputated due to bone cancer. Sometimes we can’t even sit on our deck because the noise emanating from the plant. We complained to the zoning officer and were told they didn’t have a meter to measure the noise. They apparently have one now, but there are still times when it is very loud. The only time it has been quiet was when it was struck by lightning and they shut down operations until it was fixed. That was one of three local evacuations within nine months.

We were not evacuated any of those times, but we were aware of others being evacuated, and it was terrifying. The township apparently instituted a robocall to warn of an evacuation, but we have never received a call. We have called the DEP and the National Response Center and issued complaints. We have notified the local media, written editorials, and have contacted elected officials with varying results. Our quality of life has suffered immensely. I highly doubt the plant will move or close, so, sadly, I don’t think our quality of life will change until we move. We have lost our peace, and we have to leave the home we love.

- Suzanne Bastien

“My name is Suzanne Bastien and I would like to see a halt to hydraulic fracturing and stringent regulations imposed on the processing plant.”



Phase 2 extension of the plant, 2012



Additional gas metering facility and build out, 2014



## Kelly Henry

Bedford County, PA

**Exposure:** Worked with waste from drilling pads. **Human Health Impacts:** headaches, chest pains, memory loss. Industry dishonesty/disregard.

I grew up here in Bedford County, Pennsylvania. My family had a 480-acre farm. That's where my three brothers, my sister, and I grew up. First we milked cows. In 2000, the price of milk dropped and we had a hard time finding help to milk, so we moved to beef and grain. That's where I first learned to drive a truck. I got a Commercial Driver License (CDL) to haul our grain. When it was time to move off of the farm, I went looking for a trucking job. I hauled blacktop for three months, and then I took a job hauling for a subcontractor in the fracking industry. On September 13, 2011, I started out as a truck driver hauling water. Next, they had me hauling drilling mud, moving rigs, and moving frack tanks, and then some environmental work. It's a little bit of everything with the gas industry. When I first started working, it was a small company and they were figuring it out as they went along. The trucks were brand new and they kept good maintenance on the trucks. If you reported a problem, they would get on it and fix it. In 2012, I spent 180 nights away from home. If one job shut down, I'd move to the next. I wasn't one for sitting around the motel making nothing. Whatever they needed I'd do it. If there were a truck and a job, I'd do it.

Over the years, I had seen a lot of stuff that wasn't right and rules that weren't followed. But, if you wanted to keep your job, you kept your mouth shut. Long hours were also common. On one job, we ran for 27 hours straight with no break. We were around all kinds of chemicals. They don't tell you what kind of chemicals they are using. They don't tell you what kind of footwear or clothing to wear to protect yourself. They tell you that the wastewater is safe enough to drink and send you on your way. They point you towards a truck and a job. The rest you have to figure out on your own. There wasn't any extra safety training. When you haul drill mud, you're supposed to get hazardous pay, but we never did. We never knew what we were hauling.

As an operator, I was supposed to have a material safety data sheet (MSDS) on my load in case there was a spill or leak. We never did because we never knew what we were hauling. Now I know that some of what is found in the wastewater and mud is carcinogenic and radioactive.

You didn't know how much it weighed until you got to the other end. The density of drilling mud varies depending on what's in it. When you get onto a site, they tell you it's nine, ten, eleven pound mud and from that they do the calculations and figure out how many barrels they can put in the transport and stay under the legal limit of 80,000 lbs. One time, I showed up at a site north of Towanda, PA to load a transport with drill mud. There was always someone on the site who told you how much it weighs. On this day, it was 12.5 pound mud, so he told me to take 50 barrels, figuring that was about legal. I hooked up my truck and sucked out the mud with the vacuum until the gage read 50. This load went 150 miles to a plant in Philipsburg, PA. When I pulled onto the scales at the plant, it weighed 92,500 lbs. If I had been pulled over with a load that heavy, I would have been fined for each pound over the legal limit of 80,000. I'm just glad no one was hurt.

We spent a lot of time on the sites but never knew exactly what was happening. Sometimes they would blow a whistle, but we were never given any training to know what it meant. Nobody tells you anything. They try to say they have you prepared for it, but no they don't. Some of the companies give you training to get certified to come on their sites, but it doesn't amount to anything. Nobody wanted to tell us the hazardousness of the stuff we were handling. Nobody ever mentioned the possibility of radioactivity. They didn't want you to know that. I felt that they were lying to us all the time. There was no special safety equipment provided to us. We had hard hats, safety glasses, and fire resistant clothing; that's it.

I worked until January 4, 2013. I fell on ice while at work on December 29, 2012, and tore a ligament in my hip. They operated twice on it, and the second time the doctor hit a nerve and I haven't been able to work since. I regret everything I did. I've always been as healthy as the day I was born. I never needed to take any medicines. Now it doesn't matter what they give me; it doesn't help. My hip hurts all the time. I have headaches, my feet itch so bad sometimes that I scratch them until they bleed. I get white polka dots all over them. It's the worst on my feet. The skin on your feet is the thinnest on your whole body and stuff gets in them. The skin on my feet cracked, busted, and peeled. I could peel the skin from one side of my heel clean over to the other.

After I stopped wearing my work boots, it took a long time for my feet to heal. I know there is something in them that caused this. Recently, my health has gotten worse. The crippling headaches and chest pains started in early 2015. Now my thoughts are cloudy and my memory weak. The first time it happened, they rushed me to the hospital. On January 9, 2015, I woke up at 5:20 am like normal and lay in bed watching the local news from 5:30 to 6 am. Then I got up and ate breakfast. I was about done eating and just broke out into a dead sweat, water running off my head and my arm. My t-shirt was damp, my chest was pounding, and my head throbbed like crazy; it hit me all at once. I called my mom and she took me down to the hospital in Bedford. I spent three nights there until they sent me home with no answers. Then I went to a different hospital and I spent two nights there. The doctors ran stress tests, a nuclear test, CT scans, and all kinds of blood work. They all came back fine but there was still something wrong. I had never felt that way in my life. If I lay down flat I can keep my head from spinning. When I stand up and walk, I get dizzy and light-headed. I feel like a drunk. I know that my health will never be right again.

- Kelly Henry



**Lisa Finley-Deville**  
*Fort Berthold Indian Reservation, ND*

My name is Lisa Finley-DeVilleville. I am an enrolled member of the Mandan, Hidatsa, and Arikara Tribes, known as MHA Nation, on the Fort Berthold Indian Reservation in North Dakota. My family and I have lived our whole lives in Mandaree North Dakota on the Fort Berthold Indian Reservation. On May 15, 2015 I graduated from the Fort Berthold Community College with a Bachelor of Science in Environmental Science. I also hold a Masters of Management and a Masters of Business Administration. Because of the impacts of the oil and gas industry on our land and way of life, my family and I dedicate ourselves to research. We volunteer our time to educate and inform the tribe's people of the impacts of the oil and gas industry and the threats to our way of life.

I had seen the oil rigs going up in 2008. Then it was not so bad, only a couple sites, but today every direction you look is an oil rig, and flares fill the sky. Before the drilling began, you did not have to worry about letting your children walk around town. It was not dangerous to drive down the road; there weren't any trucks or traffic. We were instead surrounded by chokecherries, june berries, plums, and turnips. Clean air, water, and land.

In the winter of 2010 my friend asked me to come and see the yellow snow around her house. Behind her house was an oil rig with a huge flare. The wind was blowing directly towards her house. I called the environmental protection agencies and the police department but no one knew what it was.

In the fall of 2011, the Mandaree Post Office was in the process of closing, which meant the Mandaree community members would have to travel 30+ miles away to receive mail. I worried about the truck traffic and our elders driving on the road because of the drilling activity. Sadly, during that time, a family of four was killed by a truck driver who fell asleep at the wheel. We decided then that we needed to take action. My husband Walter and I took a petition around to save the Mandaree Post Office. While doing this the Mandaree people began to open up to us about all of their concerns: housing, traffic, the water, the air, and our land. We took the Mandaree people's concerns and turned them into the Mandaree Volunteer Needs Assessment. The results showed the Mandaree people (149 completed assessments) were extremely concerned for our environment due to the oil and gas impact. I wrote an essay titled "Impact Issues of Oil and Gas Development on the Fort Berthold Reservation," and started to work on solutions to the issues my people faced. It was difficult because the Mandaree people are not active in voicing their concerns due to the history of our people. People are afraid to speak out in fear of the retaliation of losing their job, or their family members losing their jobs.

The Fort Berthold Community College Science students assisted me in itemizing these areas of impact. Below are highlights from the 2012 assessment.

**89.7%** believe a permanent 24 hour physician is needed. **97.1%** believe a new clinic is needed. **72.5%** believe traffic speed control effectiveness by Fort Berthold Law Enforcement is poor. **55.8%** believe school safety effectiveness by Fort Berthold Law Enforcement is poor. **79.7%** believe response time by Fort Berthold Law Enforcement is poor. **61.3%** of Mandaree residents feel less safe in the past 2 years. **89.9%** of Mandaree families are concerned for their family's safety due to new "man camps". **71.9%** believe visible pollution in the air is a problem. **75.5%** believe oil field residents' garbage is a problem. **85.5%** believe trucks dumping or spilling unknown liquids on road is a problem. **79.1%** believe Mandaree air quality and water quality is extremely important. **91.3%** say it is extremely important that land in Mandaree be free of spills and damages from oil and gas development. **95.8%** think the revenue should be used to improve streets and roads. **95.1%** think the revenue should be used to improve emergency services. **52.2%** feel zoning (planning for land use) needs to be implemented throughout the entire Mandaree area. **75.5%** feel the outdated sewer system is a problem. **72.7%** feel the outdated water system is a problem.

A statement made from an anonymous Mandaree resident from the 2012 Mandaree Needs Assessment: "Today, we are seeing the results of failure to prepare for the full onslaught of impacts on tribal members and on the Allottee and tribal lands. Already we see the increasing environmental damages caused by deliberate spills by operators, a 70-plus acre fire resulting from careless or negligent workers, an oil truck-trailer fire at Bear Den, an overturned oil truck abandoned by the driver on the state highway near Mandaree, fly ash of Allottee surface land near New Town and Four Bears, and toxic chemical spills in both Parshall and Mandaree are only a few instances of direct impacts to public safety on Fort Berthold. A very minimal infrastructure exists, if any, to adequately protect the health and safety of individual tribal members. Inadequate tribal policing capability; reportedly little or no coordination between Tribal Employment Rights Office compliance officers, Environmental Department and the tribal 'Homeland Security'; lack of tribal emergency personnel; and lack of adequate federal monitoring and compliance enforcement has significantly lowered the standards for oil companies and their sub-contractors operating on Fort Berthold."

The oilfields brought many new people to our area that have different values. They disrespect our land, air, and water. To make things even more difficult, our people have never seen money like this. Now, families are even fighting each other for money.

In Mandaree, night skies light up from natural gas flaring since around 2008, but there's no data provided for the two year oil and gas production period, prior to 2010 - nor the actual volume (MCF) of natural gas (and propane) flared into the air. On July 8, 2014, a pipeline was found leaking on our reservation. It was determined that over one million gallons of brine waste water ran into the Bear Den area, into Lake Sakakawea, our main drinking water source. The company involved estimated it started over the Fourth of July weekend. On 7-13-14; we were told that the water was OK to drink in Mandaree, yet no one answered the basic questions like, who is the certified lab that completed the water samples and other environmental tests? And were they publicly available? All water sources such as lakes, streams, rivers, creeks, and oceans have currents and water flow that are like conveyor belts, so was there a monitoring system put in place to see if there were any changes as the cleanup continued? How would we know it was safe when they were not done cleaning it up?



Fort Berthold Reservation. Photo courtesy of Lisa Finley-Deville

The tribal government seemed to be more interested in the money than concerned for our problems. They give disbursements of \$1,000 per enrolled member from tribal royalties. The tribal leaders gave themselves and their employees salary increases. The MHA Nation Environmental Department director said the oil companies are responsible for their clean up. I don't believe the oil companies; they will not tell the truth. The oil companies are here for the money. Our tribal codes (laws) are outdated and even if laws are created, there is no enforcement by our tribal leaders, therefore the tribal programs will not be enforced either. A year later there are still visible signs of the spill. There is dead vegetation and still no answers. In visiting with EPA in April of 2015, at a meeting in Bismarck, ND, EPA gave us results, but on the sheet it stated ND standards would not apply within the Fort Berthold Indian Reservation. EPA did not test for organic compounds such as gasoline, diesel, and benzene. EPA said they will not test on the reservation because it is up to the tribal leaders. There is an investigation now and we have new leaders in place. As of April, 2015, the company responsible for the salt (brine) spill has not been fined nor have there been any conclusive testing by MHA Nation or EPA.

According to a recent article by Al Jazeera America<sup>1</sup>, Edmund Baker, the new environmental director for the Mandan, Hidatsa and Arikara tribes, made the following remarks: "Be it crude oil, fracking fluids, or human waste, Baker figures his small team responds to at least one spill a day. 'Sometimes, we'll have three in a day,' said Baker. 'Sometimes, we'll have a major incident on the weekend.' Baker has only six field officers responsible for monitoring more than 1,300 oil wells scattered across more than 1,500 square miles of reservation. Those wells pump out more than 386,000 barrels of oil every day, accounting for a third of all oil produced in North Dakota – the nation's No. 2 oil producer. 'I'll just come out and admit it: We can't handle it right now,' he said. 'We are not equipped. We are not staffed. You need competent people, you need people who are not only scientifically equipped, you need people who know how to understand the law, and enforce the law, and hold companies accountable.'"

"This boom took off too fast," said Mark Fox, the chairman of the MHA Nation. "We weren't prepared for it. The federal government wasn't prepared for it. The state wasn't prepared. The only entity that was ready was the oil industry. They knew exactly what they were going to do, exactly what they wanted, and how they were going to do it."<sup>1</sup>

Although the local media has been good about reporting, it's the states down south and coastal media who think North Dakota is all-good when we are really left struggling. Like I said, money changes people. There is an increase in prostitution, drugs and alcohol, and our children are dropping out of school because they have oil money now, but what about our future? We are losing our culture,

tradition, and language. It is very difficult to imagine our future if our tribal leaders do not practice or preserve our culture, tradition, and language themselves, if they are not educated in environmental science. ND state collects one billion dollars in oil and gas taxes. MHA nation does not collect nearly as much, but we have all of the wells and damage. ND state is servicing the people who are not from here first, while we, the Native American, have been here since the beginning of mankind. I don't understand this. We have forgotten our instructions given to us by the Creator and that is to protect Mother Earth. Our creation stories told by generations past are that we came from the Earth. We have very little land left and we are giving it up for oil and gas production.

We are desperate for more research and testing and a plan for the impact that is already here! "We do not inherit the Earth from our ancestors, we borrow it from our children" (Ancient Indian Proverb), and "Only when the last tree has died and the last river been poisoned and the last fish been caught will we realize we cannot eat money" (Native American Author Unknown). We are concerned about the harmful health and environmental effects from the methane and other air pollution that is released from well sites. This is an unmeasured cost to tribal members on Fort Berthold. We value our health, our lands. There is only one Earth.

Creating Environmental laws and policies on oil and gas development that must be strictly enforced is very important. If we do not, we risk the irreparable consequences of the environmental damage. The ultimate solution may be the discovery and production of a new energy resource to replace oil. We as Native Americans are connected to the Earth because that is the story of our creation. The Earth is our Mother so we must protect it. Air, water, and soil are life; and contaminating them jeopardizes our future generations.

- Lisa Finley-Deville

<sup>1</sup> <http://america.aljazeera.com/watch/shows/america-tonight/articles/2015/5/16/tribal-environmental-director-we-are-not-equipped-for-nd-oil-boom.html#> <sup>2</sup> [http://bismarcktribune.com/news/state-and-regional/four-dead-in-head-on-collision-south-of-mandaree/article\\_ea5861a2-dd76-11e0-893f-001cc4c002e0.html](http://bismarcktribune.com/news/state-and-regional/four-dead-in-head-on-collision-south-of-mandaree/article_ea5861a2-dd76-11e0-893f-001cc4c002e0.html) <http://www.usatoday.com/story/news/nation/2014/07/10/north-dakota-pipeline-spill/12509917/> [http://www.huffingtonpost.com/2014/07/10/nd-pipeline-leaks\\_n\\_5573114.html](http://www.huffingtonpost.com/2014/07/10/nd-pipeline-leaks_n_5573114.html)



Oil and gas drilling in ND. Photo by Nick Lund, NPCA, 2014  
Provided by The FracTracker Alliance on FracTracker.org



**Bill & Mary Ann**  
*Butler County, PA*

In 1991, when we moved into our house, it was brand new. We've spent the past 24 years turning it into a home. The house came with 1.8 acres, but we've continued to buy adjacent land when it became available, and we now own about 5.5 acres. Our neighborhood has always been quiet and we mostly kept to ourselves. We have five children, nine grandchildren and four great-grandchildren. Every weekend our house was the meeting place. Much of our time was spent with them riding on the tractor, swimming, running up the road to fish in the pond on the golf course, or down to Lake Arthur in Moraine State Park. We're quite proud of our family. Even though neither of us finished high school (I have my GED), all of our children are professionals, and most of our grandchildren have college degrees.

Bill worked on the pressman floor for the *Pittsburgh Post-Gazette*. He was a member of the Graphic International Union/Newspapers Printing Pressman's Union for 44 years. For the past seven years, Bill has been driving school buses in the area. One of his pensions was cut and our health care costs keep going up. As Bill always says, "I'll be working until the day I die." He drives for several schools in the area, including special needs students to the Mt. Chestnut School on Rieger Rd. He gets compliments from the staff for his gentle nature with the students. The Mt. Chestnut School sits about 1.5 miles downwind from the proposed XTO (Exxon Mobil) Cratty well site. XTO wants to put nine fracking wells on this site.

A landman came to us to lease our land and left us with a contract. He offered us \$2,500 an acre. He made it clear it was negotiable. We read it over. The only thing we can figure is that people don't read the leases before they sign them because when you do, you give away everything. Based on what others eventually got, we could have made over \$18,000 and then monthly royalties after that. We could have taken the easy way out, but you've got to do what you feel is right. We went to the next township meeting and started asking questions. It got contentious at points because so many people had concerns and nobody had any answers. We wanted answers. Often you get in these meetings and the lawyers and engineers can't answer your questions. They pass it around the table like a hot potato and then say, "we'll get back to you" but they never do.

***"You really have to wonder how many other deficient permits the DEP approved when citizens weren't watching."***

Our elected officials haven't done anything to protect us either. They've told us that their hands are tied by the state and ignore their responsibilities under the Pennsylvania Constitution, despite the fact that the PA Supreme Court overturned part of Act 13, which had taken away local zoning authority. We've tried to educate them about the law, but they never wanted to hear it. When Bill was union president, he learned to be fair even if he disagreed with someone. That's the way democracy should be. You have to represent the rights of everyone. Our township supervisors did not represent us. They looked at us with disdain when we asked questions. Their minds were made up and they weren't interested in any information to the contrary. One of them had signed a gas lease, and another stated that he would sign if given a chance.

We all live on well water out here. They want to put this gas well less than 800 feet from the nearest private water well. There are about 60 water wells within 3,000 feet of the proposed site. Ours is about 1,762 feet away. At one meeting we asked them what would happen if our well water went bad. The XTO representative told us that they would replace the water, and explained the types of systems that they've installed in the past when that happened. I penned a quick contract on a piece of notebook paper stating as much and asked him to sign it. He did. After that, others wanted him to sign also, but we think the lawyer talked to him. He refused to sign any more, and the lawyer ripped the paper out of one woman's hands.

The site sits on two watersheds. An XTO representative told us this was good because it doesn't place the entire burden on just one watershed. The drilling pad itself would drain into the Shannon Run Watershed, which feeds into Lake Arthur in Moraine State Park and is designated as a Special Protection High Quality (HQ) Watershed and Cold Water Fishes (CWF). The other watershed, Mulligan Run, is designated CWF and feeds the Connoqueensing Creek.

They wanted to take the wastewater trucks out onto Unionville Rd; because of the sharp turn off of Election House Rd. and a dip, it is a dangerous spot. There's a high potential for a hazardous spill right there and if that happened, the toxic wastewater would be in Lake Arthur in less than 15 minutes. I explained all of this to the man who is in charge of oil and gas permits at the Northwestern Regional Office of the PA Department of Environmental Protection (DEP) and you know what he told us? That it isn't the DEP's job to avoid what might happen. Their job is to address it once it happens. I guess you shouldn't expect much "protection" from the Department of Environmental Protection. We've started to call them "Don't Expect Protection."

Some of us in the community started to organize against the industrial development in our rural neighborhood. We called ourselves Save Lake Arthur Watershed (SLAW). A neighbor down the road put up a sign in her yard opposing the well. People who originally felt isolated because they thought they were the only ones who opposed the well site started to come forward and join our group. We spent the next two weeks canvassing the neighborhood in groups of two or three with information and even more joined. There was a retired teacher, a graphic artist, a veteran, a federal employee, a retired DCNR conservation officer, a retired oil and gas engineer, and a state employee. We even had some people join the group who regretted signing with XTO.

Everyone had different talents and different roles. Some took

pictures, some knew about erosion and sedimentation (E&S) permitting, some were good on the computer, some would track what was happening at the site, and some said prayers. Our plan was to hold them accountable at every turn. We all chipped in what we could, and we hired an attorney. We went to the Township Office and got a copy of the local permits. They charged us \$170 for a copy but it was well worth it.

In April 2014, XTO applied for the two permits needed to start drilling: one to drill and the other for an erosion and sediment (E&S) control permit. The DEP granted the permits on June 25. In July, we went to the Northwest Region Office of the DEP in Meadville, PA and performed a file review on the permits. At first a file review sounded intimidating. We thought that we wouldn't know what to do. Although it was time consuming, it was well worth it.

First, you have to call and make an appointment. It took about a month to get a time. A woman who works there sat in the room with us, but she wasn't there to help. There is quite a lot there, so you need to know what you're looking for. You have to pay for the copies, or you can take a scanner and computer with you. We got copies of the permits and maps and sent them to our attorney. The application contained several serious errors and deficiencies. It's shocking that the permit was ever approved in the first place. With the help of our attorney and the Delaware Riverkeeper Network, we challenged the permits in court. XTO withdrew the E&S permit in August when it became clear that they had not performed a proper anti-degradation or thermal impacts analyses. DEP really got egg on their face over this and they cancelled XTO's permit.

If the DEP rubberstamped a permit in a Special Protection High Quality Watershed, you really have to wonder how many other deficient permits the DEP approved when citizens weren't watching. The DEP violated its public trust obligations under Article I, Section 27 and issued approvals for the XTO well site that violated our constitutional rights to clean air, pure water, and the preservation of, among other values, the natural, scenic, and esthetic values of our environment.

XTO reapplied on September 15, 2014 and on October 30, 2014, the DEP issued a letter to XTO documenting more than 50 deficiencies in the application. Included in the DEP's list of requirements were several oversights that endangered both of the local watersheds.

Over the next several weeks, XTO submitted additional paperwork, and at 3 pm on November 26, 2014, the DEP agreed to issue the permit for work to begin on the "Cratty Unit Project." It was the day before Thanksgiving. Two days later, at 7 a.m., XTO started work on the Cratty site. Our attorney attempted to contact the Environmental Hearing Board, but since it was a holiday, no one was there. We wonder if that's why DEP issued the permit when it did. Two days later, they started work in a cornfield down the road. We found out later that it was called the "Cratty Truck Area." The truck area was in addition to the project and was not included in the original permit or in any of the documents later submitted to the DEP. We went to the Township office and asked about it. They had given XTO a local permit even though the DEP hadn't signed off on it first.

It took until December 11, 2014, but finally the DEP acknowledged that the "Truck Area" wasn't included in either of XTO's permit applications and they were in violation of Section 402 of the Clean Streams Law. The DEP again revoked their permit and required XTO to immediately cease all earth disturbances activity. They were given 5 days to stabilize the site. XTO filed an appeal of DEP's action for shutting them down and you know what they said? That they didn't know they needed a permit. Can you believe that? Here's a multi-billion dollar company who has done this hundreds of times in PA and they didn't know that they needed a permit. We were contacted by our lawyer and informed that XTO is not planning to refile for a permit at the present time.

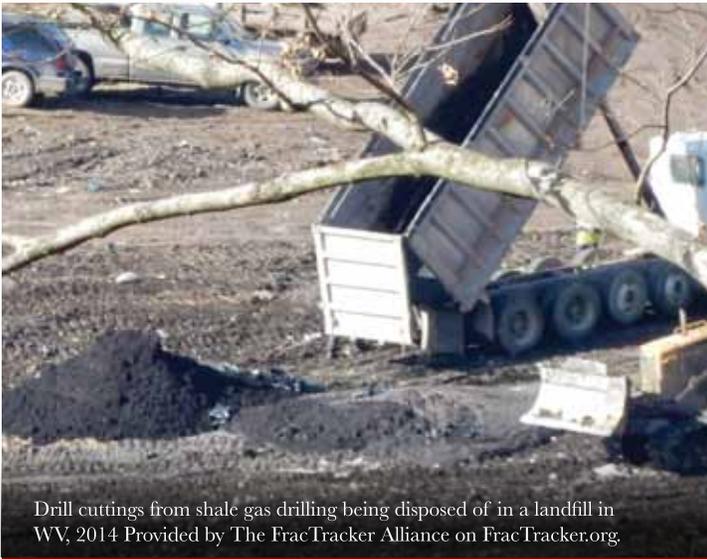
We've put our house up for sale. We want to be closer to the kids and grandkids. Talking to the neighbors, at least three other families are putting their houses on the market. Why are they leaving? Because they have no desire to see their lovely neighborhood turned into an industrial zone.

We're not giving up. We know that this isn't good for our health, the health of our grandchildren, our State Park, or our property values, and we're not giving up. We worry about the day that one of our grandkids will ask us "What did you do to stop this?" We want to be able to tell them that we did everything we could to save the water and air for you kids.

- *Bill and Mary Ann*

**Editor's note:** You can visit Save Lake Arthur Watershed's website at [SaveLakeArthurWatershed.weebly.com](http://SaveLakeArthurWatershed.weebly.com) & Delaware Riverkeeper Network at [DelawareRiverKeeper.org](http://DelawareRiverKeeper.org)





Drill cuttings from shale gas drilling being disposed of in a landfill in WV, 2014 Provided by The FracTracker Alliance on FracTracker.org

## Lisa White

Lackawanna County, PA

**Exposure-** Landfill **Human Health Impacts -**  
Alzheimer's, blacking out, loss of balance, loss of income  
- had to stop working

My name is Lisa White. My husband Neil is suffering a variety of health effects due to toxic exposure. The neurological symptoms of his disease prevent him from telling his story, so I have chosen to speak for him.

Neil and I started dating a few months before I graduated from Carbondale High School in 1985. He had graduated from the local parochial school, Sacred Heart, in 1981. When Neil and I married in 1987 we decided to stay in Simpson, Pennsylvania to raise our family. Simpson is a close-knit community where little ever changes. Our parents still live within a three-mile radius of each other. It has a cute little downtown. The Dollar General is our big mall. We have a couple of bars. There is no post office, but we're happy.

Neil and I have two sons, both out of high school. Stephen is 20 and Charlie is 19. Both of them were in the Boy Scouts. Both have their First Aid merit badges. One was an Eagle Scout, the other you could have spit how close he was to the finish, but he never did. Charlie is Neil's caregiver when I'm not around. In reality, he's more of a drill sergeant. Neil thinks that he can do what he used to do ten years ago. Charlie has to remind Neil that he has to sit down when he's putting on his pants because his balance is completely shot. Neil needs to be reminded that he can't walk without his cane. Things have been getting progressively worse for the past three years.

Neil's memory is absolutely horrible. He's been diagnosed with early onset Alzheimer's and dementia for which he takes Aricept and Namenda. His next step would be the Exelon patch, which he might need next month. He suffers from tremors in his upper extremities. He's constantly falling. In September of 2014, Neil suffered his first stroke. He was 51 at the time. He had another one 5 weeks later. I'm sure he's had more, but they were not diagnosed.

His new thing is passing out a lot. He completely passes out. On January 23, 2015, it happened again when Charlie was home with him alone. Neil was in the refrigerator and the next thing Charlie knows, Neil was on the floor. It took Charlie about five minutes to

wake Neil up. Charlie did a neurological check and called me at work. He had a big "goose egg" on the back of his head and broke a tooth. We didn't go to the hospital this time because every time I drag him there, they tell me I'm crazy and that there is nothing wrong.

I'm a licensed nurse, so I stayed up with him all night, checking on him every hour. He had some blurred vision the next day, so I stayed with him all day. That same night, he was changing into his pajama pants and he fell again.

When I was training as a nurse, I never thought that I'd be doing this at home. I thought that after the kids left, we'd be taking ballroom dancing lessons and enjoying "our time." We could have left the kids with a babysitter and taken ballroom dancing when they were kids, but we focused on what was important at the time, and I have no regrets.

Neil sometimes worked 70 hours a week to support our family. Neil started working at a landfill in Dunmore, PA around 2003. My brother worked there and helped him get the job. Neil's job was to cover the garbage at night using a 50-ton Euclid, which is a big dump truck. They do this to keep smell down. They would cover the garbage with dirt, rock, or foam. He would tell me that they didn't like to use the foam because it was expensive.

In 2011, they started to accept drill millage or drill cuttings from the Marcellus Shale industry and would use it to cover the garbage. Where in the past the owners of the dump had to pay for what they used to cover the garbage, now the drillers are paying them to take the drill millage. The millage was so hot that it would come in smoking in the morning, and it would still be smoking at night when they used it to cover the garbage.

***"We know of four people who have died since they left the landfill. My husband is dying slowly, so I guess that makes five."***

Neil stopped working in December of 2012. He left because of his health. At the end, he was too weak to get into his truck by himself. They had to lift him into it. We know of four people who have died since they left the landfill. My husband is dying slowly, so I guess that makes five.

I'm worried about him. I work as an in-home nurse and it's been very emotional lately. I've been with my current client for 15 months now, but I can no longer be an hour away with Neil in such a fragile state. The company I work for is going to help me find something closer to home, but I know I won't be able to keep it for long. I refuse to put him in a home, so eventually I'm not going to be able to work. There are good days and there are bad days. It is absolutely horrible to watch your healthy husband deteriorate. I can see the dementia getting worse and worse and worse. It's killing me inside.

***- Lisa White***



## Paula S.

Butler, PA

**Exposure:** Natural gas processing plant on route to work.

**Harm:** Air contamination: H<sub>2</sub>S hydrogen sulfide **Human**

**Health Impacts:** Tingling sensation to scalp, headaches, numbness to the back of the head, irritability, exhaustion

I don’t know if it is the Sjögrens syndrome or just hypersensitivity that renders me the proverbial “canary in a coal mine.” My immune system took a hit on December 8, 2011. Two or three seconds of exposure from inside an enclosed car has taken months of recovery. I’m angry. I was doing so well, with energy like I hadn’t had in years, and it was taken away in less than five seconds.

On Thursday, December 8, 2011, as I made my way home from Zelienople, traversing the countryside as I did on a daily basis, I was assaulted by a nasty smell. A few seconds of inhalation elapsed before I realized what was happening and jumped to turn off the heater. A few seconds of a noxious odor, akin to rotten eggs, wafted its way into my car. My husband would later tell me that it might have been H<sub>2</sub>S-Hydrogen Sulfide. I had just passed by a gas-processing plant that had sprung up along Route 528, near Upper Harmony extension. A few seconds of inhalation instantly caused a tingling sensation on my scalp, quickly followed by an intense all over headache and numbness to the back of my head. I was concerned that I might not make it home since I was near the halfway point. I kept driving while keeping tabs on what I was feeling. I just wanted to be as far away from that smell as possible.

When I experience numbness to the back of my head, it means my adrenals are under stress. When I got home I took supplements to boost adrenal support. I also took Rescue Remedy because I felt I had been assaulted. The tingling, numbness, and headache slowly subsided over a period of days. Lack of energy was left in its wake. I took a multitude of naps because I had no energy. I also experienced extreme irritability and edginess. My nerves were totally shot. My calm demeanor had become volatile. I read later that all of the symptoms I had experienced were indeed signs of H<sub>2</sub>S exposure, right down to the irritability and volatility. I purchased a respirator.

I have opted to travel a different way to work. My route may change again as I try to avoid more drilling sites. If I keep rerouting myself, soon it will take me an hour to get to work instead of 25 minutes. I’m not crazy about adding the extra miles to the car, not to mention the money spent on gasoline. It’s sort of perverse that I need to

*“I wonder if I can drive  
 with a respirator?”*

burn more fuel to avoid what makes me sick. If the pace of growth continues there may be no way for me to avoid exposure. I wonder if I can drive with a respirator? Will the police pull me over for wearing a mask?

This past week I went to my doctor. I talked to her about my ordeal. She tested me for presence of toxins. I tested positive for chemical exposure. She put me on a supplement to help rid my body of the toxins and also increased my adrenal support. Overall, my system has taken a hit. In the meantime, I try to work my way back to where I was and avoid exposure. After monthly visits to my doctor my system is getting better. I am not sure when I will need to use the respirator.

I hear a processing plant is going in a couple of miles due west of my home. I wonder if I will be able to stay here. But where do I go? My family is here. My job is here.

### Paula S. : Updated Jan. 2015

The gas processing plant is now in full operation. I’m learning how to be vigilant and aware of the air. There are times when I instantly know to stay inside my home based on the smell in the air. Often it smells like burnt electrical wires. Those are the times when I cover my face and make a mad dash for the car. There are other times when I can taste the astringent toxicity of the air. It is really frustrating in the summer, when I would usually have the windows open to let in the breezes, now I have to leave them shut to avoid bad air. I’m afraid to leave the windows open at night for fear I will awaken to toxic air.

Another by product of the processing plant is the gathering lines that push the gas to the plant. There are times when I can feel the vibration in my home, and it keeps me awake at night. There are also times when I will experience something different - a rash, a cough, etc., and I’m always wondering what my system is reacting to? What am I being exposed to? Is it environmental? Is it toxic? Will it cause cancer?

Now I live in fear. To balance my fear I am now an active part of Section 27 Alliance of Butler Township, a concerned citizens’ group devoted to stopping residential drilling in Butler Twp., Butler County, PA and making sure that the Butler Township Board of Commissioners enacts ordinances that benefit all township residents and defend all residents’ rights to clean air, pure water and a healthy environment.

- Paula S.

[www.section27alliance.com](http://www.section27alliance.com)

## *An Abbreviated List of the Harmed*

When Volume I of *Shalefield Stories* was published two years ago, Pennsylvania resident and archivist, Jenny Lisak, had compiled a list of some 300 people across the USA who had been harmed or adversely impacted by fracking. In a short period of time, the list has now grown to over 16,200. Below is a small sampling of a few from each state.

To see the entire list, go to:

[PennsylvaniaAllianceForCleanWaterAndAir.Wordpress.com/the-list](http://PennsylvaniaAllianceForCleanWaterAndAir.Wordpress.com/the-list).

### **Arkansas**

**Jerry and wife** - Little Rock, AR

Gas Facility: Southwestern Energy gas wells, waste ponds, buried liners

Exposure: Water

Symptoms: Kidney tumors, growth on gall bladder

**Tina Scoggin**, White County, Arkansas

Gas Facility: Cudd Energy gas wells, 250 ft. from home

Exposure: Air – Benzene, Xylene and Methylene Chloride, Symptoms:

Severe, permanently injured

### **California**

**Fred Starrh**, Kern County, CA

Gas Facility: Aera Energy, unlined pits

Exposure: Water – groundwater contaminated with frack wastewater

Symptoms: Groundwater so contaminated it killed every tree in the orchard after a single irrigation, while rendering hundreds of acres barren and unable to sustain life.

**Joseph and Lyn Stadish**, Los Angeles County, CA

Gas Facility: Southern California Gas Company gas storage field

Exposure: Air – toxic chemicals

Symptoms: Cancer

### **Colorado**

**Steve & Elizabeth “Chris” Mobaldi** (deceased Nov. 14, 2010), Rifle, CO

Gas Facility: 20 wells within a mile of home

Exposure: Air, dust, water

Symptoms: Pituitary tumors, joint swelling and large white bumps on her elbows and hands, death. Steve experienced rectal bleeding; Symptoms:

Two dogs developed tumors

**Beth and Bill Strudley and sons**, Garfield County, CO

Gas Facility: Antero Resources gas well, Exposure: Water; air

Symptoms: Rashes, nosebleeds, blackouts, (relocated) (drilling by the Anschutz Exploration Corp. in New York contaminated the drinking water of nine families.)

### **Illinois**

**Steve Combs**, White County, IL

Gas Facility: Injection disposal well

Exposure: Water – Barium, sodium, zinc

Symptoms: Combs can no longer use his well water, must purchase water

### **Kentucky**

**Curtis and Sherry Slone and 4 other families**, Knott County, KY

Gas Facility: EQT

Exposure: Water – lost

Symptoms: 13 head of horses without water for 10 weeks. Water seems to have been rerouted.

### **Louisiana**

**Cecil and Tyler Williams**, Caddo Parish, LA

Gas Facility: Chesapeake spill

Exposure: Oil; water – elevated chlorides, oil and grease, organic

compounds in soil and water tests, Symptoms(animal): 17 dead cows

**Nick Romero and wife**, Assumption Parish, LA

Gas Facility: Texas Brine 8 acre sinkhole at Bayou Corne

Exposure: Air – fumes from crude, methane; radioactivity; water – gas and oil

Symptoms: wife has cancer; Assumption Parish had the 7th highest breast cancer rate among LA's 64 counties

### **Michigan**

**Susan Connolly and family, Debra Miller and family**, Marshall, MI

Gas Facility: Enbridge pipeline

Exposure: VOC'S

Symptoms: Debra – police escort to her house for a summer; Susan's children – rashes, vomiting. Susan and husband: Headaches, eye irritation, lethargy/tiredness, a burning sensation in the throat, nausea and/or a cough.

**Vic Rogers, 500+ people**, Berrien County, MI

Gas Facility: Trans Canada pipeline rupture

Exposure: Air; land

Symptoms: 500 forced to evacuate. Rogers' was advised not to harvest his three acres around the explosion

### **Mississippi**

**Three Prong Trail neighbors**, Rankin County, MS

Gas Facility: Gulfsouth Pipeline; Exposure: Explosion

Symptoms: Shook houses, rattled windows, burnt over an acre of forest

### **Montana**

**Six thousand residents of Glendive**, Dawson County, MT

Gas Facility: Bridger Pipeline LLC Pipeline

Exposure: Water – benzene

Symptoms: 50,000 gallons of Bakken crude spilled. The drinking water to some 6,000 people in and around Glendive was found to contain benzene, an organic compound in oil and gas, at levels above what is deemed acceptable by the U.S. Environmental Protection Agency.

**Helen and George Ricker, 13 other families**, Roosevelt, MT

Gas Facility: Abandoned production well, waste water in unlined pits

Exposure: Water – benzene

Symptoms: Toilet, shower stall had orange stains, water stained her white sheets and clothes, residual grease covered her plates. Sulfurous stench from faucets and toilet. Incidents of cancer abnormally high among the residents—Ricker suffered from breast cancer, as did her sister, and three of her neighbors. Thick plumes of contaminated groundwater have migrated to the area from oil and gas production.

### **Nebraska**

**Four Farms**, Dodge County, NE

Gas Facility: Northern Natural Gas Co. pipeline

Exposure: Explosion

Symptoms: Four families evacuated, planting field severely damaged

### **New Mexico**

**Roy and Amy Heady and children; Glenda, Kirsten and Don Sumler,**

**Terry and Dustin Smith (deceased); Bobby and Amanda Smith**

**(injured)**, Carlsbad, NM, Gas Facility: 30-inch gas pipeline

Exposure: Explosion, Symptoms: 10 deaths, two injured

**Fabian Martinez** (deceased 2014), Eddy County, NM

Gas Facility: Pipeline

Exposure: Air – H2S

Symptoms: Martinez is believed to have died after inhaling the H2S gas released during the explosion.

### **New York**

**Miriam, Fred and Julie Solloway**, Otsego County, NY

Gas Facility: Ross1 natural gas well, Exposure: Air – sulfur and chemical odor; water; noise

Symptoms: Blurry vision, severe stomach cramps and collapsing, headaches, burning nose and throat, rashes, inability to sleep, aches, pains, hair loss, cannot drink the water anymore

Symptoms (animal): Horses refused to drink the water; horses and dogs sick, two horses were so sick they had to be euthanized

### **North Dakota**

**Darwin Peterson**

Gas Facility: Petro Harvester, Exposure: Spill of 2 million gallons of brine

Symptoms: Farm land ruined

**Dustin Bergsing** (deceased Jan. 7, 2012), Dunn County, ND

Gas Facility: Marathon well, Exposure: Air – hydrocarbons, Symptoms:

Death from hydrocarbon poisoning

**Steve and Jacki Schilke**, Williston, ND

Gas Facility: Oasis gas wells  
Exposure: Water- manganese, boron and strontium and sulfates; air – benzene, methane, chloroform, butane, propane, toluene and zylene  
Symptoms: Light-headedness, dizzy and trouble breathing, at times can't walk without cane  
Symptoms (animal): Dogs and cows sick, died

**Ohio**

**Little Yankee Run residents**, Trumbull County, OH

Gas Facility: Kleese Development Associates (KDA) operations  
Exposure: Land; water – 2,000 gallons were spilled into a tributary of Little Yankee Run  
Symptoms: Residents in the township relied on bottled water for a week as officials investigated the spill, Symptoms (animal): Fish, turtles, muskrats and other wildlife killed by oil & gas waste in pond and wetland.

**Students and Admiral Ernest J. King Elementary School staff**, Lorain County, OH

Gas Facility: Gas well, Exposure: Natural gas leak from an old well  
Symptoms: Evacuated for 3 months

**Oklahoma**

**Fourteen families**, Prague, OK

Gas Facility: Injection wells, Exposure: Land, Symptoms: Earthquake near Prague, OK, injured two people, damaged 14 houses and was felt for hundreds of miles

**Bill Reece, Diane Reece, Herman Tolbert, Bennett Tanksley, Susan Holmes and Charles Tacket**, Le Flore County, OK

Gas Facility: Produced water disposal pit  
Exposure: Water, land  
Symptoms: Pit into which wastewater was dumped was not lined. At least 14 residents in the neighborhood of the 20 homes closest to the dump site now have cancer. Noxious and harmful nuisance, pollution and contamination, toxic trespass, diminution of property value, personal injury

**Pennsylvania**

**Paul D. McLaughlin and 32 other families**, Allegheny County, PA

Gas Facility: Consol gas lease at airport  
Symptoms: Land taken by eminent domain, cheated out of what property was worth, county offered 50 members of the McLaughlin family and 32 other families \$1 to split for each parcel of their mineral rights

**Donald Ludwig**, Center County, PA

Gas Facility: NCL Gas well  
Exposure: Water – barium, manganese, iron, arsenic, lead  
Symptoms: He showers at a nearby campground and hauls his own clean drinking water. Eyes watered uncontrollably and swelled shut, trouble thinking clearly and remembering things, ringing in ears.

**Russ and Connie Kelley**, Butler County, PA

Gas Facility: 15 drilling pads built and 65 horizontal wells to be fracked within a few miles  
Exposure: Water, Symptoms: Water undrinkable, Symptoms (animal): Rabbits stopped drinking the water and died of thirst

**Texas**

**Mandy Mobley**, Fort Worth, TX

Gas Facility: Compressor station, gas drilling  
Exposure: Air, vibration  
Symptoms: Odd shifting that's been going on in house – cracks in walls, door frame coming loose, nails pulling loose from trim, floor tiles cracking; dizzy spells and migraine headaches and, frequently fatigued

**Margaret Heinkel-Wolfe**, Denton County, TX

Gas Facility: Williams Etc, drill water collection site, compressor station 990 ft away, gas wells  
Exposure: Air – toxic formaldehyde, sulfur dioxide, benzene, toluene, and xylene emissions  
Symptoms: Headaches, respiratory ailments, and trouble breathing

**Utah**

**Doug Jenkins and Larry Lee Joseph**, Carbon County, UT

Gas Facility: Dry Canyon Compressor Station  
Exposure: Explosion  
Symptoms: Injured, sustained critical burn injuries; explosion created a crater 15-ft deep, 30-ft wide.

**Virginia**

**Three Hundred Citizens**, Campbell County, VA

Gas Facility: CSX Corp train carrying fracked crude  
Exposure: Explosion  
Symptoms: Train derailed and burst into flames in downtown Lynchburg, Virginia spilling oil into the James River and forcing hundreds to evacuate. Property damage.

**West Virginia**

**Paul and Janet Strohl, Jackson County, WV**

Gas Facility: Exco well  
Exposure: Water – methane, brine  
Symptoms: Replacement water (For washing, they fill tank in their basement with rain water from their gutters and supplement that by paying per water truck-load. They drink bottled water.)

**Twelve homes**, Doddridge County, WV

Gas Facility: Antero Resources gas well  
Exposure: Water  
Symptoms: A rupture happened at a depth of 641 feet; water wells, an existing gas well, and an abandoned well were affected. Of 12 water wells, the three closest to the pad have been disconnected from the homes as a precaution to ensure no gas gets into the homes. All of the homeowners are being supplied with drinking water.  
<http://wvpublic.org/post/well-water-contamination-possible-after-drilling-mishap>  
<http://www.frackcheckwv.net/2014/10/05/more-on-anteros-frackin-accident-in-doddridge-county-wv/>

**Wyoming**

**Dick Bilodeau, Deb Thomas and 24 other families**, Clark, WY

Gas Facility: Windsor Energy gas wells  
Exposure: Air – 5 million to 7 million cubic feet of gas was discharged into the air during the 58-hour incident; water- benzene, acetone, carbon disulfide and others  
Symptoms: 25 homes were evacuated, Fort Union bedrock aquifer polluted, the blowout resulted in a 10 million cubic foot plume of groundwater contamination, or more than 100 Olympic size swimming pools worth.

**John and Cathy Fenton**, Pavillion, WY

Gas Facility: Gas wells  
Exposure: Air; water – petroleum compounds  
Symptoms Cathy and her mother lost sense of taste and smell; son developed epilepsy; John suffered headaches and chronic fatigue

**Washington**

**Five workers, 400 residents**, Benton County, WA

Gas Facility: Williams Partners LNG storage facility  
Exposure: Explosion of storage tank, fumes  
Symptoms: Mushroom cloud of black smoke. Five workers were injured, 400 residents were evacuated.

**Wisconsin**

**B.J. Christofferson, Linda Harding, Wendy Dart, Mike Michaud, David Meixner**, Maiden Rock, WI

Gas Facility: Frack sand mining  
Exposure: Frack sand (silica)  
Symptoms: Noise, dust and sand exposure, property value decline

**Judy Carey**, Monroe County, WI

Gas Facility: Proppant Specialists sand washing plant  
Exposure: Air – frack sand (silica)  
Symptoms: Fine white powder on car and dishes, “clothes are full of it, you can't roll your car windows down, feel it in your throat, feel it in your nose.”

# Timeline of a Shale Play

## Introduction

When hearing about the development of natural gas drilling in your area, or fracking, you may have heard phrases like: “**Jobs, jobs, jobs!**”, “**Energy independence for the United States!**”, “**It’s perfectly safe!**” However, there is another side of the drilling debate not heard as often. Where there has been drilling, concerned citizens at local hearings and municipal debates voice concerns like: “**I can’t go outside because the air is unbreathable**”, “**We lost most of our property value**”, “**We can’t use our water anymore.**”

For the average citizen, much still remains unclear about the fracking process, its development, and what it means for our communities. Yes, many know the word fracking and its loose associations, but what does it really mean when this industry comes to your county, or town, or even your backyard? How will your surroundings change? What is it like to have this industrial process on farms and in neighborhoods, near schools and homes?

Let’s consider the last ten years of development in the gas fields of Pennsylvania—from when the landman comes to your door until the gas is sent to market for use. Drawing on academic research, government and watchdog reports, and the firsthand experience of those on the frontlines of fracking, we will explore the technical steps in the process of fracking, highlight concrete examples of the dangers and challenges at each step, and offer tough questions for communities to consider when the gas industry shows up.

## Background

At the center of the debate is slick water, horizontal, hydraulic fracturing, or fracking. This type of drilling targets shale rock, which is made up of mud, silt, clay, and organic matter, such as methane.<sup>1</sup>

According to the Random House Dictionary, hydraulic fracturing is a process in which fractures in rocks below the earth’s surface are opened and widened by injecting chemicals and liquids at high pressure. The process then breaks up the shale to release the natural gas and bring it to the surface<sup>1</sup>.

Gas drilling today is significantly different than conventional drilling that has been around since the 1900s. Conventional drilling is done vertically, and the gas and oil are pulled from large pockets of resource formations<sup>2</sup>. Today’s horizontal fracking has been used and developed over just the last two decades, requires multiple steps in its extraction of gas, and reaches much deeper shale deposits than conventional drilling. A major difference is the amount of water used: conventional, shallow wells of old used only 20-80,000 gallons; today’s horizontal fracking will use 2-9 million gallons of water mixed with chemicals, per well.

	Conventional Drilling	Unconventional Drilling
<b>Well Type</b>	Vertical	Horizontal
<b>Well Pad Footprint</b>	>1 acre - 3 acres	3 - 6 acres
<b>Road Construction Footprint</b>	Similar to unconventional drilling	5.7 acres
<b>Water Required</b>	20,000-80,000 gallons	2-9 million gallons average 4 million Gallons
<b>Time to Drill Well</b>	about 1 Month	about 3 months
<b>Hydraulic Fracturing Required</b>	Sometimes	Almost always
<b>Source Rock</b>	Large pocket of resource; easy to extract	Resource scattered throughout rock, hard to extract

Source: Paleontological Research Inst.<sup>2</sup>



*New York State Banned Fracking*; New York Times, Dec. 17, 2014

*New York acting State Health Commissioner Dr. Howard A. Zucker said his review boiled down to a simple question: Would he want his family to live in a community where fracking was taking place? His answer was no.*

Before the actual drilling takes place, there are a few steps taken by everyone involved. It often starts with a landman at the door, offering money in exchange for the leasing of land or mineral rights. The landman negotiates with the landowner and then serves as a liaison between the property owner and the oil and gas company. In most cases, the landman works independently from the gas companies.

The lease presented has a series of components. It states how long the lease will be in effect, and also outlines the responsibilities and rights of both parties. These responsibilities include terms about royalties, rental payments, the storage of gas, and the placement of well pads and pipelines. The terms of the lease are always negotiable and for anyone signing a lease, it would be wise to have a lawyer review any documents to ensure there are not any loopholes.

There are also a series of risks associated with a person's property that may not be outlined explicitly in the lease or forewarned by the landman. For example, the terms of a mortgage or insurance policy might conflict with the activities outlined in the gas lease. In an article published by the New York Times in 2011, reporter Ian Urbina noted that in some mortgages, hazardous activity is prohibited for fear of the potential drop in property value<sup>3</sup>. A decrease in property value not only means a loss for homeowners, but also for the banks trying to sell the property again if the owner chooses to leave.

After the lease has been reviewed by lawyers and signed by the landowners, the next step is the initial survey of the land through seismic testing. Although oil and gas companies know generally where the shale formations lay under the surface, they use seismic testing to pinpoint where well pads should be placed, and whether the shale is thick enough to frack. Seismic testing is completed through a process of setting off explosions underground and using its reflection to map the coordinates of the shale. In some cases, these tests are done without the landowner's permission and can cause cracks in foundations on structures above ground<sup>4</sup>.

The next step in the process is land clearing and paving to prepare for the well pad construction. Here we see sizable movement of trucks and industrial equipment, which can cause loud and disturbing sounds at all hours of the day<sup>5</sup>. The acreage of land clearing for one well pad can be anywhere from three to six acres, roughly the size of two to three soccer fields, as opposed to the one or two acres of land occupied by conventional gas drilling<sup>2</sup>. In Pennsylvania, as reported by the Pennsylvania Department of Environmental Protection (PA-DEP), there are currently 8,927 wells, and about 3,586 well pads.

Depending on the placement of the well pad in relation to existing roads, access roads are built to transport the necessary equipment to and from the well. The building of access roads can add significant land disturbance and dust, especially in rural areas<sup>6</sup>. The number of wells on each pad varies depending on the well. There can be anywhere from 1 to 24 wellheads per pad. In a study recently published, researchers found that although multi-well pads (MWP) create less surface disturbance, they often generate more wastewater and environmental violations than single well pads (SWP)<sup>7</sup>. The hydraulic fracturing process can require between 2,300-4,000 trucks trips per well.<sup>44</sup>

## Natural Gas Lease Considerations

Do not sign a gas lease on the spot! The lease you are presented with will favor the gas company and could contain terms which make you financially responsible for their operations.

Write down and keep the name and contact information of the leasing agent/landman and tell him or her you will be in touch after you speak with a lawyer. Do Not sign a gas lease until you present the proposed lease for review to a lawyer with specific knowledge of gas leases. If after fully understanding the risks involved you decide to sign a gas lease, changes to the lease will need to be negotiated to protect your property and your pocketbook.

Below are important points to take into consideration. They are not all inclusive.

### Terms and Circumstances to Consider with a Lease:

The major concern when signing a gas lease should be how the terms agreed to could impact the current use of the property, including future construction by the homeowner, the ability to get mortgage financing and homeowner's insurance and whether, in the future, the property can be sold at a fair market price and financed by the purchaser.

Be especially careful if the residence relies on well water. Find out if people in the region with similarly sized property are actually making money from gas drilling operations. Take a look at the hidden costs by determining the impact drilling is having on regional well water or other water supplies and air quality. Also, find out if there has been damage to the foundation or structural integrity of peoples' homes from nearby drilling operations.

- Limit the lease term to 5 years without an automatic renewal.
- Make certain the gas company and all companies in the chain of command responsible for gas drilling operations are fully insured for the operations on the subject property and the spacing unit as a whole and that they are legally responsible in the lease to restore the property to pre-drilling condition if drilling commences on the subject property or any property in the spacing unit in which the subject property is located.
- Make certain the lease has no exceptions to paying royalties such as subordinating it to an existing mortgage.
- If the drilling operations cause a homeowner's mortgage default or loss of homeowner's insurance, the gas company should be responsible for curing the default and providing the equivalent of homeowner's insurance.
- Include approval of the location of well siting, roads, ponds, pump stations and other

Appurtenances at a distance from the residence that is consistent with maintaining health and safety and complies with federal mortgage underwriting guidelines; and once these locations are identified, amend the lease to limit use to the agreed to portion(s) of the property.

- Add a “Pugh Clause” when a large tract of land is involved. It will provide, in effect, that at the end of the primary term the lease will expire with respect to any part of the land that is not being used by the gas company.
- New lease terms can be included in an addendum to the lease and these new terms will supersede the lease terms in the printed form.

#### Terms to be Aware of:

- Require pre- and post-drilling water well testing at the gas company’s expense by the company of your choosing.
- The following terms should be agreed to in one or more separate agreements, not in the gas lease; and these agreements should be negotiated by an attorney familiar with gas leasing: (i) use of and access to water, (ii) easements for roads and utilities incident to drilling; and (iii) easements for underground gas storage.
- Do not allow flaring or compression of gas or storage of waste on the surface of the property or injection of waste water from operations into wells on and under the property.
- Retain in the lease the right to approve in writing whether and where future gas pipelines may be located under the subject property. Actual pipeline use, location and funding for long-term maintenance and repair should be agreed to in a separate agreement.
- Do not allow post-production costs to be deducted from the royalties. Retain the right to review the books and records of the gas company.
- Do not allow wording that prohibits taking legal action against the lessee-gas company.
- Limit the force majeure clause to include only acts of God, war or unrelated third parties and limit the time force majeure can remain in effect.
- Do not allow an assignment of the gas lease or other transfer of the gas company’s interest under the lease without your prior written consent.
- Commencement of drilling should be defined to occur when the actual drilling operations begin, not merely that the well is considered “capable of production.”
- Limit in specific language what the gas company has the right to extract from underground; for example: “natural gas from the Marcellus Shale, only or the “Utica Shale, only.” The property owner retains mineral rights to everything that is not granted to the gas company under the lease.

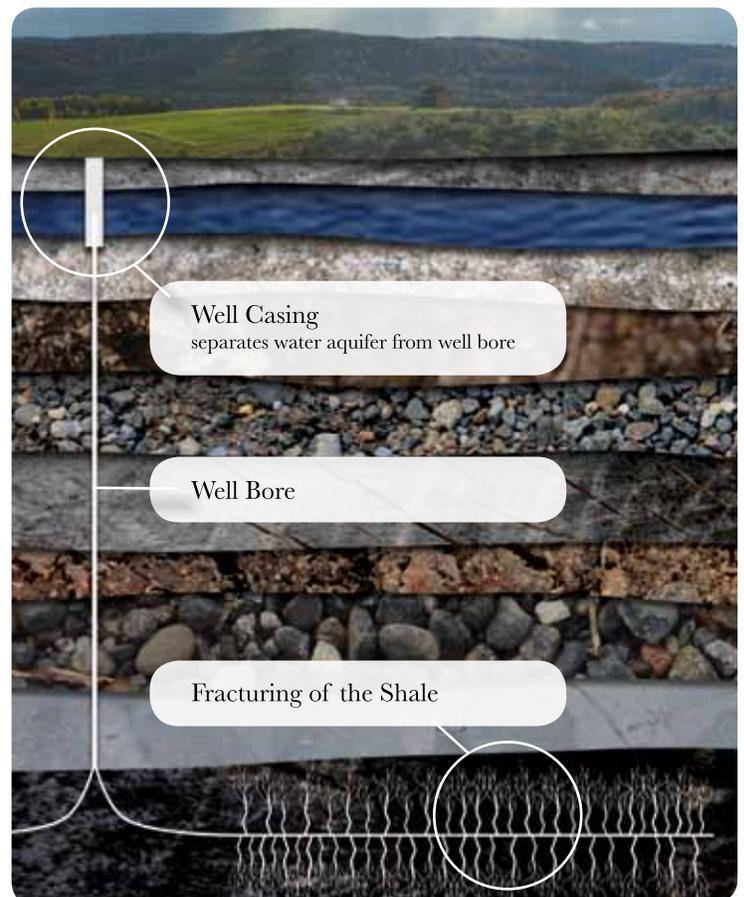
#### Prepared by Elisabeth N. Radow, Esq., Radow Law PLLC.

NOTE: These guidelines are intended to identify terms to consider when deciding whether to sign a gas lease. However, these guidelines are limited in scope and should not be relied upon as a property owner’s sole reference when entering into a gas lease. Seek the guidance of an attorney familiar with your specific needs.

After the well pad is constructed, the drilling begins with a process called “boring”. In order to access the shale, which lays thousands of feet below the surface, a drill rig drills several holes directly into the ground to create the well<sup>8</sup>. A substance known as drilling mud (made up of water, clays, and chemicals) along with the drill bit at the front of the drill, are pushed through the ground, helping to create a path for steel casing to be placed. Concrete is then poured around the casing area. Once the first hole is drilled, subsequent layers of casing are placed in order to separate the well from the aquifer<sup>8</sup>. However this system is not failsafe. Researchers at Cornell University found, based on DEP 2012 reports, the steel and cement casings failed upon completion 8.9% of the time, creating the routes for possible contamination<sup>9</sup>. Because of this possibility, it is incredibly important landowners get their water tested before any type of industry activity begins if they rely on a well or natural spring as their primary source of water.

The next step sets slick water, horizontal, hydraulic fracturing apart from other drilling techniques used in the past. With horizontal fracking, the drill is turned at the “kick off point” and the boring continues for a mile or more, sometimes in multiple directions<sup>8</sup>. As the drill rig pushes underground, the drilling mud and sediments displaced by the rig are brought to the surface. The solids displaced can contain radioactive materials, heavy metals, and salts, and may be buried on-site, or taken to a landfill<sup>8</sup>.

Once the casing is laid from the surface of the well to the edges of the horizontally drilled earth, the fracking begins. This starts by setting



off small explosions with a specialized “perforating” gun, exposing the piping to the shale<sup>8</sup>. Once, the shale is exposed, 2 to 9 million gallons of chemicals, sand, and water are shot into the ground, at pressures of anywhere between 5 to 10,000 psi (pounds per square inch) and creates fractures in the shale<sup>8</sup>. To put this into perspective, firefighters attack fires with hose pressure of about 300 psi. That means the fracking fluids are shot into the ground at about 33x the pressure of a fire hose<sup>10</sup>. The sand in the fracking fluid acts as a proppant, holding open the fractures and allowing the gas and oil to escape from the shale formation.

Experts have identified up to 12 aspects of this stage that raise significant safety and health concerns. Among those concerns are the contents of the fracking fluid. While exact numbers may vary from well to well, most sources agree the fracking fluid is composed of: 90% water, 9.5% sand, and .5% chemical additives<sup>11</sup>. According to DEP records many of the chemicals identified in the process can have known health effects and are readily air born. These can return to the surface in the form of flowback. The sand alone can be extremely hazardous to those exposed. The most popular type of sand used, known as silica, is very harmful when inhaled. This creates an issue for workers and anyone exposed to it. It has been linked to silicosis (a lung disease) tuberculosis, chronic obstructive pulmonary disease, and kidney and autoimmune disease.

Only about 20-40% of the fracking fluid immediately returns to the surface as flowback or wastewater; the rest of it remains underground, with a portion of it returning to the surface with the oil and gas over the life of the well. So the question becomes, where does all this toxic flowback go?

### ***Flowback Impoundments***

One of the most commonly used places for storage on-site are man-made earthen impoundments, frack pits. Frack pits are open air pits lined with plastic. These pits are filled with water and in some cases the chemicals and fracking fluids are mixed with the water in the pit. After the fracking process, the flowback can again be temporarily stored in the pits. Flowback impoundments are illegal in some states, but allowable in Pennsylvania under a special permit.

In the state of Pennsylvania, centralized flowback impoundments accept millions of gallons of wastewater from multiple wells across the state. They are a huge concern because of their potential impacts

to citizens living nearby. As noted by several scientists, frack pits are a possible source of airborne VOCs (Volatile Organic Compounds), pose a threat to surface or near surface groundwater due to lining leakage, and cause erosion<sup>2</sup>.

Former DEP Secretary for Pennsylvania, John Quigley, spoke about the possible environmental and health effects associated with these large open pits in 2014. “The use of impoundments is a severe risk...to soil and groundwater, to public health, and to the families whose life savings may be embodied in the homes that suddenly lost most, if not all of their value, when their drinking water wells became contaminated”<sup>13</sup>.

There are also famous legal cases in Pennsylvania pertaining to the health and environmental impacts of impoundments and frack pits. In 2011, Stephanie and Chris Hallowich sued Range Resources, MarkWest Energy Partners, and Williams Gas/Laurel Mountain Midstream. Gas wells and an impoundment pit surrounded their home in Westmoreland County. They claimed their headaches, burning eyes and throats, and ringing in their ears resulted from the natural gas drilling taking place a few thousand feet from their home. Although a settlement was reached in order to absolve these large companies of responsibility, no major policy reform has come as of early 2015, and these facilities, although possibly hazardous to one’s health, are still legal<sup>14</sup>.

In 2012, three families in another Western PA County sued an oil and gas company for problems related to impoundment pits. The families near the company’s Yeager site in Washington County claimed they had been exposed to toxic chemicals as a result of spills, leaks and air pollutants at the site<sup>15</sup>. As part of the lawsuit, the judge ordered the company to disclose all the chemicals in the fracking fluid and waste water on the site. As of April, 2015 the company has yet to disclose all of the chemicals used on-site during the fracking process<sup>16</sup>.

### ***Transported off-site***

If the wastewater is not stored in frack pits or impoundments, it can be treated in municipal and private facilities. The flowback travels from the sites to these facilities via trucks labeled with only a “residual waste” placard. The wastewater cannot be treated in the same way we treat our drinking water, and local municipal treatment plants are not equipped to handle the chemical waste. For example, samples of water downstream from water treatment facilities have contained radioactive radium along with elevated levels of chloride and bromide, which are commonly found in flowback fluids<sup>17</sup>.

When local water treatment facilities treat river water, they normally use chlorine, in order to comply with federal drinking water standards. Chlorine removes the bacteria and unwanted chemicals we don’t want in our water. However, in the past, when these facilities had high levels of total dissolved solids (TDSs), chlorine reacted with them to create a carcinogen called trihalomethanes (THM). The carcinogen, although appearing in small amounts, has extremely harmful effects on one’s health if there is prolonged exposure. Because of this, some drinking water treatment facilities, like those in the Pittsburgh area, have replaced chlorine with chloramine<sup>18</sup>. Chloramine creates lower quality water and is known to pull lead from pipes into the drinking water. Additionally, one study published in 2015 found increased amounts of ammonium and iodide in the Pittsburgh rivers.



Pete Stern, Loyalstock State Forest, Flyover - PA 2013 - Frack Pit  
Provided by The FracTracker Alliance on FracTracker.org



Pete Stern, Loyalstock State Forest, Flyover - PA 2013 - Compressor Station  
 Provided by The FracTracker Alliance on FracTracker.org.

These hazardous chemicals are often associated with oil and gas wastewater<sup>19</sup>.

The flowback can also be transported or stored off-site in tank farms, which is the newest solution to waste disposal. As for municipal landfills, although there is an annual limit to the amount of sludge and solids they can receive, there are known discrepancies between the drilling reporters, and what landfills are actually receiving. For example, in 2013 one oil and gas company reported to the DEP that they had sent 21 tons of drill cuttings to landfills that year. However, the actual amount was closer to 95,000 tons. Another company's records were off by 22,000 tons<sup>20</sup>. The concern here is the radon exposure from the radium that is deposited in landfills from oil and gas waste. Radon is a decay product of radium, and exposure to radon is a leading cause of lung cancer according to an article published this year in *Power Source*<sup>21</sup>. Although there are caps on how much of this type of waste landfills can receive, the discrepancies in reporting of waste are cause for concern to individuals and workers exposed to these materials.

### ***Transported to Injection Wells***

A large amount of wastewater is also transported by truck to Class II injection wells and injected about two miles underground. According to the US Environmental Protection Agency (EPA), every day over two billion gallons of fluids associated with oil and natural gas production are injected into approximately 144,000 Class II wells across the U.S. Most oil and gas injection wells are in Texas, California, Oklahoma, and Kansas<sup>22</sup>.

In PA, since there are only 8 injection wells, PA companies truck about 24% of their waste to Ohio, where there are 202 active injection wells. Injection wells have been linked to groundwater contamination<sup>23</sup> and earthquakes. As a result, even though states have received massive amounts of pushback by local citizens<sup>24</sup>, they remain legal. In 2008 there were 11 earthquakes in Oklahoma<sup>44</sup>. In 2014, there were 560 earthquakes of 3 or higher magnitude in Oklahoma<sup>25</sup>.

### ***Recycling***

The last route for disposal for oil and gas waste is recycling. Over the past few years the industry has touted its commitment to "recycle" wastewater for use at other wells. By recycling, the industry means reusing water previously used to frack a well, and then using it again to frack other wells. However, the reality has not always lived up to

the hype. In 2010, it was reported by the PA-DEP that the industry recycled 57% of its total wastewater. Then it was discovered a large oil and gas company misreported its numbers. After the report was revised, it turns out the industry only recycles about 17% of its wastewater, even though the DEP still uses the larger percentage<sup>26</sup>. This is yet another example of the inconsistencies in DEP reports and oil and gas industry self-reporting. Even though there are many ways to dispose of the vast volumes of wastewater, one of the biggest obstacles the industry faces is finding a safe and effective way to do so.

Despite industry denial, as of 2015 every disposal method poses potential risk pertaining to health and the environment. As mentioned before, of the 2 to 9 million gallons of production fluids initially pumped into the ground, only about 20-40% are recovered from the well in the form of flowback. From what we know now, there can be 600 chemicals injected into the ground. The most common chemicals injected are some of the most toxic. These include light alkanes, heavy alkanes, oxides, aldehydes, polycyclic aromatic hydrocarbons, benzene, and toluene<sup>31</sup>. The toxicity of the chemicals and naturally occurring radioactive materials (NORMs), are why proper disposal of waste is so important for communities to understand, and that understanding can help lessen the risks of exposure.

### ***Post Drill - Well Completion***

Back on the well site, after the flowback is transported, a series of steps are taken to "complete" the well. If the pipelines are not built or ready to transport the natural gas, one of two methods are utilized to dispose of the pressurized gas: flaring or green completion. Flaring, the most commonly used method, releases burned greenhouse gases (a mixture of methane and other chemicals) into the air to help depressurize unrecoverable gases emerging from oil and gas wells<sup>27</sup>. According to *Energy in Depth*, a research and public outreach campaign promoting oil and gas development, the large volume of gas lost during flaring affects regional air quality and the profitability of drilling operations<sup>28</sup>. Even though some energy companies agree flaring can be detrimental to the health of people who live near well pads, it is still virtually accepted by state and federal governments as a method of cleaning wells.

On a state level, flaring can be a very confusing act to nearby residents. It is advertised as illegal, but flaring in states like Pennsylvania is allowed on a case-by case basis. Flaring is often allowed if it is needed for; exploration; determining how much oil and/or gas exist; repair, maintenance, or emergency and safety purposes; and used for other operations as laid out in the 40 CFR Part 60<sup>29</sup>.

On the other hand, green completion, also known as Reduced Emissions Completion, separates natural gas, sand, and fracking fluids in one step; instead of pulling the fracking fluids out first, then the sand and natural gas. Green completion, unlike flaring, eliminates the need for venting gas straight into the air. Although the upfront costs for green completion systems are significantly higher than flaring costs, which may deter its use, the revenue gained when the extra gas is sold to market<sup>30</sup> offsets the investment.

### ***Transportation of Natural Gas***

After the natural gas is pulled to the surface, the next step is the transportation of the gas to a processing facility, refinery, or

transmission line<sup>32</sup>. The movement is typically done through gathering lines connected to the wellhead. As of 2015, the United States utilizes about 171,000 miles of gathering lines laid underground, used to transport natural gas, petroleum, and crude oil products<sup>32</sup>. In Pennsylvania, there are about 20,000 miles of gathering lines running beneath our homes and roads that lead to processing plants all across the Marcellus region<sup>33</sup>.

Located every 40-70 miles along the pipelines' path to processing plants are units called compressor stations, which pressurize the gas. Compressors also help clean the natural gas by stripping it of dirt and other sentiments with scrubbers. Because this process can become very loud and disturbing to the environment around them, compressor stations are typically equipped with mufflers in order to reduce irritation<sup>34</sup>. Operational emissions of compressor stations have prompted many complaints across the state from nearby residents, pertaining to noise, smell, and air quality concerns.

Once the gas travels through the gathering lines and the compressor stations, the second to last step in the process happens in the processing plants. As most of us know, the natural gas we use to heat our homes and run our cars is not the same natural gas extracted from a well. The natural gas that is eventually brought to market must be processed and rid of impurities, leaving only the purest form of methane<sup>35</sup>. Since 2008, Pennsylvania has built 462 compressor stations and processing plants across the region as production and drilling have increased<sup>38</sup>.

After the natural gas is processed in the plant, there are multiple routes it may take to the market, as reported by the U.S. Energy Information Administration. The gas could be used for lease and plant fuel consumption, residential consumption, electric power consumers, commercial consumers, industrial consumption, exported to overseas markets<sup>36</sup>.

Before the natural gas is shipped overseas, it is liquified to save space. This is done by dropping the temperature of the gas to -260 degrees fahrenheit<sup>37</sup>. Liquid Natural Gas (LNG) takes up about 1/600th the volume of natural gas in the gaseous state. The new LNG is then put into containers and shipped overseas via LNG terminals<sup>38</sup>. Although the process sounds simple and profitable, there are multiple risks associated that critics claim are often not taken into account. For example, there is a risk of explosion of natural gas at the LNG facility. Natural gas of any form is highly flammable; therefore anyone within the blast radius is at risk.

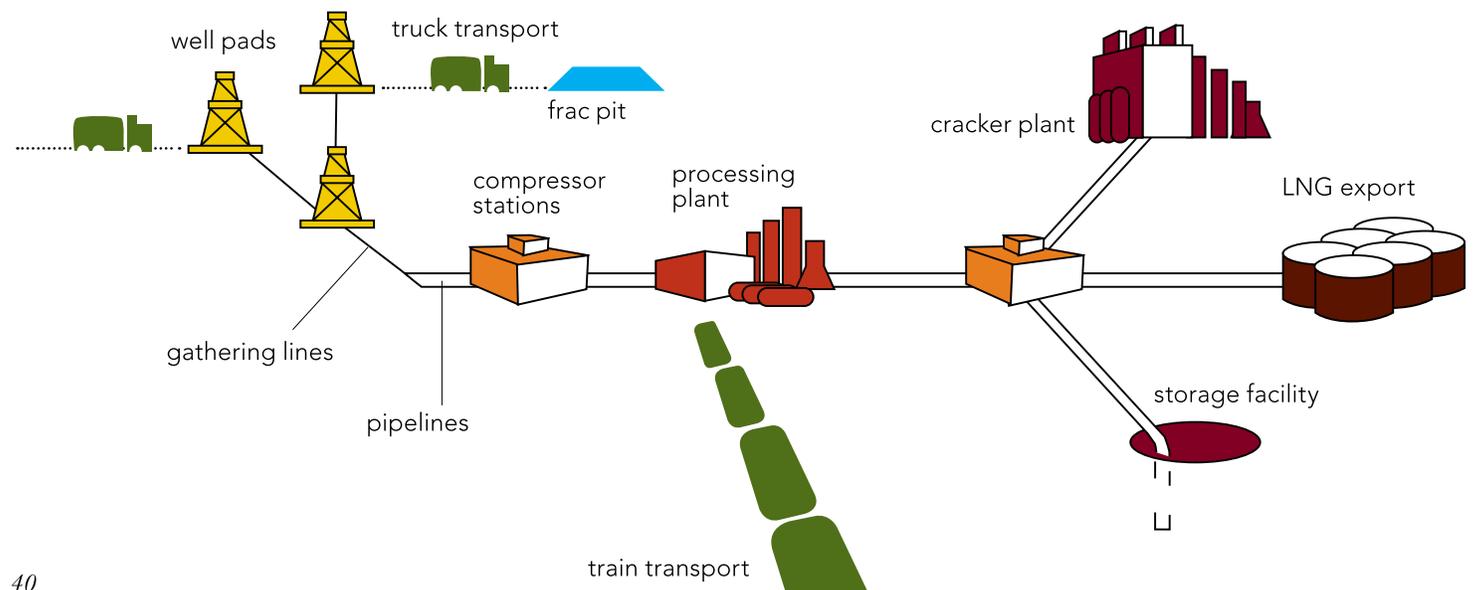
In early 2015, plans were underway to convert Dominion Cove Point, situated on the Western Shore of the Chesapeake Bay in Maryland, from an import facility to an export terminal. This facility as it stands only imports LNG and stores gas. However, the proposed plan would allow Cove Point to export LNG as well. The community of Lusby, Maryland surrounds the proposed Cove Point site and is home to over 2,500 people who live about one mile from the facility. The new export terminal will only increase this community's exposure.

Although the industry is looking to export a large volume of gas, another sizable percent of US produced natural gas is headed to the chemical market via large facilities commonly known as crackers. Cracker is industry lingo for a plant that takes oil and gas and breaks it up into smaller molecules. An ethane cracker creates ethylene, a compound used in the manufacture of plastic<sup>39</sup>. This type of production, in 2012, helped produce 14 million tons of plastics as containers and packaging, almost 11 million tons as goods such as appliances, and about 7 million tons as nondurable goods, for example, plates and cups<sup>40</sup>. This high demand for chemicals produced for making plastic, coupled with the energy boom of the Marcellus region, only increase the oil and gas industries need for cracker plants.

It is important, however, to review the possible health effects of a cracker plant, and not just the economic benefits. As of 2015, during the beginning stages of planning for the cracker plant in Beaver County, Pennsylvania, groups such as the Clean Air Council are asking questions about the specific health effects this plant would have on the local community and the environment. They note in a report filed to the EPA in May, "the plant, if built, is expected to emit a number of air pollutants [which are] linked to increased risk of respiratory and cardiovascular complications, hospitalizations and increased mortality"<sup>41</sup>. Since the area is highly saturated with at-risk populations, such as the elderly, many people in this area are raising questions to the DEP and Shell LC about the impacts the plant could have on people's health and wellness.

## Conclusion

In Pennsylvania alone, there have been at least a minimum of 248 documented cases of contaminated drinking water supplies between December 2010 and August 2014 tied to natural gas development according to the PA-DEP. However, since the DEP does not require the gas company to report instances of water contamination where the company has voluntarily agreed to replace a homeowner's



water supply, it is difficult to ascertain the actual number of cases of contamination across Pennsylvania. Hence, the numbers related to documented violations are, in all likelihood, much lower than the actual number of infractions<sup>42</sup>.

Another issue facing states is the aggregation of pollution created as a result of fracking. As we know by now there are multiple avenues for possible air pollution in the fracking process. However, these pollution sources are not regulated together unless deemed “close” by state government standards, even though closeness is arguably the interconnectedness of pollution sources regardless of distance. In recent years, advocacy groups such as the Clean Air Council have argued that the DEP needs to start aggregating pollution sources to comply with the Clean Air Act<sup>31</sup>.

Over the past two decades of gas development in areas all across the world, there are many unanswered questions about whether or not this unconventional process of drilling will have long term effects on our economy, communities, health, and environment. Whether or not

you are for or against drilling, the fact remains that the infrastructure and movement associated with hydraulic fracturing is something that can radically increase not only in a matter of years, but in a matter of months, and thereby changing the face of communities forever.

Although oil and gas industries advocate for use of local energy from the Marcellus region, energy independence, and decreased gas prices, we have seen it is not that simple. The complexities surrounding this practice are often overwhelming to the average citizen. In order to reach reasoned public policy we must take into account all of the realities of natural gas development, not just those touted by the industry and their supporters.

For this reason, citizens who are in the areas where fracking has occurred or those on the cusp of signing a lease, must understand the entirety of the process. They must not be afraid to ask questions, engage with local officials, and educate themselves on this industrial process. It is their right to make informed decisions about what they believe will bring them the best future possible in the place they call home.

*“Both the horizontal drilling and fracturing have been around for a long time. The industry will tell you this over and over again - they’ve been around for 60 years, things like that. That is correct. What’s different is the volume of fracking fluids and the volume of flow-back that occurs in these wells. It is 50 to 100 times more than what was used in the conventional wells.”*

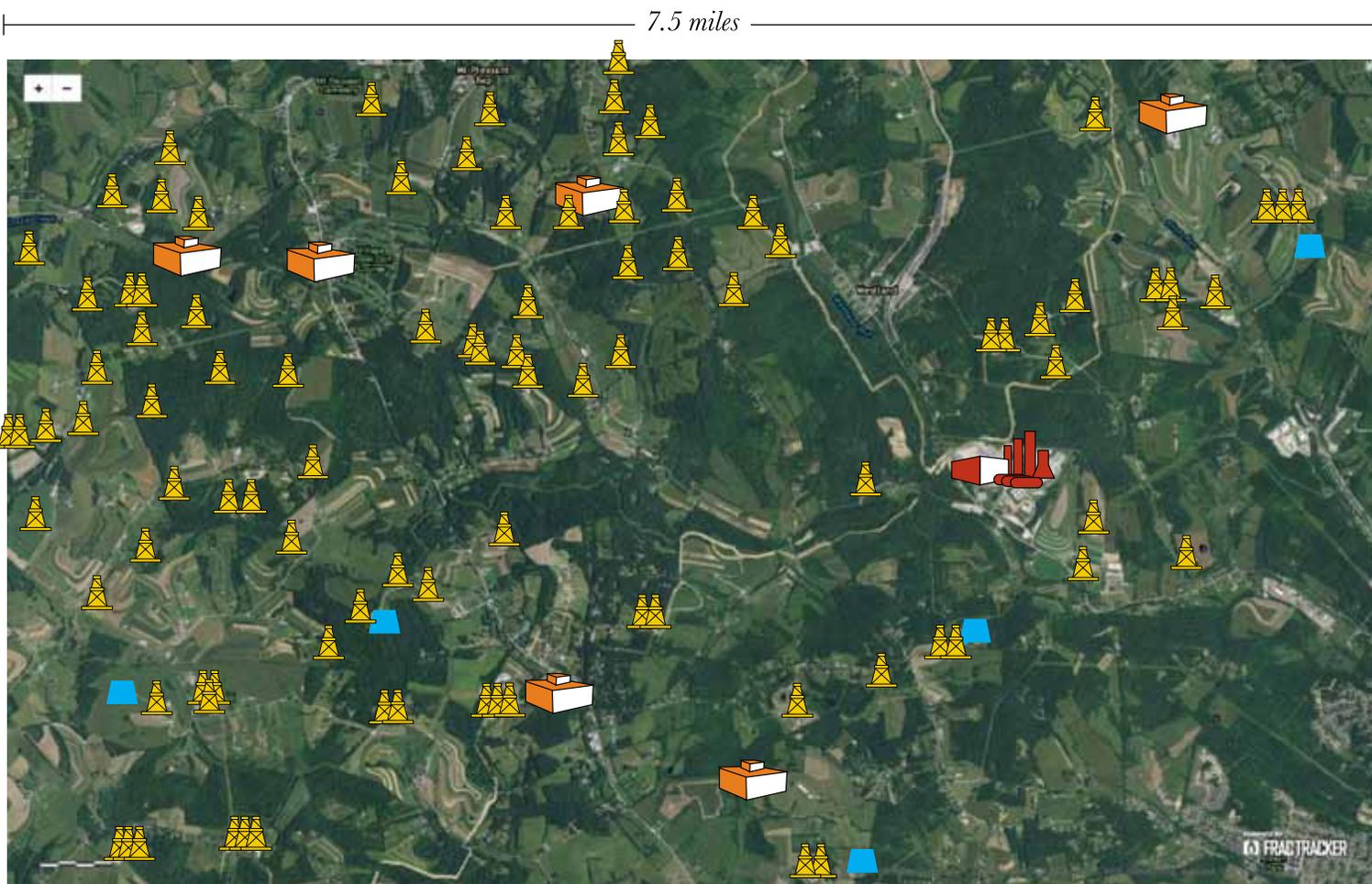
*- Louis W. Allstadt Former Executive Vice President of Mobil Oil*

Works Cited - for a complete list of works cited visit [ShalefieldStories.org](http://ShalefieldStories.org)

1 Engineering, The Royal Society and The Royal Academy of. 2012. Shale gas extraction in the UK: a review of hydraulic fracturing. London: The Royal Society and The Royal Academy of Engineering.

2 Smrecek, Trisha A. 2012. “Understanding Drilling Technology.” Paleontological Research Institution (6):9. [http://www.museumoftheearth.org/files/marcellus/Marcellus\\_issue6.pdf](http://www.museumoftheearth.org/files/marcellus/Marcellus_issue6.pdf)

3 Urbina, Ian. 2011. “Rush to Drill for Natural Gas Creates Conflicts with Mortgages “. The New York Times. [http://www.nytimes.com/2011/10/20/us/rush-to-drill-for-gas-creates-mortgage-conflicts.html?pagewanted=all&\\_r=1&](http://www.nytimes.com/2011/10/20/us/rush-to-drill-for-gas-creates-mortgage-conflicts.html?pagewanted=all&_r=1&)



7.5 miles of gas infrastructure in Washington County, PA after 10 years of development, map courtesy of [FracTracker.org](http://FracTracker.org) (icons added by Friends of the Harmed)

# Unconventional Natural Gas Development and its Associated Health Risks

Compiled from SWPA Environmental Health Project's Illustrated Stages of UNGD

This key will help illustrate the possible symptoms associated with the various chemicals used during UNGD



Respiratory System



Nervous System



Digestive System



Immune System



Reproductive System



Cardiovascular System

## ON-SITE



### Truck Transport of Water, Fluids & Sand

Each well fracked on a site requires significant amounts of water, along with sand to help prop open the cracks. The water and sand are transported via trucks. An average well requires 2,300-4,000 truck trips.

VOCs • Particulate Matter



### Casing, Drilling & Hydraulic Fracturing

After the well pad is cleared, the initial well site chosen, and shallow test wells are drilled to varying depths, casing (cement and/or steel) for the permanent well are put into place and drilling begins using a drill rig.

Methane • Nitrogen Oxide • Hydrogen Sulfides • Particulate Matter



## OFF-SITE



### Gas Pipeline

Once the gas wells are drilled and the natural gas begins to flow, gas and gas liquids are delivered to market through a network of pipelines that pass through compressor stations and smaller pipelines.

VOCs • Methane • Hydrogen Sulfide



### Compressor Station

Natural gas, while being transported through a gas pipeline, needs to be constantly pressurized. However, when the pressure becomes too great, the compressor station will vent the gas.

VOCs • Particulate Matter



## Potential Health Risks Associated with Chemical Emissions:

**VOCs** (Volatile Organic Compounds) Benzene, Formaldehyde, Toluene, ethyl, xylene, carbon dioxide and carbon monoxide



**Particulate Matter**



When shale gas drilling first comes to your community, you may not know exactly what kind of impacts it may have on the environment and your health. One of the biggest potential threats UNGD poses on communities and the environment is the types of chemicals used and emitted into the air. These chemicals, whether naturally occurring or man-made, can pose health issues to those exposed. This graphic will help explain some of the most common chemicals used and emitted from UNGD and their associated health risks. If natural gas drilling comes to your community, it would be wise to be aware of your health and to take proactive steps to avoid exposure as development grows.

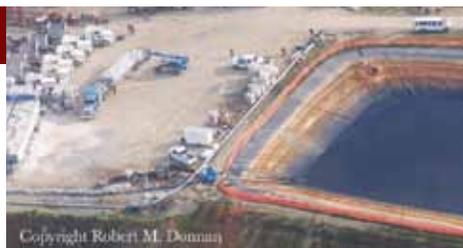


**Flaring & Condensate Tank**

**Flaring:** Used for burning off flammable gas released by valves when there is too much pressure in the pipelines.

**Condensate:** Methane is separated from other commercially viable liquid components using a condensation process.

VOCs • Methane • Nitrogen Oxide • Particulate Matter



**Flowback Impoundment**

These large ponds are used for storage of flowback fluids, drilling muds, and other chemicals and water used in the hydraulic fracturing process.

VOCs • Hydrogen Sulfide



**Glycol Dehydrator**

Associated with the condensation process, glycol dehydration is used to separate wet oil or water out of the natural gas stream.

VOCs • Particulate Matter • Methane  
• Hydrogen Sulfide



**Processing Plant**

Processing plants purify natural gas from underground gas fields by removing common by products.

VOCs • Particulate Matter • Methane • Nitrogen Oxide



**Metering Station**

These stations are designed for continuous analysis of the quality and quantity of natural gas being transferred in a pipeline. Gases, including volatile organic compounds, maybe vented at these metering stations on a sporadic basis.

VOCs • Particulate Matter



**Pig Launcher**

This practice performs maintenance operations on a pipeline such as a cleaning or inspecting. This is done by inserting a “pig” into the pipeline to push the pressure-driven flow of the product down the pipe.

VOCs • Methane • Hydrogen Sulfide



**Methane**



**Nitrogen Oxide**



**Hydrogen Sulfide**



# Fracking in the Coalfields



Coal Operation, West Virginia, courtesy Center for Coalfield Justice

## ***When Gas meets Coal***

Communities across southwestern Pennsylvania are experiencing the harmful impacts of industrial shale gas exploration. This is a familiar state of affairs for the coalfield residents of Greene County, who have been devastated by underground coal mining for generations. Greene County residents have been required to sacrifice their homes, streams and communities to make way for the coal industry's relentless push forward for expansion and profit.

Greene County is home to the largest underground coal mine in North America. This mine produces coal through an extreme form of underground extraction called longwall mining. Longwall mining occurs mostly out of sight, but its impacts are devastating and far reaching. Unlike room and pillar mining, which leaves support pillars for the ground above, longwall mining removes the entire coal seam, which has devastating impacts for surface structures and bodies of water.

Longwall mining destroys aquifers and drinking water wells and releases potent gases, rendering entire communities uninhabitable. The shale gas industry has now taken residence in these coalfield areas, compounding environmental degradation in ways that are still not completely understood. The state is not examining the cumulative impacts of the two industries and has not shown any interest in actually understanding these issues.

The Center for Coalfield Justice, a local environmental justice advocacy group in Washington and Greene County, has been calling attention to this problem for years. The group has also been working with local organizations, like the Izaak Walton League, which has found alarming levels of shale gas wastewater pollutants in coal mine wastewater samples. It is apparent that these two industries are combining pollution in ways that no one truly understands. The only certainty is that coalfield residents will be the ones who pay the ultimate price for this grand energy experiment.

***Patrick Greuter, Esq.*** - Executive Director, Center for Coalfield Justice

## ***Community Based Water Monitoring in Greene County PA***

*Original content for this story was written by Kirk Jalbert (2015) in "Fracking in the Coalfields: Community-Based Water Monitoring in Greene County, PA" for The FracTracker Alliance, Knowing Our Waters Project. for the full article or more information on FracTracker's work and resources go to (<http://www.fracktracker.org/projects/water-monitor/fracking-coalfields/>). This project was funded by the Colcom Foundation.<sup>1</sup>*

Efforts to fill gaps in the understanding of the cumulative impacts of coal and gas extraction are particularly evident in the volunteer water monitoring community. One of the most active citizen-driven environmental advocacy groups in Greene County is the Izaak Walton League of America, (IWLA) Harry Enstrom Chapter,<sup>2</sup> conducting monthly grab samples at 27 monitoring sites. Since 2010, with the introduction of their volunteer monitoring program, Harry Enstrom has experienced explosive growth, from 27 members to over 120 today. But the organization is not necessarily anti-industry. As their mission states, "The IWLA supports the economic development of mining, drilling and the proper use of natural resources." But the chapter is highly dedicated to seeing energy extraction done safely. "It is of the utmost importance that our most valued resources – water & air – are not destroyed by ongoing mining and drilling activities, particularly with respect to the development of the Marcellus Shale gas reserves."

Beginning in 2011, members of the IWLA began to find high levels of bromide at five of their water monitoring sites. In each case these monitors were at either an acid mine drainage discharge site, or at points where active coal refuse slurry pods discharge treated water into nearby streams. An earlier article that followed the work of the IWLA, written by PublicSource<sup>3</sup>, noted that a statewide study of 140 abandoned mines by the US Geological Survey in 1999 found bromides never exceeded .6 milligrams per liter at any of the IWLA testing sites<sup>4</sup>. However, samples taken by the IWLA have shown bromide levels to be as much as 10 times higher than the USGS's. These findings quickly led IWLA volunteers to suspect that waste products of the two industries were co-mingling in underground mine shafts or in refuse impoundments managed by the coal industry.

## Into the Field

FracTracker joined the IWLA on a tour of their “hot spot” monitoring locations in December of 2014. These locations included the Emerald Mine refuse impoundment discharge #001 into Smith Creek, as well as Cumberland Mine’s refuse impoundment discharge #014 and #029 into Whiteley Creek. All of these sites are operated by Alpha Resources – and 014 and 029 were included in the 2014 EPA/DOJ violations settlement. A fourth hot spot we visited was the Clyde Mine AMD treatment plant, which discharges into Ten Mile Creek (operated by the DEP since the mine’s abandonment in 2002).

The PA Oil and Gas Act Section 78 (on the Disposal of Brine, Drill Cuttings, and Residual Waste) prohibits the disposal of flowback water or any materials associated with the drilling industry into coal mines, slurry impoundments, coal mine discharges or coal refuse piles<sup>5</sup>. But detecting the co-presence of coal waste and shale gas waste can be difficult.

In lieu of having a clear signature of shale gas waste, IWLA volunteers monitor for pH, water temperature, and relative conductivity / total dissolved solids (TDS) to determine the presence of bromide. One strategy the IWLA has used to bring attention to their findings is to obtain PA DEP’s own monitoring data to confirm potential discharge violations. The agency has no discharge limits for bromide, but standards do require conductivity concentrations to be below 1,000 microsiemens, and TDS concentrations to be below 500 milligrams per liter.

In DEP’s most recent water samplings, collected in 2012, Emerald Mine discharge #001 registered conductivity readings of nearly 5,000 microsiemens and TDS levels of 3,500 milligrams per liter. Cumberland Mine’s discharge #029 conductivity was as high as 7,500 microsiemens. IWLA also requested the assistance of watershed scientists from the WVU Water Research Institute to corroborate these findings. These researchers found similar results. DEP’s discharge limits are technically set as monthly averages. Averages do not provide enforcement actions in the case of extreme discharge spikes throughout the month, however. Additionally, there presently is not a way to enforce monthly averages without self-reporting by the industry in a region lacking in DEP oversight.

Smith Creek, Whiteley Creek, and Ten Mile Creek all flow into the Monongahela River. “This is going into your drinking water. It’s going into the Mon River,” Dufalla explains to a packed room of concerned citizens in February 2014. “1 million people depend on the Monongahela River for their drinking water. Look at your bromide parts per billion. When you get 4,000 – remember there’s no standard for bromide, and remember that 3 bromides to make one trihalomethane – if you divide that by 3, you get a sense of how many trihalomethanes can be produced.” This is problematic for municipal drinking water facilities in the region. EPA drinking water standards mandate a maximum trihalomethane concentration of 80-ppb<sup>6</sup>. The discharge from Clyde Mine is just upriver from the Tri-County treatment facility.

In documents submitted to the DEP in November 2013, and again in March 2014, the IWLA requested testing for a full spectrum of pollution indicators at their hot spot sites<sup>7</sup>. Similar documents were forwarded to the EPA. These included requests to test for radionuclides in response to a 2013 Duke University study that found radium concentrations were 200 times above normal near a wastewater treatment facility in Indiana County, PA, receiving shale gas waste<sup>8</sup>.

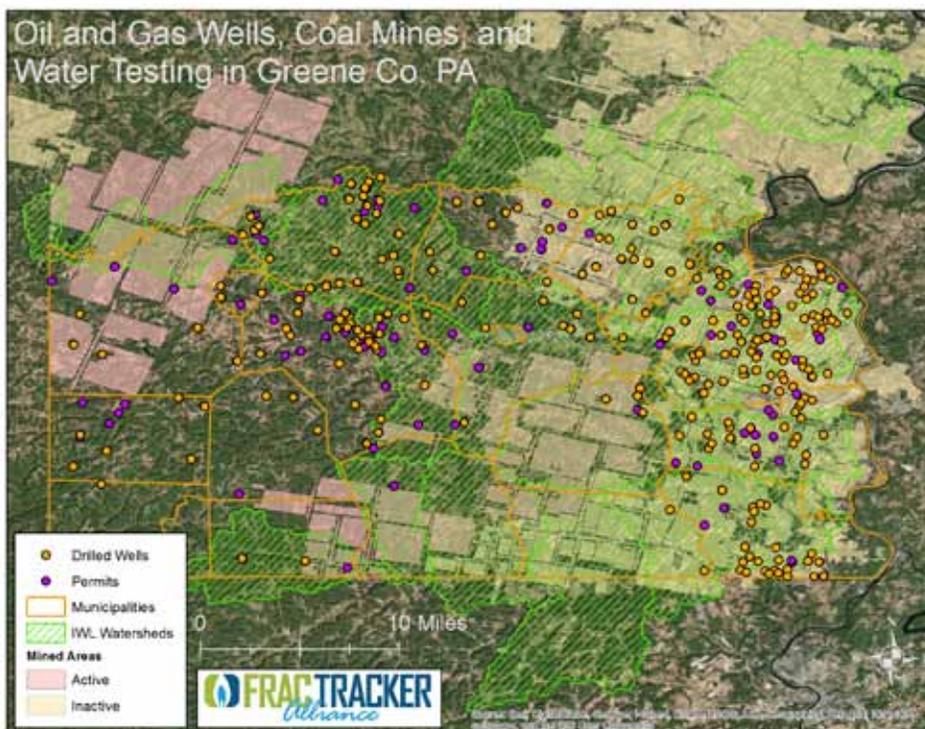
Documents obtained by the IWLA from an April 2014 DEP sampling at Smith Creek discharge #001 found radium 226 levels of 301 PCi/L. The total radium limit for industrial effluent set by the EPA is 60 PCi/L<sup>9</sup>. Thus far, these requests for more comprehensive monitoring in Greene County have fallen on deaf ears, despite accumulating data that point to shale gas waste interactions at coal mining discharge sites.

## Becoming Engaged Citizens

The IWLA’s efforts to bring attention to alarming pollution levels in Greene County’s watersheds are well documented, and have been the subject of numerous investigative journalism pieces over the years. The persistence of the IWLA Harry Enstrom chapter has made its monitoring tours and monthly chapter meetings an obligatory stop for journalists, researchers, and politicians from all over the

country. Foreign delegates from Germany, Poland, Australia, Russia, and Italy have also consulted with the chapter to better understand the environmental and social impacts of extreme fossil fuel extraction. In 2013 the Harry Enstrom chapter received the IWLA’s National “Save Our Streams Award,” and in 2014 the IWLA’s National “Conservation Award.” In 2014 their volunteer monitoring program expanded into Washington County, PA, and in 2015 they have plans to train IWLA chapters in neighboring WV and OH.

The IWLA and other monitoring organizations, such as the watershed associations affiliated with the Greene County Watershed Alliance, have also made significant scientific contributions to the WVU Water Research Institute’s Three Rivers QUEST (3RQ) program<sup>10</sup>. WVU WRI has used this data to work closely with the PA DEP over the past year to address TDS loads in the Monongahela River watershed. These same citizen-led organizations also submitted highly informed testimony during the DEP’s public hearings in February of 2014 for proposed changes to Act 13.



These accomplishments highlight some of the most impressive benefits of volunteer water monitoring programs. Participants are empowered by the practice of learning about how their ecosystems work – and their fragility. Participants also educate one another on how to navigate complex legal systems. Perhaps most importantly, concerned citizens realize they can play a part in pressuring government agencies to take seriously their responsibilities in protecting residents' wellbeing.

There remains a consistent frustration, however, with the lack of response to citizen complaints. The PA DEP has not revisited Greene County's discharge sites for comprehensive data collections since 2012. Nevertheless, the DEP's 2014 PA Integrated Water Quality Monitoring and Assessment Report, required by the Clean Water Act, suggests that TDS loads in the Monongahela River watershed have significantly decreased since 2012<sup>11</sup>. The one exception is in Dunkard Creek. The report states that, "Statistically significant increasing trends for both SO<sub>4</sub> (sulfates) and TDS were observed at one station (Dunkard Creek)." Of more than 100 monitoring stations in the DEP's Water Quality Network (WQN), data for only 14 stations were used in the 2014 study, and the Dunkard Creek Station was the single station located in Greene County<sup>12</sup>. The IWLA argues that, if abandoned mine discharge sites like Dunkard Creek are experiencing high concentrations of abnormal pollution indicators, than other mining discharge sites are as well.

But this issue of poor regulatory oversight may be changing thanks to the diligence of the IWLA, CCJ, and other environmental advocacy organizations in the region. During FracTracker's tour of monitoring sites in November, we happened upon a DEP watershed specialists gathering samples at Dunkard Creek. We were told that the DEP would be responding to accruing complaints by returning to the area in 2015 for a comprehensive monitoring study. Dufalla tells us at the end of our field site visit:

"We're going to keep on pushing until we get the water and air cleaned up. It's not about money and it's not about suing. That's definitely not what it's about. It's about keeping the air and water clean for future generations to come. Which is actually part of the constitution of the Commonwealth of Pennsylvania, Article 1 Section 27, that guarantees every resident clean water and clean air. And all we're trying to do is to get those who are responsible for regulating this to follow the regulations founded in the constitution."

## *The Continuing Saga of Greene County Contamination*

Exerpts from DEP Hearing April 29th, 2015

My name is Charles Evans Hunnell, I reside in Greene County, Center Twp., Waynesburg, PA. I'm a graduate of West Greene High School and Penn State University. I'm a Vietnam Veteran and a retired LCDR U.S. Navy Reserve. I am also a retired teacher of U.S. History and Economics at Upper St Clair High School.

I testified at the previous hearing on Chapter 78 held at Washington and Jefferson College and today I am even more concerned with the actions of the drilling industry and the DEP concerning the health and safety of the citizens of Pennsylvania.

Why does Pennsylvania continue to permit operators to use open impoundments containing flow back and produced water from unconventional slick water drilling. It is well known that these open pits contain hazardous chemicals and radiation (flow back and produced water, part of the byproducts of deep drilling) and that they do leak. The industry has a serious, health and safety problem of how to properly dispose of the byproducts.

The DEP has known since 2011 that Emerald Mine, Cumberland Mine (Alpha Resources Mines) and Clyde Mine (a DEP abandoned mine) have been discharging high levels of Bromides, Strontium, Chlorides, Sodium, extremely high levels of Electronic Conductivity and Total Dissolved Solids, and with elevated Osmotic Pressures into Greene County streams. The problem is that these levels are not associated with mining but are associated with unconventional slick water deep drilling. How have these flow back and produced water contents ended up in Greene County mines? One of the following has had to happen:

1. There has been a massive breach underground all through Greene County.
2. The mines have permitted residual waste trucks to dump their contents into mine disposal sites to be discharged under mine discharge permits.
3. Residual waste trucks have dumped their contents into abandoned mine sites all over Greene County. We know that the second two possibilities have happened. The results of the lack of DEP regulation is that the citizens of Greene County are constantly threatened by the unconventional slick water deep drilling's flow back and produced water ultimately making its way into Smith Creek, Ten Mile Creek, Whitely Creek, and into the Monongahela River.

The newest discovery in Greene County is the presence of high levels of RADIATION. This was found in tests conducted by the DEP in April of 2014 and then buried by the DEP. This information was discovered by the Harry Enstrom Chapter of the Izaak Walton League of America in November 2014, through a right-to-know on Clyde Mine and an April 2015 right-to-know on Smith Creek and Whitely Creek. How interesting that the DEP chose to bury this data and not to send copies in the spring of 2014 to the Harry Enstrom Chapter of the Izaak Walton League of America, who requested that radiological tests be conducted at the five hot spots they monitor in Greene County. I believe this shows a disregard for the health and safety of the citizens of this Commonwealth.

Radiation is one of the by-products of unconventional slick water drilling. We don't hear that in the news do we? The following Greene County streams have been contaminated with RADIATION as well as the chemicals from flowback and produced water: Smith Creek, Ten Mile Creek, and Whitely Creek.

The results of the radiological testing of Greene County streams indicates the presence of high levels of the following: Radium 226, Radium 228, Uranium 238, Thorium 232. This radiation will be around for a long time in our environment the half-life of Radium 226 is 1,600 years, the half-life of Thorium 232 is billions of years.

*If we keep going with the pace that we're going right now, we're just treating this region like a grand experiment. What happens when you start plugging a bunch of gas wells near abandoned mine pools? Or what happens when you start long-wall mining close to a shale gas well? If it goes the way it's going right now, unfortunately, we're going to see some massive disaster.*  
*Veronica Coptis - Center for Coalfield Justice Deputy Director*

1. <http://www.fractracker.org/projects/water-monitor/monitor-profiles/>  
2. <http://www.iwlaharryenstrom.org>  
3. <http://publicsource.org/investigations/briny-water-flows-into-southwestern-pa-streams#.VVouHUKZ5UR>  
4. [http://files.dep.state.pa.us/Mining/Abandoned%20Mine%20Reclamation/AbandonedMinePortalFiles/MIW/USGS\\_Dissolved\\_Metals\\_part1.pdf](http://files.dep.state.pa.us/Mining/Abandoned%20Mine%20Reclamation/AbandonedMinePortalFiles/MIW/USGS_Dissolved_Metals_part1.pdf)  
5. [http://www.depweb.state.pa.us/portal/server.pt/community/oil\\_gas/6003](http://www.depweb.state.pa.us/portal/server.pt/community/oil_gas/6003)  
6. <http://water.epa.gov/drink/contaminants/basicinformation/disinfectionbyproducts.cfm>  
7. [http://www.irc.state.pa.us/docs/3042/COMMENTS\\_PUBLIC/3042%2003-19-14%20IZAAK%20WALTON%20LEAGUE%20OF%20AMERICA%20DUFALLA%20ENSTROM.pdf](http://www.irc.state.pa.us/docs/3042/COMMENTS_PUBLIC/3042%2003-19-14%20IZAAK%20WALTON%20LEAGUE%20OF%20AMERICA%20DUFALLA%20ENSTROM.pdf)  
8. <http://pubs.acs.org/doi/abs/10.1021/es402165b>  
9. <http://pubs.usgs.gov/sir/2011/5135/pdf/sir2011-5135.pdf>  
10. <http://3riversquest.org>  
11. [http://www.portal.state.pa.us/portal/server.pt/community/water\\_quality\\_standards/10556/draft\\_integrated\\_water\\_quality\\_report\\_-\\_2014/1702856](http://www.portal.state.pa.us/portal/server.pt/community/water_quality_standards/10556/draft_integrated_water_quality_report_-_2014/1702856)  
12. [http://www.portal.state.pa.us/portal/server.pt/community/water\\_quality\\_standards/10556/water\\_quality\\_network/1172348](http://www.portal.state.pa.us/portal/server.pt/community/water_quality_standards/10556/water_quality_network/1172348)

The streams I have identified are used for fishing and usual recreation (swimming and boating). Should the citizens of Greene County not know that the streams in Greene County are no longer the safe options for enjoyment that they have been in the past but are potential chemical and radiological hazard areas?

As a citizen of Pennsylvania and a resident of Greene County, I am incensed at the cavalier attitude of the extraction industry and the DEP for the health and safety of the citizens of this state. With the presence of radiation and carcinogenic chemicals in our drinking water supplies the future does not look good for those of us who make our homes in this region. When people realize there is a large explosion of cancer in this area in the future the citizens will want to know why this

is happening. We are already able to see the beginnings of the problems. How are you going to answer that question?

In rural Pennsylvania, we are being treated like a third world playground for the extraction industries. You have adversely affected the lives of thousands of rural Pennsylvanians by appearing to operate as the proxy of the gas industry and the coal industry.

The Department of Environmental Protection's mission is to protect Pennsylvania's air, land, and water from pollution, and to provide for the health and safety of its citizens through a cleaner environment. We will work as partners with individuals, organizations, governments, and businesses to prevent pollution and restore our natural resources. When in the name of God are you going to do this?

*According to the recent DEP file pulls done by the Center for Coalfield Justice, the DEP radiation testing revealed that the level of radiation in these streams near mining discharges are above the safe drinking water standard for radiation. Smith Creek, Whitely Creek, and Ten Mile Creek were all at least 12 times greater than the safe drinking water standard for radiation. To see the full results contact the Harry Enstrom Chapter of the IWLA at [iwlaharryenstrom@gmail.com](mailto:iwlaharryenstrom@gmail.com) or view them online at [www.coalfieldjustice.org](http://www.coalfieldjustice.org).*

## ***The Results Are In***

We recently received the results of the tests that were conducted on Ten Mile Creek and the Clyde Mine discharge into Ten Mile Creek, by the DEP. In the following paragraphs, I will try to explain what the DEP testing indicates and how long the radiation effects will be around.

Let us put this concept to what was found in Ten Mile Creek. The radioactive half-life for Radium 226 is 1,600 years. The level of Radium 226 found in the stream was 175 PCL. This means in 1600 years the radiation emitted from the current Radium 226 would be 87.5 PCI/L. In another 1600 years, the emissions would be 43.55 PCL. Remember, the radiation level for Radium 226 combined with Radium 228 in drinking water is 5 PCI/L. It will be thousands of years before the level of Radium 226 is at 5 PCL. Another thought to keep in mind is that our water treatment plants cannot remove the Radium 226 or 228 from our drinking water.

If we look at the Thorium 232 levels, it becomes enlightening on the danger this element possesses in our environment. Thorium 232 is found naturally in the environment, but the element is more concentrated as we go deeper into the earth. Thorium 232 was once used in X-rays and rat poisons, but it was so dangerous, it was banned. The half-life of Thorium 232 is billions of years. For example: if you have 50PCI/g of Thorium 232, it will take 45 billion years to reduce the emission to 5 PCI/g. At present, the Thorium 232 level is 151 PCI/L in Ten Mile Creek. Before the Thorium 232 level reaches the 5 PCL, the Earth will no longer exist. It is here to stay. What affects this will have on the health of the population remains to be recorded.

Radium 228 is similar to Radium 226. Remember, the standard for drinking water is 5 PCL for combined radium 226 and Radium 228. If we add up the Radium 226 and 228 found in Ten Mile Creek, they will total to 326 PCI/L. It will take a long, long time before the current radiation from Radium 226 and 228 reaches 5 PCL. It will be here for generations to come.

The million dollar question is, "Where does all this radiation originate?" We now know that the level of Radium 226 coming from the Clyde

Mine is 301 PCI/L. It is hard for me to believe that this amount of radiation is found in coal.

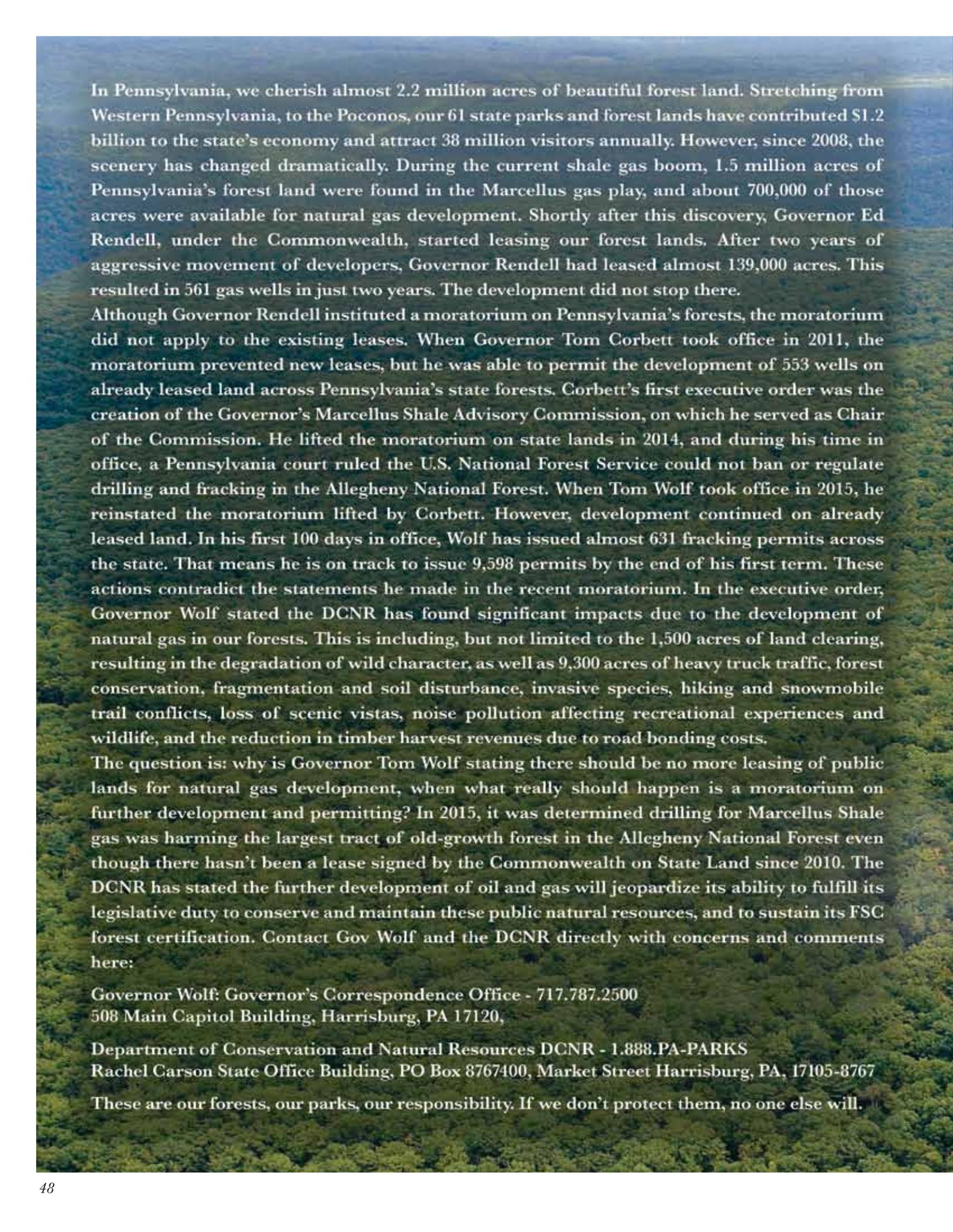
We know that the Marcellus Shale is very radioactive and there is a large amount of Radium 226 found in the shale layer. Is it possible that the "flowback" water from the drilling operation has entered our mine pools and is being discharged into our raw drinking water sources? Is it possible that the high levels of radiation are somehow responsible for the high cancer rates found in our area? We know that Thorium affects the human Thyroid gland. Could it be that the high levels of Thorium are responsible for the drastic increase in Thyroid problems in our area? Could it be that the long history of the extraction industry is now beginning to show its effects? What is in store for us with the new found drilling for gas in our area? The future will tell the outcomes of drilling on our health. How does it feel to be a lab animal? Added to this is "how will all these new chemicals being introduced into our environment affect our endocrine system?"

To be honest, I am really deeply concerned about our future health.

***-Ken Dufalla***



Water Monitoring, photo courtesy of Center for Coalfield Justice



In Pennsylvania, we cherish almost 2.2 million acres of beautiful forest land. Stretching from Western Pennsylvania, to the Poconos, our 61 state parks and forest lands have contributed \$1.2 billion to the state's economy and attract 38 million visitors annually. However, since 2008, the scenery has changed dramatically. During the current shale gas boom, 1.5 million acres of Pennsylvania's forest land were found in the Marcellus gas play, and about 700,000 of those acres were available for natural gas development. Shortly after this discovery, Governor Ed Rendell, under the Commonwealth, started leasing our forest lands. After two years of aggressive movement of developers, Governor Rendell had leased almost 139,000 acres. This resulted in 561 gas wells in just two years. The development did not stop there.

Although Governor Rendell instituted a moratorium on Pennsylvania's forests, the moratorium did not apply to the existing leases. When Governor Tom Corbett took office in 2011, the moratorium prevented new leases, but he was able to permit the development of 553 wells on already leased land across Pennsylvania's state forests. Corbett's first executive order was the creation of the Governor's Marcellus Shale Advisory Commission, on which he served as Chair of the Commission. He lifted the moratorium on state lands in 2014, and during his time in office, a Pennsylvania court ruled the U.S. National Forest Service could not ban or regulate drilling and fracking in the Allegheny National Forest. When Tom Wolf took office in 2015, he reinstated the moratorium lifted by Corbett. However, development continued on already leased land. In his first 100 days in office, Wolf has issued almost 631 fracking permits across the state. That means he is on track to issue 9,598 permits by the end of his first term. These actions contradict the statements he made in the recent moratorium. In the executive order, Governor Wolf stated the DCNR has found significant impacts due to the development of natural gas in our forests. This is including, but not limited to the 1,500 acres of land clearing, resulting in the degradation of wild character, as well as 9,300 acres of heavy truck traffic, forest conservation, fragmentation and soil disturbance, invasive species, hiking and snowmobile trail conflicts, loss of scenic vistas, noise pollution affecting recreational experiences and wildlife, and the reduction in timber harvest revenues due to road bonding costs.

The question is: why is Governor Tom Wolf stating there should be no more leasing of public lands for natural gas development, when what really should happen is a moratorium on further development and permitting? In 2015, it was determined drilling for Marcellus Shale gas was harming the largest tract of old-growth forest in the Allegheny National Forest even though there hasn't been a lease signed by the Commonwealth on State Land since 2010. The DCNR has stated the further development of oil and gas will jeopardize its ability to fulfill its legislative duty to conserve and maintain these public natural resources, and to sustain its FSC forest certification. Contact Gov Wolf and the DCNR directly with concerns and comments here:

Governor Wolf: Governor's Correspondence Office - 717.787.2500  
508 Main Capitol Building, Harrisburg, PA 17120,

Department of Conservation and Natural Resources DCNR - 1.888.PA-PARKS  
Rachel Carson State Office Building, PO Box 8767400, Market Street Harrisburg, PA, 17105-8767

These are our forests, our parks, our responsibility. If we don't protect them, no one else will.



*photo courtesy of F.O.H*



*photo courtesy of EcoFlight.org*

# *An Open Letter to Pennsylvania Gov. Tom Wolf*

by Jenny Lisak

Dear Governor Wolf,

I remember when I first heard about fracking, and that the idea of injecting billions of gallons of toxic chemicals into hundreds of thousands of wells pock marking the state seemed so absurd and offensive. But then I continued to learn more and was newly shocked at each fresh revelation: the Halliburton Loophole, the many people getting sick from air emissions and water contamination, our public lands being sacrificed, property values diminishing, increased crime, illegal dumping, flaring, low level ozone, radon bound with gas, our public agencies seemingly bought and sold, our neighborhoods nearest pond a radioactive waste pit, the failure rate of cement casings and steel pipe, eminent domain, earthquakes, injection wells, all that goes along with frac sand mining, pipe lines, cryogenic plants, glycol dehydrators, and so much more! I thought it couldn't possibly get any worse.

Natural gas contributes four types of greenhouse gases: CO<sub>2</sub>, burning gas releases just a bit more than half the levels of coal - VOC's (volatile organic compounds), the natural gas industry is the largest contributor of VOC's - Methane, CH<sub>4</sub>, the major component of natural gas, is 80 to 100 times the global warming potential of CO<sub>2</sub> in the first 20 years. Nitrous oxides, from the incomplete combustion of natural gas and from natural gas based fertilizer use and manufacture, have 300 times the global warming potential.

All of those lovely 5 to 10 acre gravel lots splattered all over the PA shale plays? They can no longer sequester carbon. Not only are they unable to sequester carbon, they have also released it through the destruction of a

healthy field or forest. An acre of 50 year old forest sequesters 30,000 pounds of carbon dioxide annually, an older forest much more. 700,000 acres of PA forest land have already been leased –twenty percent of that for Marcellus well pads. That means a loss of 140,000 carbon sequestering acres on PA forest land. I can only surmise that the climate impact is significant when figuring in all the shale plays and pipelines and access roads. Yet you, Governor Wolf, say you want the gas industry to succeed, you say it's key.

The industry began their relationship with our communities with lies. "It's only sand and water; you'll never know we were there; all your neighbors have leased." How many would have signed leases if they had been briefed on the many risks, including: well blowouts, explosions, uncontrollable flows of oil, natural gas or well fluids, fires, formations with abnormal pressures, pipeline ruptures or spills, pollution, releases of toxic natural gas and other environmental hazards? Did they let farmers know that waste pits are highly toxic and radioactive and will off-gas carcinogens to their families and that the only thing between that chemical stew and their water supply is a huge garbage bag? Did they offer farmers an escape route like the one they have for their workers? Did they mention the significant gas migration problem and that gas can migrate into their homes and water and endanger their loved ones?

Governor, I had hoped that you would be on our side when you learned: ***"Even tiny doses of benzene, toluene, and other chemicals released***



*photo courtesy of EcoFlight.org*

*"By any responsible account, the exploitation of the Marcellus Shale Formation will produce a detrimental effect on the environment, on the people, their children, and the future generations, and potentially on the public purse, perhaps rivaling the environmental effects of coal extraction."*

*Ronald Castille - Pennsylvania Supreme Court Justice (Republican)*

*during the various phases of oil and natural gas production, including fracking, could pose serious health risks—especially to developing fetuses, babies and young children. Among the more than 750 chemicals known to be used in fracking, a significant subset may carry the potential to disturb the natural hormone messengers responsible for critical processes such as sleep, growth, and reproduction. Even in very small concentrations, these endocrine disrupters have been shown capable of derailing normal brain and sexual development; diminish the immune system's ability to fight disease, cause cancer, and other effects.”*

Governor Wolf, are you aware of the radioactivity issue? Avner Vengosh, professor of water quality and geochemistry at Duke's Nicholas School of the Environment says “even if fracking the Marcellus ceased overnight, the questions and potential problems about radioactivity would linger,” and that “once you have a release of fracking fluid into the environment, you end up with a radioactive legacy.” And what about the words of PA Supreme Court Justice Castille? “By any responsible account, the exploitation of the Marcellus Shale Formation will produce a detrimental effect on the environment, on the people, their children, and future generations, and potentially on the public purse, perhaps rivaling the environmental effects of coal extraction.”

I am amazed that we can spend billions in updating infrastructure, cleaning up pollution, permitting and policing, mitigating climate impacts, addressing negative health consequences, providing disaster relief, research and development (which means drilling deeper and bigger and better, farther and faster), and on and on, but can't spend it on turning this state around onto a course of hope for a future with unspillable sustainable energy.

Clean, healthy jobs can be created in building and maintaining infrastructure that supports clean, renewable energy. Refusing or neglecting to address the Pennsylvanians who do not want noxious, explosive, heavy industry and the infrastructure that supports it in their backyards and next to their schools is malevolent.

1. Developmental and Reproductive Effects of Chemicals Associated with Unconventional Oil and Gas Operations - Webb, Bushkin-Bedient, Cheng, Kassotis, Nagel: Dec, 2014

## **“Bomb Trains” Threaten Our Communities** by *Three Rivers Rising Tide*

Every day, millions of tons of highly explosive crude oil are shipped across North America by rail. In February and March of 2015 alone, four oil trains derailed and exploded, causing fires, contaminating waterways, and resulting in the destruction of homes and property.

In the summer of 2013, an oil train derailed and exploded in the center of Lac-Magentic, Quebec, killing 47 residents and destroying the downtown[1]. Imagine if a train was to derail in downtown Pittsburgh...? Why is this suddenly in the news? These incidents are happening more often because the amount of crude oil being shipped by rail is skyrocketing. Fracking for oil in the Bakken Shale deposit of North Dakota has caused rail shipments of oil to increase by 4000% since 2008, without any permitting and with very little oversight[2].

According to records provided under a federal government emergency order, up to 75 trains, each loaded with at least 1 million gallons of volatile crude oil, pass through Allegheny County each week. These trains move through the heart of Pittsburgh on lines that pass through Downtown near the David L. Lawrence Convention Center and next to Station Square. Between 40-60% percent of Pittsburghers live within a 1/2 mile evacuation zone of the oil train routes, including seventy-two K-12 schools [2,3]. Nationwide, over 25 million Americans live within bomb train evacuation zones. Pipelines are a proposed alternative to transport the Bakken oil, however these carry their own risks.



Trains through downtown Pittsburgh, photo courtesy F.O.H.

Governor, I fear you are listening to those who have vested interests in the gas industry succeeding. We are listening to our neighbors and friends who are suffering the consequences and impacts of deep shale gas production. We are listening to the scientists who tell us the fossil fuel era must end. We are educating ourselves, we are organizing, and we are not going to give up on our families, friends or state so easily. Pennsylvanians that have grown up here, have homes and raise their families here, deserve equal time. We do not want to be refugees from our own homes.

We are opposed to subjecting our children to as many as 75 toxic airborne chemicals that are emitted from gas production. Yet, our state's regulatory agencies permit harm by granting fracking permits; permit the release of toxic chemicals through our aquifers and into the air next to our homes and schools; permit the destruction of our public lands; and permit the estimated 9% fugitive methane emissions that will take us over the climate cliff. Communities all over PA are suffering travails. A woman, her sister and her dog suffered seizures from breathing the fumes from nearby gas operations. An elderly couple blacked out in their home from the fumes of a compressor station. A woman was told not to bathe in her contaminated water but did, because she had no alternative. There are families in PA that have been without potable water for years.

I fervently hope that you will have compassion and empathy for the families and communities that are being impacted by the shale gas industry and that you will speak with us, consult climatologists, biologists, medical professionals and do what other states have determined was best for their citizens - ban fracking. Let's make Pennsylvania a leader in renewable, sustainable jobs and energy so we can have a healthy tomorrow for all of us, and for all that follow us.

*-Jenny Lisak*

# The Cost of Shale Fuels

by Dory Hippauf

When drilling corporations first came to the Marcellus Shale area, Pennsylvania was hailed as The New Texas and The Saudi Arabia of North America. In 2010, *60 Minutes* ran a story about “shaleionaires” and a paper from Penn State predicted that there would be 200,000 new jobs in the industry.<sup>1</sup>

The first Pennsylvania natural gas well was drilled in Washington County in 2003 by Range Resources-Appalachia, LLC. Their first Marcellus gas production from the well began in 2005. As of January 2015, 15,726 permits have been issued for unconventional wells, with 8,827 drilled or under development in Pennsylvania. Analysts estimate that PA is only 10% of the way to a full build-out of 90,000 wells, yet some communities are already seeing the first signs of a bust in the cycle.

## Playing Catch-up

In September 2014, The Pennsylvania Department of Environmental Protection (DEP) published 248 cases where oil and gas activity has contaminated personal water wells since 2010. The release of these documents followed a report by the state’s Auditor General Eugene DePasquale criticizing the DEP for mishandling complaints about water quality and drilling, including poor record-keeping. “DEP is underfunded, understaffed and inconsistent in how it approached shale gas development. For an analogy, internally we believe it’s like firefighters trying to put out a five-alarm fire with a 20-foot garden hose,” DePasquale said.

The majority of DEP documents were on paper, thus making the analysis and compilation of statistics difficult. According to DEP spokesman Eric Shirk, they are now taking steps to “manually scan in all these files and make a central repository on the Web that everybody can take a look at.”

Under current law, the Department of Environmental Protection must look into cases of potential drinking water pollution only when it is asked to investigate a problem by a landowner. The department also does not track how often gas drillers voluntarily replace drinking water supplies, either temporarily or permanently.

“Often, homeowners and drillers work out agreements without needing the department’s assistance,” DEP spokesman Tom Rathbun said. “We get involved when we are notified of a problem, but we are not made aware of every case.”

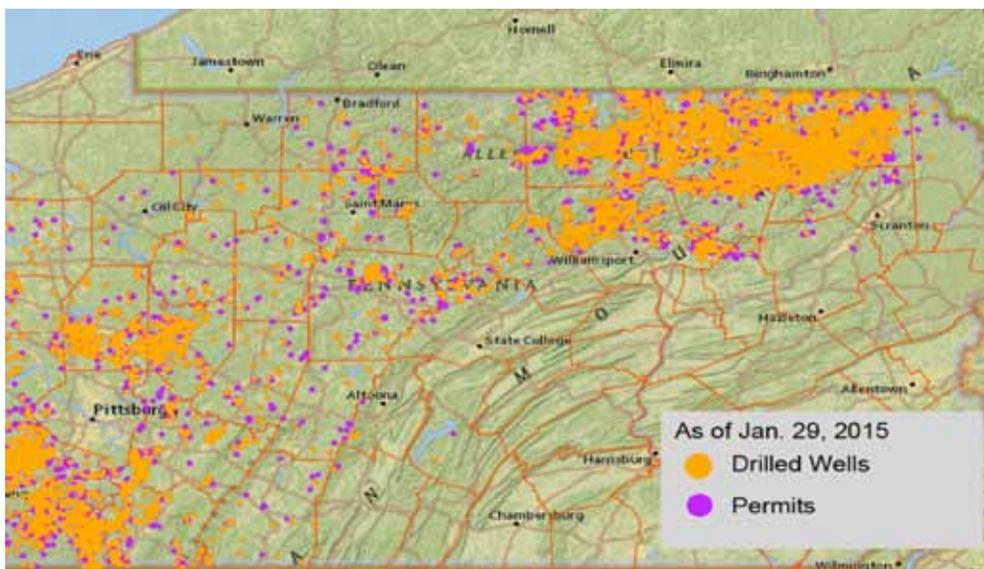
## Inflated Jobs Numbers?

Perhaps one of the biggest talking points by the industry is how many jobs have been created for Pennsylvanians. Estimates vary.

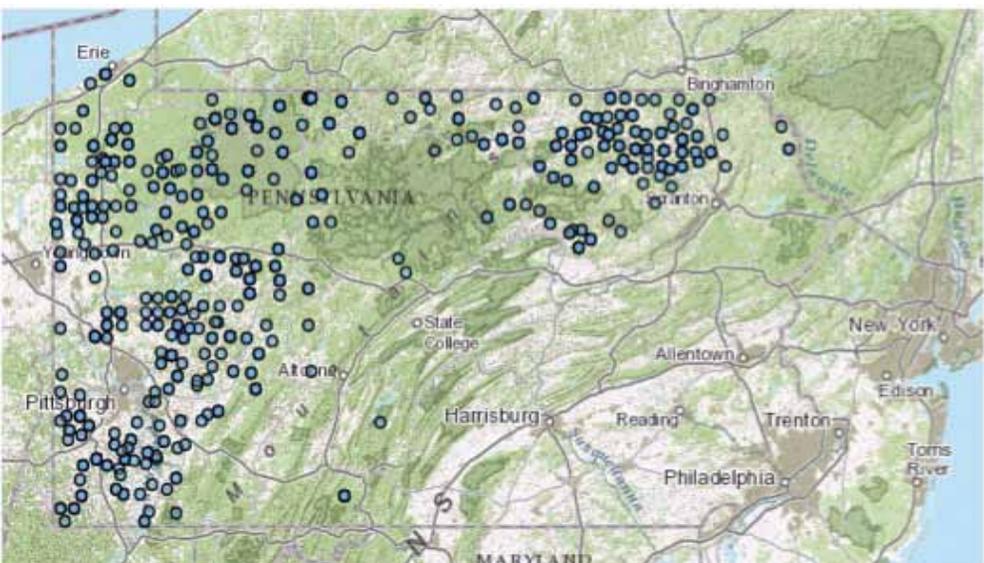
When people hear the numbers, they are thinking these are jobs directly related to fossil fuels, like workers on a drill pad or construction of pipelines. People also erroneously assume these jobs will be filled with residents of their state.

Former Pennsylvania Governor Tom Corbett often boasted the shale industry had created 200,000 jobs in Pennsylvania. This conflicts with others’ statistics. The Pennsylvania Department of Labor and Industry (DOL) reports that 28,000 jobs were created by the industry. According to the Keystone Research Center, Pennsylvania is currently ranked 48th out of 50 states in job growth .

1. <http://marcelluscoalition.org/wp-content/uploads/2010/05/PA-Marcellus-Updated-Economic-Impacts-5.24.10.3.pdf>

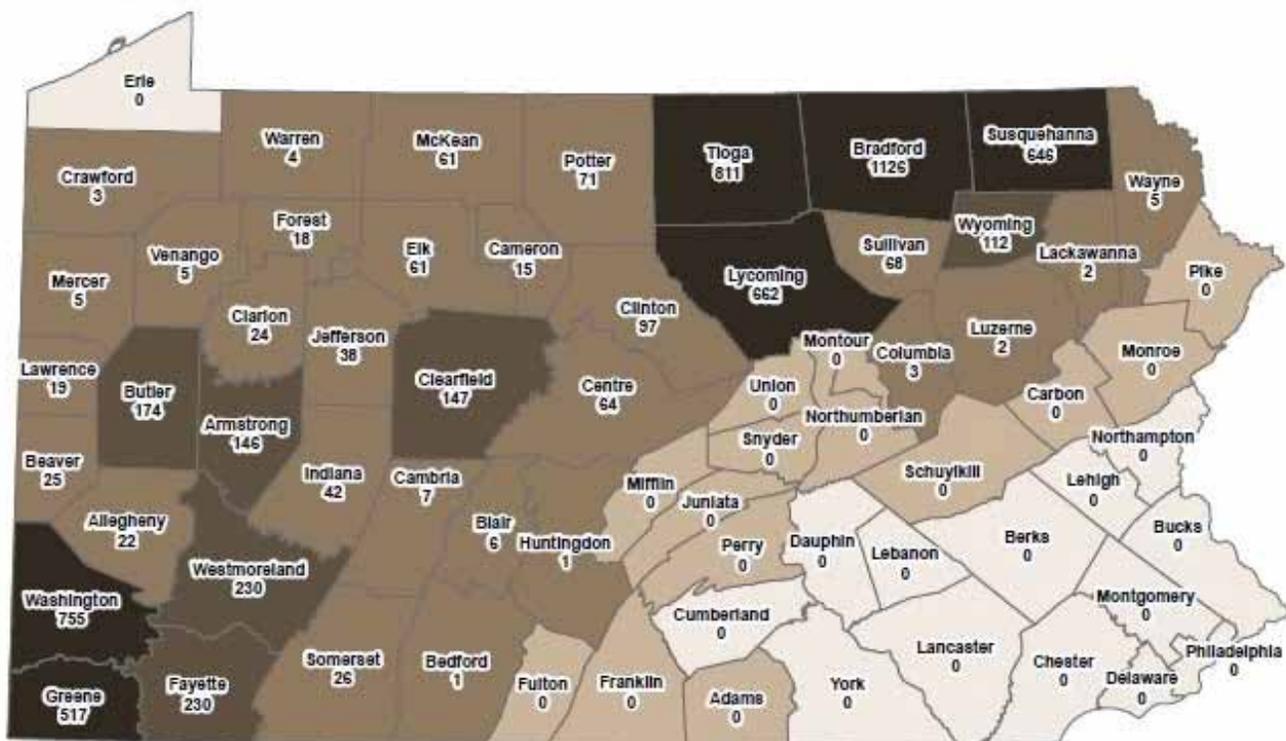


Drilled wells and permits as of Jan 29, 2015 provided by The FracTracker Alliance on FracTracker.org



2014 Water Contamination complaints filed with DEP, provided by The FracTracker Alliance on FracTracker.org

# Shale Boomtowns: The Economic and Social Impacts of Gas Drilling



Source: Multi-State Shale Collaborative.

400 or more wells = high-drilling counties  
 100-399 wells = moderate-drilling counties  
 1-99 wells = low-drilling counties

## Employment

- Jobs related to gas drilling make up only **0.4%** of all PA jobs
- Employment gains concentrated in the six high drilling counties
- No real shale-related job gains elsewhere

## Crime

- Violent crime increased by **17.7%**, 130 more incidents of violent crime in high-drilling counties
- Violent crime was down in non-drilling counties
- Property crime increased by **10.8%** in high-drilling counties
- Drug abuse increased by **48%**, all other counties saw increases by only half that amount
- DUI offenses were up by **65%** in high-drilling counties; up by **42%** in rural non-drilling counties

## Sexually Transmitted Diseases

- All counties with drilling reported increases of **24% to 27%** in the rate of chlamydia infection

## Truck Accident Fatalities

- Fatal truck accidents spiked by **499%** in Bradford County and **99%** in Susquehanna County

## Housing

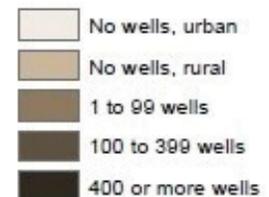
- Rents increased between **7.6%** and **12.3%** in high-drilling counties
- Tioga County rents doubled or tripled
- Homelessness increased in Tioga and Greene counties
- Fourfold increase in homeless Head Start families in Tioga County
- Threefold increase in kids in foster care due to inadequate housing in Greene County

## Bust in Tioga County

- Number of new wells drilled fell by **55%** from 2011 to 2012
- Below state unemployment rate 2010-11
- Since 2012, unemployment rate has been above state average

PA's six high-drilling counties are:

- Bradford
- Tioga
- Washington
- Lycoming
- Susquehanna
- Greene



Source: Shale Boomtowns: The Economic and Social Impacts of Gas Drilling Research by the Multi-State Shale Research Collaborative; Keystone Research Center & PA Budget and Policy Center, Fiscal Policy Institute – New York, Policy Matters Ohio, The Commonwealth Institute for Fiscal Analysis – Virginia, West Virginia Center on Budget and Policy. <http://www.multistateshale.org/forum-shale-boomtowns>

# Resources

## Understanding Shale Gas Activity

**Southwest Pa Environmental Health Project** - [www.environmentalhealthproject.org](http://www.environmentalhealthproject.org) Their mission is to respond to individuals' and communities' need for access to accurate, timely and trusted public health information and health services associated with natural gas extraction. 724.260.5504

**FracTracker** - [www.fractracker.org](http://www.fractracker.org) Mapping of permits, wells, gas infrastructure and violations, relevant research. 412.802.0273

**Mountain Watershed Association**- [www.mtwatershed.com](http://www.mtwatershed.com) 724.455.4200

**Center for Coalfield Justice**- [www.coalfieldjustice.org](http://www.coalfieldjustice.org) - <http://coalfieldjustice.org/issues/coalbed-methane-natural-gas-drilling/>

**Clean Air Council**- [www.cleanaircouncil.org](http://www.cleanaircouncil.org) (Gas development and infrastructure data and research; support and tool kits for public hearings and legal matters.)

**Protect our Children**- [www.protectourchildrencoalition.org](http://www.protectourchildrencoalition.org)

**Marcellus Protest**- [www.marcellusprotest.org](http://www.marcellusprotest.org)

**Pennsylvanians Against Fracking**- [www.paagainstfracking.org](http://www.paagainstfracking.org)

**Americans Against Fracking**- [www.americansagainstfracking.org](http://www.americansagainstfracking.org)

**Food and Water Watch**- [www.foodandwaterwatch.org](http://www.foodandwaterwatch.org)

**Marcellus Shale US** - [www.marcellus-shale.us](http://www.marcellus-shale.us)

**Delaware Riverkeepers**- <http://delawariverkeeper.org>

**Concerned Health Professionals of New York**- [www.concernedhealthny.org](http://www.concernedhealthny.org) (Compendium of scientific, medical, and media findings demonstrating risks and harms of fracking.)

**PSE Healthy Energy** (Physicians, Scientists and Engineers for Healthy Energy) - [psehealthenergy.org](http://psehealthenergy.org) (Research and Policy Institute that supports the adoption of evidence based energy policy. Publications, science summaries, and presentations.)

**Multi-state Shale Research Collaborative** (MSSRC) (socio-economic research) - <http://www.multistateshale.org> <http://www.multistateshale.org/case-studies>

**Landman Report Card** - [www.landmanreportcard.com](http://www.landmanreportcard.com)

## Health Concerns, Complaints & Violations

**PA DEP**: Odor, Visible Emissions, Air Pollution, Noise Complaint Line: 1-866-255-5158

**PA Dept. of Health**: 877-724-3258 - [www.health.pa.gov/Your-Department-of-Health](http://www.health.pa.gov/Your-Department-of-Health)

**EPA "Eyes on Drilling" Tip Hotline** for any complaints about air, water, or spills : 1-877-919-4372

**National Response Center** (NRC)- <http://www.nrc.uscg.mil> - Anyone witnessing an oil spill, chemical release or maritime security incident should call the NRC hotline at 1-800-424-8802.

**Center for Disease Control** (CDC/ATSDR) - call with drilling related health complaints, water and air impacts: 215-814-3139

## Data, Testing & Monitoring

**Harry Enstrom Chapter**- Izaak Walton League of America (stream and water monitoring)-[www.iwlharryenstrom.org](http://www.iwlharryenstrom.org)

**Alliance for Aquatic Resource Monitoring** (stream and water monitoring) - [www.dickinson.edu/allarm/](http://www.dickinson.edu/allarm/) 717.245.1565

**SWPA Environmental Health Project** (air monitoring) - [www.environmentalhealthproject.org](http://www.environmentalhealthproject.org)

**Shale Test** - [www.shaletest.org](http://www.shaletest.org) 530.237.4558

## Films & Video

**Unearthed**- [www.un-earthed.com](http://www.un-earthed.com)

**Groundswell Rising**- [www.groundswellrising.com/the-film/](http://www.groundswellrising.com/the-film/)

**Gas Rush Stories** - [www.gasrushstories.com](http://www.gasrushstories.com)

**Triple Divide** - [www.tripledividefilm.org](http://www.tripledividefilm.org)

**Split Estate** - [www.splitstate.com](http://www.splitstate.com)

**Gasland 1 & 2**- [www.gaslandthemovie.com](http://www.gaslandthemovie.com)

## Other Regional & National Organizations

**Halt the Harm Network**- [www.halttheharm.net](http://www.halttheharm.net) Advocacy network to support those working to halt the harms of fracking.

**Protecting Our Waters**- <https://protectingourwaters.wordpress.com>

**PennEnvironment**- [www.pennenvironment.org](http://www.pennenvironment.org)

**Earthworks**- [www.earthworksaction.org](http://www.earthworksaction.org)

**Save Our Streams PA** - [www.saveourstreams.org](http://www.saveourstreams.org)

**Pa Forest Coalition** - [www.paforestcoalition.org](http://www.paforestcoalition.org)

**Shale Justice**- <http://shalejustice.org>

**Un-Natural Gas** - [www.un-naturalgas.org](http://www.un-naturalgas.org)

**United for Action** - [unitedforaction.org](http://unitedforaction.org)

**Shalefield Organizing Committee** (pipelines) - [www.shalefieldorganizing.org](http://www.shalefieldorganizing.org)

**Catskill Citizens for Safe Energy** - [www.catskillcitizens.org](http://www.catskillcitizens.org)

**Marcellus at the Polls** - [www.facebook.com/groups/VoteProEarth](https://www.facebook.com/groups/VoteProEarth)

**Oil Change International** - [priceofoil.org](http://priceofoil.org)

## Legal Help and Services

**Community Environmental Legal Defense**- fund-[www.celdf.org/pennsylvania-community-rights-network-1](http://www.celdf.org/pennsylvania-community-rights-network-1)

**FairShake**- <http://www.fairshake-els.org> (412) 742-4615

## Media

**Public Herald** - [www.publicherald.org](http://www.publicherald.org) 724.388.0464

**ProPublica** - [propublica.org](http://propublica.org) 212.514.5250

**Pipeline - Pittsburgh Post Gazette** - [pipeline.postgazette.com](http://pipeline.postgazette.com) 412.263.1100

**Allegheny Front** - [www.alleghenyfront.org](http://www.alleghenyfront.org) 412.697.2933

**State Impact Pa** - [stateimpact.npr.org/Pennsylvania](http://stateimpact.npr.org/Pennsylvania)

## Community Outreach & Educational Resources, PA

### Allegheny

**Marcellus Protest** - [marcellusprotest.org](http://marcellusprotest.org) 724.485.9835

**Fawn Against Marcellus** - [www.facebook.com/groups/fawnagainstmcellus](https://www.facebook.com/groups/fawnagainstmcellus)

**Friends of South Fayette** - [www.friends-of-south-fayette.com](http://www.friends-of-south-fayette.com)

**South Hills Area Against Dangerous Drilling** - [www.shadd.org](http://www.shadd.org) [Contact@shadd.com](mailto:Contact@shadd.com)

### Beaver

**Beaver Co. Marcellus Shale Committee** - [www.marcellusawareness.com](http://www.marcellusawareness.com) 412.897.7996

### Berks

**Berks Gas Truth** - [www.gastruth.org](http://www.gastruth.org) - [berksgastruth@gmail.com](mailto:berksgastruth@gmail.com)

### Bradford

**Shalefield Justice**- [Shalejustice.org](http://Shalejustice.org)

### Bucks, Chester, Delaware, Montgomery & Philadelphia

**Protecting Our Waters** - [www.protectingourwaters.wordpress.com](http://www.protectingourwaters.wordpress.com) 215.690.1278

### Butler

**Marcellus Outreach Butler**- [www.marcellusoutreach.org](http://www.marcellusoutreach.org) 724.272.4539

### Centre

**Marcellus Center for Outreach and Research**- PSU - [www.marcelluspsu.edu](http://www.marcelluspsu.edu) 814.865.1587

### Clarion

**Clarion P.E.A.C.E.** - [www.facebook.com/clarionpeace](https://www.facebook.com/clarionpeace)

### Clearfield & Jefferson

**PA Alliance for Clean Air and Water**- [www.pacwa.org](http://www.pacwa.org) [pacwa@gmail.com](mailto:pacwa@gmail.com) 814.518.7507

### Dauphin, Central PA

**Gas Truth of Central Pa**- [www.facebook.com/GasTruthofCentralPa](https://www.facebook.com/GasTruthofCentralPa) 717.233.1801

### Delaware

**Delaware Riverkeeper Network**- [www.delawariverkeepernetwork.org](http://www.delawariverkeepernetwork.org) 215.369.1188

### Elk

**ELK County C.A.R.E.S.** - [www.facebook.com/ElkCountyCARES](https://www.facebook.com/ElkCountyCARES)

## **Fayette & Green**

*Fayette Marcellus Watch* - <http://faymarwatch.org>

## **Forest, Elk, McKean & Warren**

*Allegheny Defense Fund* - Project - [www.alleghenydefense.org](http://www.alleghenydefense.org) 814.778.5173

## **Indiana**

*Coalition for a Healthy County* - [coalitionforahealthycounty.wordpress.com](http://coalitionforahealthycounty.wordpress.com)

## **Lawrence & Mercer**

*Fracking Truth Alliance* - [frackingtruth.webs.com](http://frackingtruth.webs.com) 412.337.1671

## **Lycoming**

*Responsible Drilling Alliance* - [www.responsibledrillingalliance.org](http://www.responsibledrillingalliance.org) 570.494.7583

## **McKean & Potter**

*Save Our Streams PA* - [www.saveourstreams.org](http://www.saveourstreams.org)

## **Piladelphia**

*Philadelphia Physicians for Social Responsibility* - [www.psrphila.org](http://www.psrphila.org)  
267.519.5299

## **Tioga**

*Tioga County PA Gas Watch* - <http://tiogagaswatch.blogspot.com>

## **Union**

*Central Susquehanna Citizens Coalition* - <http://cscenow.blogspot.com> - info@cscenow.org

## **Wayne**

*Damascus Citizens for Sustainability* - [www.damascuscitizensforsustainability.org](http://www.damascuscitizensforsustainability.org)  
845.252.6677

## **Westmoreland**

*Westmoreland Marcellus Citizen's Group* - [www.westmorelandmarcellus.blogspot.com](http://www.westmorelandmarcellus.blogspot.com). 724.238.4968

*Citizens to Preserve Ligonier Valley* - <http://cplvweb.wix.com/preserveligoniertwp>  
724.238.4968

*Protect Penn Township Community Organization* - [www.protectpt.org/#joingive/clyzj](http://www.protectpt.org/#joingive/clyzj). Gillian Graber, president

## **York**

*Lower Susquehanna Riverkeeper Network* - [www.lowerSusquehannariverkeeper.org](http://www.lowerSusquehannariverkeeper.org)  
717-779-7915

## **Organizing Across the U.S.**

### **Alabama**

*Eco Alabama* - [www.facebook.com/ecoalabama](http://www.facebook.com/ecoalabama)

### **Alaska**

*Cook InletKeeper* <http://inletkeeper.org> 907.235.4068 ext. 27

### **Arizona**

*Arizonans Against Fracking* - <https://www.facebook.com/pages/Arizonans-Against-Fracking/1421941578073437>

### **Arkansas**

*Arkansas Fracking.org* - [www.facebook.com/arkansasFracking.org](http://www.facebook.com/arkansasFracking.org)  
*Mayflower Arkansas Oil Spill* - <https://www.facebook.com/MayflowerArkansasOilSpill>

### **California**

*Ca Against Fracking* - <http://californiansagainstfracking.org/30+> organizations  
*Alameda County Against Fracking* - [www.frackfreeculvercity.com](http://www.frackfreeculvercity.com)  
*Frackfree Culver City* - [www.frackfreeculvercity.com](http://www.frackfreeculvercity.com)  
*Monterey County Against Fracking* - [www.facebook.com/montereyCountyAgainstFracking](http://www.facebook.com/montereyCountyAgainstFracking)  
*Stop Fracking Brea* - [www.stopfrackingbrea.com](http://www.stopfrackingbrea.com)

### **Colorado**

*Boulder County Citizens for Community Rights* - <http://bococcr.org>  
*Renewable Community Alliance* - <http://www.renewablecommunities.org>  
*Frack Free Boulder* - [www.facebook.com/FrackfreeBoulder](http://www.facebook.com/FrackfreeBoulder)

### **Florida**

*Save Blackwater River State Forest* - <https://www.facebook.com/SaveBlackwaterRiverStateForest>

### **Idaho**

*Idaho Residents Against Gas Extraction* - <https://www.facebook.com/groups/264716450257682/>

### **Illinois**

*Frack Free Illinois* - [www.facebook.com/frackfreeillinois](http://www.facebook.com/frackfreeillinois)  
*Southern Illinoisans Against Fracking Our Environment* - <http://www.dontfractureillinois.net>

## **Indiana**

*Frack Free Michiana* - [www.facebook.com/frackfreemichiana](http://www.facebook.com/frackfreemichiana)

*Michiana Peace and Justice Coalition* <http://www.michianapeacejustice.net>

## **Iowa**

*Allamakee County Protectors* - <http://www.allamakeecountyprotectors.com>

## **Maryland**

*Chesapeake Climate Action Network* - <http://chesapeakeclimate.org/maryland/covepoint/>

*Waterkeepers Chesapeake* - <http://www.waterkeeperschesapeake.org>

## **Massachusetts**

*Frack Hack* - [www.frackhack.com](http://www.frackhack.com)

*No Fracking Gas in Mass* - [www.nofrackedgasinmass.org](http://www.nofrackedgasinmass.org)

## **Michigan**

*Don't Frack Michigan* - [www.dontfrackmichigan.org](http://www.dontfrackmichigan.org)

*Michigan Citizens for Water Conservation* - <http://www.savemewater.org>

## **Minnesota**

*Land Stewardship Project* - [landstewardshipproject.org](http://landstewardshipproject.org)

## **Montana**

*Big Blackfoot Riverkeeper, Inc.* - [www.bigblackfootriverkeeper.org](http://www.bigblackfootriverkeeper.org)

## **Nevada**

*Frack Free Nevada* - <https://sites.google.com/site/frackfreenevada/home>

*Save Nevada Water: Ban Fracking in Nevada* - [www.facebook.com/whatthefracknv](http://www.facebook.com/whatthefracknv)

## **New Jersey**

*The Franciscan Response to Fracking* - [www.stmarys-pompton.org](http://www.stmarys-pompton.org)

*New Jersey Highlands Coalition* - <http://www.njhighlandscoalition.org>

## **New Mexico**

*The Earth First Initiative* - [www.facebook.com/earthfirstinitiative](http://www.facebook.com/earthfirstinitiative)

*Mora County Legal Defense Fund* - <http://www.moracountylegaldefensefund.org>

*Wild Earth Guardians* - [www.wildearthguardians.org](http://www.wildearthguardians.org) 505.988.9126

## **New York**

*New Yorkers Against Fracking* - <http://nyagainstfracking.org>

*Catskills Mountain Keeper* - [www.catskillmountainkeeper.org](http://www.catskillmountainkeeper.org)

*Frack action* - [www.frackaction.com](http://www.frackaction.com)

*Gas Free Seneca* - [www.gasfreeseneca.com](http://www.gasfreeseneca.com)

## **North Carolina**

*Find Your Fracker* - [www.findyourfracker.org](http://www.findyourfracker.org)

*No Fracking in Stokes* - [www.nofrackinginstokes.org](http://www.nofrackinginstokes.org)

## **Ohio**

*Athens County Fracking Action Network* - [www.acfan.org](http://www.acfan.org)

*Frackfree Mahoning Valley* - <http://www.frackfreemahoning.blogspot.com>

*Protect Youngstown* - <http://www.protectyoungstown.org>

*Concerned Barnesville Area Residents* - <http://www.concernedbarnesvillearearesidents.org>

*North West Ohio Alliance to Stop Fracking* - [www.facebook.com/nwohioalliancetostopfracking](http://www.facebook.com/nwohioalliancetostopfracking)

## **Oregon**

*Citizens Against LNG* - [citizensagainstlng.org](http://citizensagainstlng.org)

## **Tennessee**

*Coalition For a Frack Free Tennessee* - [frackfreetennessee.wordpress.com](http://frackfreetennessee.wordpress.com)

*Stop Fracking Around Chattanooga* - [www.facebook.com/stopfrackingaroundchattanooga](http://www.facebook.com/stopfrackingaroundchattanooga)

## **Texas**

*Frackfree Denton* - <http://frackfreedenton.com>

*Frac Dallas* - [fracdallas.org](http://fracdallas.org)

*North Central Texas Community Alliance* - [www.nctca.net](http://www.nctca.net)

## **Vermont**

*Vermont Natural Resources Council* - [www.vnrc.org](http://www.vnrc.org)

## **Virginia**

*Friends of the GW Forest Against Fracking* - [www.facebook.com/friendsofthegwforestagainstfracking](http://www.facebook.com/friendsofthegwforestagainstfracking)

## **West Virginia**

*Wheeling Water Warriors* - [www.facebook.com/wheelingwaterwarriors](http://www.facebook.com/wheelingwaterwarriors)

## **Wisconsin**

*Frac sand Sentinel - Concerned Chippewa Citizen* - <https://wisair.wordpress.com>

## **Wyoming**

*Powder River Resource Council* - [www.powderriverbasin.org](http://www.powderriverbasin.org)



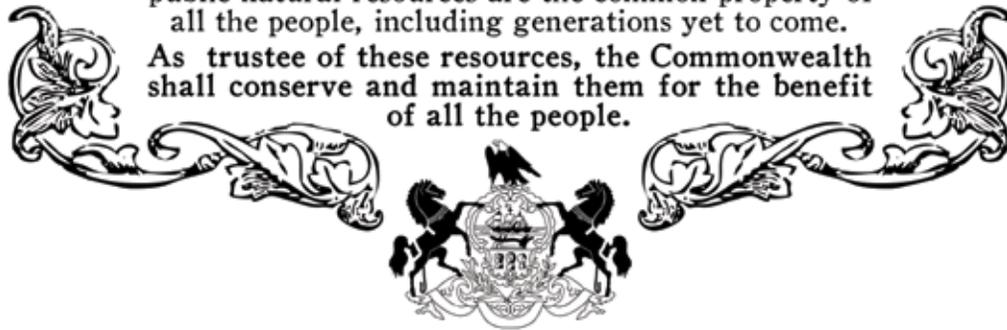
# CONSTITUTION OF THE COMMONWEALTH OF PENNSYLVANIA

## Article I DECLARATION OF RIGHTS

### Natural Resources and Public Estate Section 27

The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and aesthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people, including generations yet to come.

As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people.



### *Shalefield Stories*

Published by Friends of the Harmed ©2015

P.O. Box 90190  
Pittsburgh, PA 15224  
412.346.8098

[ShalefieldStories.org](http://ShalefieldStories.org)

[Facebook.com/ShalefieldStories.Friends](https://www.facebook.com/ShalefieldStories.Friends)

Twitter @FriendsofHarmed

Instagram - ShalefieldStories

Friends of the Harmed would like to thank the  
*Mountain Watershed Association*,  
whose Direct Support Fund made this publication possible.

[MTWatershed.com](http://MTWatershed.com)

suggested donation: \$7.00

ISBN 978-0-9905079-1-8

50700 >



9 780990 507918