




Big Oil, Bad Air

Fracking the Eagle Ford
Shale of South Texas

The Eagle Ford Shale region of South Texas is in the midst of a massive drilling boom that's generating billions of dollars for oil companies. But a months-long investigation in partnership with InsideClimate News and The Weather Channel finds some residents saying emissions of dangerous chemicals are making them sick, and state regulators have offered little help.



Big Oil, Bad Air

- 
- 4 Introduction:** The story behind 'Big Oil, Bad Air'
- 6** Project Credits
- 8** Reader Reactions
- 10** As drilling ravages Texas' Eagle Ford Shale, residents 'living in a Petri dish'
- 36** Saturated with oil money, Texas legislature saved industry from pollution rule
- 49 Follow-Up:** Tough new fracking rules in Colorado drawing keen attention in Texas, where boom rages on
- 54 Follow-Up:** Natural gas boom advances with little study of public health effects, report finds
- 57 Follow-Up:** Air monitoring in fracking areas fails to detect spikes in toxic emissions, new study says

GO ONLINE FOR MORE ON THIS TOPIC

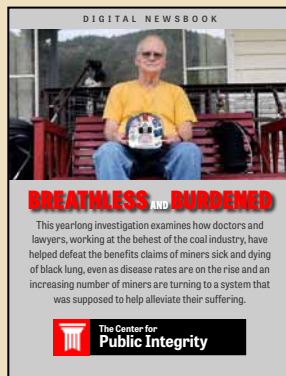
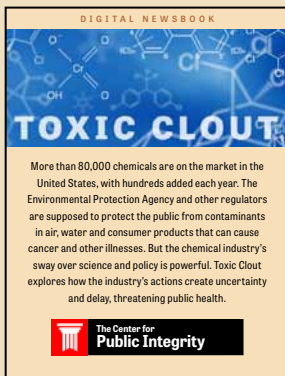
Related stories, interactive graphics and supporting documents can be found at: www.publicintegrity.org/environment/big-oil-bad-air

STAY CONNECTED

Subscribe to our e-mail newsletter and get the latest from our in-depth investigations, articles, interviews, blogs, videos, and more.



The Center for Public Integrity was founded in 1989 by Charles Lewis. We are one of the country's oldest and largest nonpartisan, nonprofit investigative news organizations. Our mission: To enhance democracy by revealing abuses of power, corruption and betrayal of trust by powerful public and private institutions, using the tools of investigative journalism.



Other free digital newsbooks produced for the Center in collaboration with the [Donald W. Reynolds Journalism Institute](#) at the Missouri School of Journalism.

Support the Center: Donate Today

The Center for Public Integrity would cease to exist if not for the generous support of individuals like you. Help keep transparency and accountability alive and thriving by becoming a new or recurring member to support investigations like *Big Oil, Bad Air*. To make a recurring gift, click here when you are online or visit www.publicintegrity.org.

INTRODUCTION

The story behind 'Big Oil, Bad Air'

By Jim Morris, David Hasemyer and Lisa Song

Published Online: February 18, 2014

HOW DOES one of America's biggest oil and gas booms go mostly unrecognized in the national media? Hard to say, but it has. A subject of solid local coverage, the Eagle Ford Shale play in South Texas has yet to become part of the national conversation on hydraulic fracturing — fracking — in contrast to, say, Pennsylvania's Marcellus Shale or North Dakota's Bakken.

This oddity, along with the sheer size of the play — 26 counties, 20,000 square miles — attracted us to the story. We focused on the air-quality impacts of drilling and related activities because chemical-laden air may prove to be an even bigger public health consequence than tainted water, which has been widely reported.

The partnership that produced "Big Oil, Bad Air: Fracking the Eagle Ford Shale of South Texas" was formed in the spring of 2013. Two



nonprofit news organizations, the Center for Public Integrity and InsideClimate News, teamed up with The Weather Channel to explore the issue of air emissions and the consequences for the people of the Eagle Ford.

What we did to get the story

- Took eight trips to the Eagle Ford to interview sources, talk with people in their homes and take videos and photos.
- Filed 24 Texas Public Information Act requests with the Texas

Commission on Environmental Quality (TCEQ). Using the state disclosure law, we sought records that would help us understand how the agency regulates the oil and gas industry's emissions and how it does or doesn't respond to residents' complaints.

- Interviewed more than a dozen engineers and industry experts and studied government and industry publications so we could create an infographic, glossary and primer to explain how pollutants are released during oil and gas extraction. A few asked not to be identified because they didn't want to be part of what they considered a controversial project.
- Interviewed more than 20 scientists about the health impacts of chemicals emitted during gas and oil development. Few have studied the health effects in the Eagle Ford, so we reached out to scientists knowledgeable about shale plays in other regions, as well as general experts in air monitoring, petroleum engineering, public health and toxicology. Due to the controversial nature of the topic, some scientists — including tenured professors — declined to be interviewed.

- Read 284 complaints filed with the TCEQ by Eagle Ford residents who said they had been affected by oil and gas drilling. We then tracked the agency's follow-up to these complaints.
- Reviewed hundreds of financial and campaign contribution disclosure documents on file with the Texas Ethics Commission to determine whether legislators' personal finances were linked to the industry.

How people tried to thwart us

- The agency responsible for regulating air emissions — the TCEQ — refused to make any of its commissioners, officials or investigators available for interviews. Instead, we had to submit questions via emails that were routed through agency spokespeople. It's unclear if the spokespeople passed our questions along to the agency's experts. We received answers to most of our emails, often in some detail. But some of our questions were ignored or answered with talking points on general topics. The TCEQ employees who dealt with our public records requests were helpful and responsive, however. They discussed the filing pro-

cess over the phone and answered questions about our requests.

- When a reporter called TCEQ field inspectors at their homes — a commonly used reporting technique — TCEQ spokeswoman Andrea Morrow left the reporter a message saying, “Under no circumstances are you to call our people and harass them at

home.” Morrow also blocked the reporter from approaching the agency’s chairman, Bryan Shaw, at a public meeting in Austin.

- The agency’s public records pricing system was puzzling. We were charged as little as 20 cents for one document but were asked for more than \$10,000 to provide a batch of documents that had been given to

PROJECT CREDITS

Reporters: Jim Morris, Center for Public Integrity; Lisa Song and David Hasemyer, Inside Climate News

Editor: Susan White, InsideClimate News

Photos: Lance Rosenfield

Center for Public Integrity

Editors: Jim Morris and Ronnie Greene

Reporters: Ben Wieder and Alan Suderman

Web layout: Sarah Whitmire

Web development: Chris Zubak-Skees, Erik Lincoln and Kimberley Porteous

Fact-checking: Peter Smith

CPI would like to extend special thanks to the entire team at Shorthand.

InsideClimate News

Graphics: Paul Horn

Data: John Bolger

Coordinating Producer: Sabrina Shankman

Research: Zahra Hirji and Marcus Stern

Weather Channel

Video Editor: Faisal Azam

Senior Story Editor/weather.com: Kevin Hayes

Executive Producers: Greg Gilderman and Neil Katz

another news agency years ago. We withdrew our request.

- The Texas Railroad Commission, which regulates drilling and all other aspects of the industry, made Commissioner David Porter available for a 10-minute phone interview. The Weather Channel later scheduled an on-camera interview with Porter, but when the producers arrived at the appointed time, they were told Porter was sick and would not be available for the next month. Like the TCEQ, the Railroad Commission spokespeople refused to discuss anything on the phone, including even technical questions about the mapping data we purchased from the agency. Nor would they make Porter or other top officials available for final, pre-publication phone interviews.
- Industry officials in Texas were as reluctant as regulators to meet face-to-face or go on camera. Most insisted that all queries be submitted in writing. No tours of Eagle Ford operations were allowed, despite several requests. No on-the-ground discussions of air pollution were facilitated. Hunt Oil was the exception. When we asked about a problem

at one of its processing plants, the company set up a phone interview with an executive who answered our questions.

- Steve Everley, a spokesman for Washington D.C.-based Energy in Depth, which is affiliated with the Independent Petroleum Association of America, was the only industry representative who agreed to appear on camera. Omar Garcia, who heads the San Antonio-based communications arm of the 11 biggest Eagle Ford operators, answered questions over the phone and by email.

As our reporting deepened, even some Eagle Ford residents grew skittish. Mike and Myra Cerny, who live near Karnes City and are surrounded by oil and gas facilities, spoke at length with a reporter in June. But several months later they retired from public view and declined requests for photographs or an on-camera interview. ■

'Close your doors and go away:' readers react to fracking investigation ▶▶

READER REACTIONS

Reader reaction to “Big Oil, Bad Air” continues to pour in. Most of it has been positive:

From a man who recently drove through Texas' Eagle Ford Shale region on his way to Arizona:

“I have never seen the scope or intensity of the destruction as I witnessed in that trip. ‘It’s big,’ I said to myself. ‘Why is there no opposition and national attention to this?’ You have answered my question...”

From a woman from upstate New York:

“It’s not that I am or ever was against natural gas...I am against people not being informed or empowered to soberly look at our dependence on fossil fuels and what seems to be a strong effort on the part of very powerful players to limit the public’s options to either decrease dependency or move more quickly toward renewables... Thanks for your work, which may very well help a few folks in Texas.”

From a man in one of the South Texas drilling areas:

“Thank God for Jim Morris and the Center for Public Integrity. Mr. Morris told our story with honesty and dignity.”

Not everyone has been complimentary. One man wrote:

“Frankly, I wish you people would close your doors and go away. The damage you do to the economy under the name of environmental concerns is unacceptable and a problem for our country, not a solution. You are the problem.”

Wrote another:

“Hysteria mongers like Ceres, like Bill McKibben, like the Center for Public Integrity...would have our policymakers toss away all of these jobs, reject all of this massive economic impact, and toss aside all the strategic advantages the oil and natural gas boom has brought to this country and its people over the last six years.”

On Facebook, one man wrote:

“Keep up the good work... it is very disturbing to read more news about public officials profiting from Big Oil, seemingly to turn a blind eye to dirty pollution and public health hazards. Shame on those complacent public employees... their inaction is harming our health.”

Another woman had this to say:

“Central Texas as experienced recently along the Interstate is certainly a stinky, torn-up, run-down, price-inflated depressing mess, for sure. I did think that in addition to the stink, the air felt bad to breathe. I was stunned to experience what we'll allow ourselves to go through for a few more gallons of an obsolete fuel source, when I could plainly see the abundant sun and wind all around. Money and short-term thinking sure have hypnotized a lot of people.”

A man wrote:

“Let's just [stick] our heads in the tar sands and pretend that the oil and gas needs of the world are paramount to our health. This is just crazy.”

And in reference to an investigation of Texas lawmakers' financial investment in oil companies, a man wrote:

“This should be illegal and all of them should be in jail.”

As drilling ravages Texas' Eagle Ford Shale, residents 'living in a Petri dish'

Health worries take a back seat in South Texas oil boom

By Jim Morris, Lisa Song and David Hasemyer

Published Online: February 18, 2014

KARNES CITY, Texas — When Lynn Buehring leaves her doctor's office in San Antonio she makes sure her inhaler is on the seat beside her, then steers her red GMC pickup truck southeast on U.S. 181, toward her home on the South Texas prairie.

About 40 miles down the road, between Poth and Falls City, drilling rigs, crude oil storage tanks and flares trailing black smoke appear amid the mesquite, live oak and pecan trees. Depending on the speed and direction of the wind, a yellow-brown haze might stretch across the horizon, filling the car with pungent odors. Sometimes Buehring's eyes burn, her chest tightens and pain stabs at her temples. On those days, she touches her inhaler for reassurance.

In another five miles Buehring,



Lynn Buehring

58, passes into Karnes County, where she was born and once figured on living out her retirement, surrounded by a calm broken only by an occasional thunderstorm.

Today, however, the ranch-style house she shares with her 66-year-old husband, Shelby, is at the epicenter of one of the nation's biggest and least-publicized oil and gas booms. With more than 50 wells drilled within 2½ miles of their home, the days when the Buehrings could sit on the deck that Shelby built and lull away an afternoon are long gone. The fumes won't let them.

Known as the Eagle Ford Shale play, this 400-mile-long, 50-mile-wide bacchanal of oil and gas extraction stretches from Leon County, Texas, in the northeast to the Mexican border in the southwest.

Since 2008, more than 7,000 oil and gas wells have been sunk into the brittle, sedimentary rock. Another 5,500 have been approved by state regulators, making the Eagle Ford one of the most active drilling sites in America. Energy companies, cheered on by state officials, envision thousands more wells scattered across the plains. It is, an industry spokesman says, an “absolute game-



Lynn Buehring and her husband Shelby, in Shelby's "man cave" at their home near Karnes City, Texas.

Lance Rosenfield/Prime

changer” for a long-depressed region of about 1.1 million people, some of whom suddenly find themselves with enough money to ensure their grandchildren's future.

From the porch of their little white house, the Buehrings can see, and often smell, evidence of the hell-bent rush to tap Texas oil.

In addition to the wells near their home, there are at least nine oil and gas production facilities. Little is known about six of the facilities, because they don't have to file their

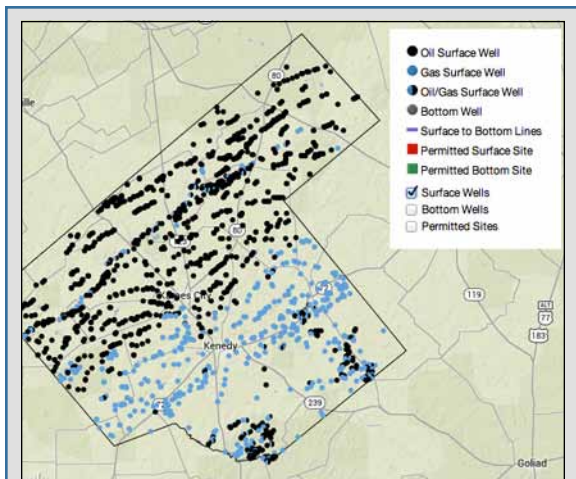
emissions data with the state. Air permits for the remaining three sites show they house 25 compressor engines, 10 heater treaters, 6 flares, 4 glycol dehydrators and 65 storage tanks for oil, wastewater and condensate. Combined, those sites have the state's permission to release 189 tons of volatile organic compounds, a class of toxic chemicals that includes benzene and formaldehyde, into the air each year. That's about 12 percent more than Valero's Hous-

ton Oil Refinery disgorged in 2012.

Those three facilities also are allowed to release 142 tons of nitrogen oxides, 95 tons of carbon monoxide, 19 tons of sulfur dioxide, 8 tons of particulate matter and 0.31 tons of hydrogen sulfide per year. Sometimes the emissions soar high into the sky and are carried by the wind until they drop to the ground miles away. Sometimes they blow straight toward the Buehrings' or their neighbors' homes.

The regulation of oil and gas extraction falls primarily to the states, whose rules vary dramatically. States are also responsible for enforcing the federal Clean Air Act, an arrangement that is problematic in Texas, which has sued the U.S. Environmental Protection Agency 18 times in the last decade.

For the past eight months, the Center for Public Integrity, InsideClimate News and The Weather Channel have examined what Texas, the nation's biggest oil producer, has done to protect people in the



Online Interactive Graphic

Map shows location of oil and gas wells and permitted sites but not yet drilled in Karnes County as of fall 2013. ▶

Eagle Ford from the industry's pollutants. What's happening in the Eagle Ford is important not only for Texas, but also for Pennsylvania, Colorado, North Dakota and other states where horizontal drilling and high-volume hydraulic fracturing, or fracking, have made it profitable to extract oil and gas from deeply buried shale.

Our investigation and records obtained from Texas regulatory agencies reveal a system that does more to protect the industry than the public. Among the findings:

- Texas' air monitoring system is so flawed that the state knows almost nothing about the extent of the pollution in the Eagle Ford. Only five permanent air monitors are installed in the 20,000-square-mile region, and all are at the fringes of the shale play, far from the heavy drilling areas where emissions are highest.
- Thousands of oil and gas facilities, including six of the nine production sites near the Buehrings' house, are allowed to self-audit their emissions without reporting them to the state. The Texas Commission on Environmental Quality (TCEQ), which regulates most air emissions, doesn't even

know some of these facilities exist. An internal agency document acknowledges that the rule allowing this practice "[c]annot be proven to be protective."

- Companies that break the law are rarely fined. Of the 284 oil and gas industry-related complaints filed with the TCEQ by Eagle Ford residents between Jan. 1, 2010, and Nov. 19, 2013, only two resulted in fines despite 164 documented violations. The largest was just \$14,250. (Pending enforcement actions could lead to six more fines.)
- The Texas legislature has cut the TCEQ's budget by a third since the Eagle Ford boom began, from \$555 million in 2008 to \$372 million in 2014. At the same time, the amount allocated for air monitoring equipment dropped from \$1.2 million to \$579,000.
- The Eagle Ford boom is feeding an ominous trend: A 100-percent statewide increase in unplanned toxic air releases associated with oil and gas production since 2009. Known as emission events, these releases are usually caused by human error or faulty equipment.
- Residents of the mostly rural Eagle Ford counties are at a disadvantage

even in Texas because they haven't been given air quality protections, such as more permanent monitors, provided to the wealthier, more suburban Barnett Shale region near Dallas-Fort Worth.

Texas officials tasked with overseeing the industry are often its strongest defenders, leaving the Buehrings and other families interviewed for this story to mostly fend for themselves. Oil money is so thoroughly ingrained in the Texas culture and economy that there is little interest in or sympathy for those who have become collateral damage in the drive for riches.

The TCEQ is led by three commissioners appointed by Gov. Rick Perry, a Republican who favors dismantling the EPA and voices doubt about climate change. TCEQ officials often go on to jobs as lobbyists for the energy industry they once regulated.

The Texas Railroad Commission, which issues drilling permits and regulates all other aspects of oil and gas production, is controlled by three elected commissioners who accepted more than \$2 million in campaign contributions from the industry during the 2012 election cycle, according to data from the National Institute on Money in State Politics.

State legislators who enact the laws that regulate the industry are often tied to it. Nearly one in four state legislators, or his or her spouse, has a financial interest in at least one energy company active in the Eagle Ford, a Center for Public Integrity analysis of personal financial disclosure forms shows.

"I believe if you're anti-oil and gas, you're anti-Texas," state Rep. Harvey Hilderbran, a Republican from Central Texas, said during a media panel discussion in September.

The TCEQ declined to make any of its commissioners, officials or investigators available for interviews. In a prepared statement, it said air pollution isn't a problem in the Eagle Ford.

"The air monitoring data evaluated to date indicate that air pollutants in the Eagle Ford Shale area have not been a concern either from a long-term or short-term perspective," the statement said. "Therefore, we would not expect adverse health effects, adverse vegetative effects, or nuisance odors in this area."

But an interoffice memorandum obtained through the Texas Public Information Act indicates the TCEQ knows its statewide air monitoring system is flawed.

"The executive director has ex-

tensive records of underestimated or previously undetected emissions from oil and gas sites. These are not isolated instances but have occurred statewide and indicate a pattern,” Richard A. Hyde, then deputy director of the TCEQ’s Office of Permitting and Registration, wrote in the Jan. 7, 2011, memo. Hyde, now the TCEQ’s executive director, through an agency spokeswoman declined to comment.

Since drilling came to Karnes County, Lynn Buehring’s asthma has worsened. Instead of using a breathing machine once or twice a month, she now needs it several times a week, and sometimes twice a day. She has also developed migraine headaches so intense that they’ve induced temporary blindness and brought her to the brink of unconsciousness.

The Buehrings complained to the TCEQ in 2012, prompting investigators to check out several Marathon Oil facilities near their home. At one point the emissions were so high, the investigators wrote in their report, that they “evacuated the area quickly to prevent exposure.” Marathon, a Houston-based company worth nearly \$25 billion at the end of 2013, reported that it fixed the problem and was not fined.

Last summer, the air around the Buehrings’ house was so bad — Lynn described a rancid chicken stench — that she couldn’t sit outside with Shelby and watch the sunset, a nighttime ritual since they bought their house in 1995.

“There’s nothing we can do,” Shelby said. “Nobody is listening to us. They’re not going to stop, so we have to live with it or leave ... This is my home, and I hate it here.”

The health issues faced by people who live in drilling areas — not just in Texas but throughout the United States — simply don’t carry enough weight to counterbalance the financial benefits derived from oil and gas development, said Robert Forbis Jr., an assistant professor of political science at Texas Tech University.

“Energy wins practically every time,” Forbis said. “It seems cynical to say that, but that’s how states see it — promote economic development and minimize risk factors.”

‘Help us ... before we all die’

The energy industry’s impact on Americans living near drilling areas has been fiercely debated in the last decade, as the shale boom brought drilling to vast stretches of the United States. Much of the concern



Fracking activity in the Eagle Ford Shale of Texas. Lance Rosenfield/Prime

has centered on how methane and fracking chemicals can contaminate drinking water. But scientists say air pollution is an equally serious problem that receives less attention, in part because it's so difficult to track.

Plumes of contaminated air move with the wind. Some of the chemicals break down in sunlight or react with other pollutants to form new compounds. The evidence disappears quickly, while health effects may linger.

People who live close to oil and gas development — whether in

Texas' Eagle Ford, Pennsylvania's Marcellus Shale or Wyoming's Green River Basin — tend to report the same symptoms: nausea, nosebleeds, headaches, body rashes and respiratory problems. Public health experts say these shared experiences point to a pressing need for improved air monitoring.

"If you have pockets of communities with the same symptoms downwind of similar sources, then there is a body of evidence," said Isobel Simpson, an atmospheric scientist at the University of California, Irvine,

who studies air pollution around the world.

Chemicals released during oil and gas extraction include hydrogen sulfide, a deadly gas found in abundance in Eagle Ford wells; volatile organic compounds (VOCs) like benzene, a known carcinogen; sulfur dioxide and particulate matter, which irritate the lungs; and other harmful substances such as carbon monoxide and carbon disulfide. VOCs also mix with nitrogen oxides emitted from field equipment to create ozone, a major respiratory hazard.

Studies show that, depending on the concentration and length of exposure, these chemicals can cause a range of ailments, from minor headaches to neurological damage and cancer. People in the Eagle Ford face an added layer of risk: hydrogen sulfide, also known as H₂S or sour gas, a naturally occurring component of crude oil and natural gas that lurks underground.

Like asbestos entombed in a 50-year-old ceiling, H₂S usually isn't a problem if left undisturbed. Once liberated, however, it becomes a formidable threat, capable even in miniscule doses — a few parts per million or less — of aggravating asthma and causing nausea, headaches and eye irritation. It gives off a rotten-egg odor

in lower concentrations but at around 100 parts per million the chemical knocks out the sense of smell and begins to act as an asphyxiant. At 1,000 ppm it kills within minutes.

Karnes County, in particular, is rich with H₂S. According to data operators have submitted to the Railroad Commission, the county's Person field has an average concentration of 16,399 ppm — 16 times the lethal dose — with a maximum concentration of 71,550 ppm. The Panna Maria field has an average concentration of 24,408 ppm and a maximum of 39,000 ppm.

H₂S and some other chemicals emitted during oil and gas production are so dangerous that the federal government has developed safety standards for workers who encounter them on a regular basis.

But there are no clear federal standards to protect people living near drilling sites — including children, the sick and the elderly — who intermittently breathe varying amounts of toxic emissions for years on end.

Scientists “really haven't the foggiest idea” how oil and gas development affects public health, said Aaron Bernstein, associate director of the Center for Health and the Global Environment at Harvard University. Bernstein blames the

information gap on a lack of monitoring and research, particularly in the rural, less affluent communities where most of the drilling occurs.

“It’s not as though there isn’t reason to be concerned,” he said. “These are industrial activities with known emissions that are known to affect people’s health.”

Complaints lodged with the TCEQ hint at the scope of air problems in the Eagle Ford.

On Dec. 7, 2011, a woman in Frio County smelled “an oil and rotten egg odor” around 2 a.m. and woke up “with an upset stomach and horrible headaches.”

On April 10, 2012, a family in Atascosa County reported an odor “so bad that their lungs feel as if they will burst.”

“Help us residents of South Texas before we all die,” a Gonzales County resident pleaded the same day. The complaint alleged that an operator had dug a hole in the ground and buried “oily drilling waste... sometimes with diesel fuel, chemicals and oil floating on it.”

Nearly 300 complaints have been filed by Eagle Ford residents since 2010. But for every person who bothers to call the TCEQ, untold others suffer in silence. Among them: Mary Alice Longoria, an X-ray technician

at a state prison who lives with her husband in a mobile home near Kenedy, in Karnes County. The Longorias have owned their 2½-acre plot for more than three decades. Until a year ago, Mary Alice could sit on her deck and see only rolling pasture, occupied by horses, cows, deer and the occasional dove hunter.

Now, oil rigs and storage tanks mar her view and send foul odors, noise and blinding lights into her home. A flare ebbs and flows in the distance. She no longer allows her 2-year-old grandson, Gabriel, to play in the backyard because “I’m afraid for his health.” Family barbecues, a staple of South Texas life, have been discontinued.

If the flare burns through the night, Longoria said, she often finds a sticky deposit on the windshield of her pickup truck when she rises before dawn to go to work. Lynn Buehring, who lives about five miles away, described a “greasy, yellow substance” on her windshield.

Longoria hasn’t confronted the operator of the drilling site, having concluded it would do no good. Nor has she tried to contact the state. She wasn’t sure which agency would even field a complaint, she told a reporter; she’d never heard of the TCEQ.

The TCEQ maintains that people

like Longoria have nothing to fear.

“[M]onitoring data provides evidence that overall, shale-play activity does not significantly impact air quality or pose a threat to human health,” agency spokeswoman Andrea Morrow wrote in an email. “While improperly operated facilities can result in temporary, local, unauthorized emissions, there are no indications that these emissions are of sufficient concentration or duration to harm residents of the Eagle Ford or Barnett shales.”

Omar Garcia, president of the South Texas Energy & Economic Roundtable — STEER — the communications arm of the 11 biggest Eagle Ford operators, predicts a “huge reduction in flaring” as more pipelines are installed to capture pollutants.

“The oil and gas industry places a premium on safety and the environment,” Garcia said. “All the operators follow strict guidelines.”

Patchy monitoring

Experts interviewed for this story say Texas doesn’t have enough data to be able to claim, with any assurance, that the air is safe.

The TCEQ relies primarily on field canister samples, on-the-

ground investigations and aerial surveys with infrared cameras to detect emissions. Last summer, the agency used the cameras during two flyovers to capture hundreds of images of the Eagle Ford. A contractor then surveyed 16,015 oil and gas storage tanks and found 800 with leaks, TCEQ spokesman Terry Clawson said.

Asked how the agency dealt with the polluters, Clawson did not respond.

Scientists say that while these spot checks are important, they are no substitute for strategically placed, stationary monitors that continuously measure how air quality changes over time.

The TCEQ has only five permanent monitors in the Eagle Ford, all positioned far from the most heavily drilled areas. The Barnett Shale in North Texas, by contrast, has 35 permanent monitors, even though that field covers only about 5,000 square miles — a quarter of the area of the Eagle Ford.

“The biggest challenge with air monitoring is having the measurements in place so you can catch the times when concentrations are high,” said Rob Jackson, a Duke University scientist who studies pollution from shale extraction.



A large flare at a central collection facility emits a dark smoke-like by-product in Karnes County, Texas. Lance Rosenfield/Prime

The monitor closest to the Buehrings' house is in Floresville, 25 miles away, so it's hard to know how the couple might be affected by the plants and wells that surround them, Jackson said. Their daily exposures would vary dramatically based on wind direction, weather patterns and the rate of emissions from each well and plant.

The TCEQ has no plans to add air monitors in the Eagle Ford, but Clawson said it has contracted with the University of Texas "to conduct mo-

bile monitoring upwind and downwind of the Eagle Ford Shale area."

The goal of that study, however, isn't to measure air emissions in the Eagle Ford. Instead, it aims to figure out how Eagle Ford pollution may be affecting cities like San Antonio, just beyond the shale play.

The study's director said the data will be gathered from the monitor in Floresville. With no wells nearby, "our sampling wouldn't be overcome by immediate emissions," said David Sullivan, a research associate with the

University of Texas' Center for Energy and Environmental Resources.

San Antonio's ozone levels have violated federal standards dozens of times since the drilling began. Ozone is one of several greenhouse gases, including methane, released or created during drilling operations. Experts are particularly concerned about methane because it's a powerful greenhouse gas and large-scale leakage could undermine natural gas' reputation as a cleaner alternative to coal.

Even the EPA doesn't know much about methane emissions or the other pollutants from oil and gas production. An inspector general's report last year concluded that the agency's air emissions database is incomplete and "likely underestimates" those emissions. The lack of reliable data, the report said, "hampers EPA's ability to accurately assess risks and air quality impacts from oil and gas production activities."

Environmental groups have tried to collect their own air-quality data in the Eagle Ford, but the process is so expensive and time-consuming that they've had little success.

Last March, Wilma Subra, an environmental consultant from Louisiana, and Sharon Wilson of the advocacy group Earthworks,

accompanied Calvin Tillman, who runs a nonprofit called ShaleTest, as he took air samples near Mike and Myra Cerny's one-acre tract, about a half-mile from the Buehrings.

There are at least 17 oil wells within a mile of the Cernys' small house. Their teenage son, Cameron, gets frequent nosebleeds, and the fumes make his parents dizzy, irritable and nauseous. "This crap is killing me and my family," said Mike, a former oil company truck driver. "We went from nice, easy country living to living in a Petri dish."

Myra complained to the TCEQ in 2012, and the agency cited Marathon Oil for operating a broken flare and failing to report thousands of pounds of unauthorized emissions at its Sugarhorn Central gas processing plant. But Marathon paid no penalty. "I feel like we're expendable," Myra said.

The Cernys have sued Marathon, hoping to get enough money to move away from the drilling. Marathon spokeswoman Lee Warren said in an email that the company "took corrective actions" after receiving the state citation and engaged in "good faith discussions with [the Cernys] to listen to and address their concerns."

Marathon had monitoring done around the family's house in 2012,

prior to the filing of the lawsuit, and found “no levels of air contaminants in excess of regulatory limits,” Warren wrote. “The TCEQ conducted further visits to the Sugarhorn site in 2013 and has closed out that case.”

The air samples the environmental groups took near the Cerny home detected 14 VOCs, including benzene, toluene and xylene, but none in concentrations the TCEQ considers immediately dangerous. Subra said that doesn’t mean the air is safe, because the data came from a “grab sample” that represented only a snapshot in time.

She and other scientists say there’s another factor that state and federal health guidelines don’t consider: the added risks of breathing many chemicals at once.

Guidelines are set for one compound at a time without considering what happens when people are simultaneously exposed to multiple chemicals. To add to the confusion, scientists don’t know much about



Wilma Subra, left, an environmental scientist and president of Subra Company Inc., and Sharon Wilson, right, of the environmental group Earthworks, present a report on the Eagle Ford to residents of Karnes County and surrounding areas at a public meeting. Lance Rosenfield/Prime

some of the chemicals emitted, and certain proprietary compounds are hidden from public scrutiny.

Neil Carman, who spent 12 years as an investigator with a predecessor to the TCEQ and now works for the Sierra Club, said any of the chemicals could cause illness but become more pernicious when combined. “What you get is a toxic soup,” he said. “I would be very concerned

about people living there day after day and getting a semi-continuous toxic exposure.”

One way to reduce emissions is to identify and crack down on the worst offenders, said Jackson, the Duke scientist. His research in parts of Pennsylvania’s Marcellus Shale has shown that while most of the gas wells have relatively low emissions, a small group — 1 percent, 5 percent, or even a tenth of a percent — release an enormous amount of pollutants.

In Texas, however, the fast pace of drilling and the TCEQ’s shrinking budget make it difficult to find the culprits.

“If I have just a couple of wells to look at, it’s kind of easy to identify the good actors from the bad actors,” said David Sterling, chair of the University of North Texas Health Science Center. But that becomes much harder when thousands of wells are being drilled. “As much as I would like to believe that industry can police itself, history has shown that that has not worked without sufficient oversight.”

The number of employees in the TCEQ’s Office of Compliance and Enforcement, which conducts investigations and performs air monitoring and other health-related duties, has fallen 13 percent since 2010,

when drilling in the Eagle Ford began picking up. Over the same period, the agency’s overall budget dropped 34 percent.

“State agencies don’t have the resources — and in a lot of cases they don’t have the political will — to implement regulations, monitoring and enforcement to keep pace with what’s going on in the field,” Subra said. “Yet they continue to grant [drilling] permits.”

Indeed, the Texas Railroad Commission rarely denies a drilling permit. From January 2003 through September 2013, it issued nearly 200,000 statewide. Only 650 — or 0.3 percent — were rejected.

The Railroad Commission’s enforcement record, like the TCEQ’s, has come under criticism. In fiscal year 2012, it referred for enforcement action only 2 percent of the 55,000 violations its field staff found statewide, according to the state Sunset Advisory Commission, whose mission is to eliminate “waste, duplication, and inefficiency in government agencies.” Of the 217 fines levied, the average was less than \$9,000.

Railroad Commissioner David Porter said fines don’t tell the whole story. “We’re more concerned about bringing people into compliance than we are in punishment after the fact.”



The scene at a cattle ranch in Wilson County, Texas. Lance Rosenfield/Prime

he said in an interview. One way to do this, he said, is through a process called severance: The commission can order companies to halt production if they don't adhere to the rules; production can resume only after the problems have been fixed.

The commission has sent out about a quarter-million severance notices over the past 10 years. In 62 percent of the cases, the mere threat of a crippled well was enough to prod the operator into compliance, spokeswoman Ramona Nye wrote in an email. Another 32 percent were resolved after a severance order was issued. The rest required fines or closure.

Asked how many wells were closed by the commission last year, Nye wrote that such information was “not readily available.”

On their honor

Texas' regulatory efforts are also hamstrung by a law that allows thousands of oil and gas facilities — including wells, storage tanks and compressor stations — to operate on an honor system, without reporting their emissions to the state.

Operators can take advantage of this privilege — called a permit by rule, or PBR — if their facilities emit

no more than 25 tons of VOCs per year and handle natural gas that is low in hydrogen sulfide. Two employees in the TCEQ's air permits office — Anne Inman and John Gott — estimate these PBRs could account for at least half of the hundreds of thousands of air permits the agency has issued for new or modified oil and gas facilities since the 1970s.

“It's probably not even fair to call them permits,” said Ilan Levin, an Austin-based lawyer with the Environmental Integrity Project, a research and advocacy organization. “The regulators don't have a clue as to what's really coming out of some of these facilities. They're just ever-so-gently regulated; that's exactly what the state of Texas has intended.”

Operators with this type of permit aren't required to file paperwork backing up their self-determined status, so the TCEQ has no record of most of the facilities' locations or emissions. A chart generated in 2011 by the office of then-TCEQ deputy executive director Zak Covar says the permits “Cannot be proven to be protective. Unclear requirements for records to demonstrate compliance with rules.”

Levin said there's some justification for PBRs — “it would overwhelm the [TCEQ] if you had every mom-

and-pop oil and gas operator out there filling out applications that had to be reviewed by regulators.”

But Levin said the system is open to abuse.

Big operators sometimes get a PBR for each component of a facility. Each might be under the 25-ton-per-year threshold that would require a more rigorous permit, but the facility as a whole could emit more than that.

The TCEQ refers to the practice as the “stacking of multiple authorizations,” and the memo from Covar's office said its use “means that protectiveness and compliance with the rules cannot be demonstrated.”

The TCEQ also has trouble dealing with “emission events” — unplanned releases above and beyond what operators are allowed to discharge during standard maintenance, startup and shutdown activities. Emission events are usually caused by human error or faulty equipment.

The number of emission events associated with oil and gas development doubled between fiscal years 2009 and 2013, from 1,012 to 2,023. The amount of air pollutants released into the Texas air during these events increased 39 percent.

A gas processing plant in McMullen County, in the southwestern por-



A fracking operation ends and the production phase begins at a well site in Karnes County, Texas. Lance Rosenfield/Prime

tion of the Eagle Ford, reported 166 emission events last year, almost one every other day. From 2007 through 2011, the Tilden plant, owned by Regency Energy Partners of Dallas, discharged 1,348 tons of sulfur dioxide during such episodes. That's more than 30 times the amount it was legally allowed to release during "normal" operations.

Companies are required to report emission events within 24 hours. But they don't always comply.

Marathon waited three months to

report a 2012 incident at its Sugarhorn plant near the Cernys and Buehrings. It released 26,000 pounds of VOCs in 12 hours, 1,000 times more than allowed under its air permit.

Few fines for violations

Eagle Ford operators that violate state regulations face few, if any, repercussions.

In an email, the TCEQ's Morrow said the agency has cited Regency's Tilden plant for five air violations

over the past decade and that Regency has paid a single, \$3,000 fine.

Even then, Regency — which had a net income of \$48 million in 2012, the last full year for which data are available — wasn't punished for allowing chemicals to taint the air. Instead, it was fined for not reporting a Nov. 30, 2012, leak within 24 hours.

Morrow said fines are based on a facility's compliance history. Each facility receives a score and is rated high, satisfactory or unsatisfactory. The TCEQ considers the Tilden plant to be satisfactory, she said.

A spokeswoman for Regency, Vicki Anderson Granado, said in an email that the plant has been “modernized and improved throughout its history” and “was among the industry leaders” in adopting an acid gas injection technology that sends what would otherwise be air emissions deep underground.

Granado did not respond when asked why the plant had so many emission events last year.

Larry Soward, a former TCEQ commissioner with a reputation for being tough on industry, said the agency's enforcement strategy is shaped by its top-down management style. Its upper ranks consist of people who share Gov. Perry's business-friendly point of view, he said.



Larry Soward, a former commissioner with the Texas Commission on Environmental Quality (TCEQ), and current chairman of Air Alliance Houston. Lance Rosenfield/Prime

Its middle managers and investigators “know the parameters very well in which they can operate. It's not unclear, especially to the field staff, who they can go after and who they can't.

“You have a regulatory system that says, ‘Well, even if you did something bad, we're just going to say don't do it again, or slap you on the wrist,’ and companies in industry know that,” Soward said.

He said his greatest regulatory success came after he left the TCEQ in 2009 and joined Air Alliance Houston, an environmental group, as a consultant in 2011. That year the group successfully helped lobby the legislature to increase the maximum TCEQ fine from \$10,000 per violation per day to \$25,000.

But the agency rarely imposes the maximum penalty.

Between January 2012 and October 2013, the TCEQ issued 117 fines statewide for violations related to oil and gas production. Operators paid less than \$25,000 in more than three-quarters of those cases, records show. The two fines that arose from complaints in the Eagle Ford were both lower than that.

Houston psychiatrist Charles Covert, who owns a cattle ranch in La Salle County, filed a sworn affidavit with the TCEQ in April 2013 saying he had been “poisoned by [hydrogen sulfide] inhalation in his own ranch home compound and was seriously injured.” He said he required “intensive medical treatment by 5 doctors for the past seven months.”

Covert blamed his illness on discharges from the nearby Alderman Ranch Tank Battery, where Houston-based Swift Energy Co. has a well and stores crude oil and

natural gas condensate, a mixture of hydrocarbon liquids. Swift, he alleged, operated the site for months without acknowledging the well was sour — a term that refers to high levels of hydrogen sulfide. Covert did not respond to interview requests.

After Covert complained, TCEQ investigators went to the site four times. “The staff detected moderate to strong odors and experienced irritation of the eyes and a burning sensation in the throat during odor surveys,” the agency said in a statement.

Swift, which had a net income of \$20.9 million in 2012, was cited for discharging air contaminants “in such concentration and of such duration” that could harm human health or property or impair quality of life. It was fined \$14,250.

In an emailed statement, Paul Vincent, Swift’s director of finance and investor relations, said the TCEQ citation “did not state that Swift Energy was causing adverse health effects, only that a potential for such effects was possible.” He said Swift paid the fine “without any admission of any violation alleged.”

More often than not, residents’ complaints lead nowhere, as Fred and Amber Lyssy discovered in April 2013.



Amber and Fred Lyssy and their three young children mix family time with doing chores on their farm. Lance Rosenfield/Prime

The Lyssys raise pigs, goats and cattle on a 564-acre organic farm in Wilson County outside Floresville. The land is owned by Fred's mother, Agnes Ramos, who for years has refused offers to lease the mineral rights for drilling. Some neighboring landowners have accepted, however, and the Lyssys' land is now surrounded by wells, flares and holding tanks.

When foul odors swept across the farm, the Lyssys suspected a gas

processing plant less than a mile away. Fred stopped letting his livestock graze on the pasture next to the facility and moved his and Amber's bedroom to the opposite side of the house. They worry about how their three children — ages seven months, 3½ and 6 — will be affected by the pollution. They fear it will jeopardize their pledge to provide organic food to their customers.

“We are about liberty and free-

dom,” Amber said, “but they are trespassing with their emissions.”

The Lyssys’ anxiety mounted when six of their dogs — Anatolian Pyrenees that they use to work the farm — suffered mysterious, agonizing deaths. Five died within a few days of one another in February 2013. Amber said they began vomiting, scratching their heads bloody and whining for no apparent reason. Their veterinarian ruled out common substances like antifreeze and rat poison but could provide no explanation. The cost of a necropsy barred any more definitive answers.

After the Lyssys complained to the TCEQ, inspectors made two visits to the area. Using an infrared camera and handheld gas monitors, they detected hydrogen sulfide and other unspecified emissions coming from a Hunt Oil complex with 12 crude oil tanks and a flare.

A Hunt executive told the TCEQ he had no idea there were leaks and promised to repair the vents and oil tank hatches responsible for the emissions. The agency was satisfied and did not cite the company for any violations.

Three weeks later, the investigators returned for a third visit and again found hydrogen sulfide leaks, according to a TCEQ report. Again, Hunt —

a private company with \$4 billion in revenue last year, according to Forbes — promised to get things fixed.

The investigation was closed in August with a notation that there were “no violations.” The Lyssys’ sixth Pyrenees, Big Boy, died in November after showing the same symptoms as their other dogs.

Paul Licata, Hunt’s vice president of environmental, health and safety, blamed the leaks found during the TCEQ’s follow-up visit on contractors who had done the initial repairs. When the inspectors discovered the site was still leaking, Licata said, Hunt responded immediately.

Jeanne Phillips, a Hunt spokeswoman, said the company “is pleased that the TCEQ found no fault with Hunt and we are proud of our longstanding policy of working closely with communities ... where we have operations.”

Oil companies are still pressuring Ramos to lease her mineral rights. They want the land so badly, she said, that company representatives have trespassed, lied, badgered and turned four of her six daughters against her.

“My daughters say, ‘But Mom, God put the oil on the land to be used, so you are going against God,’” Ramos said.



Fracking activity can be seen on the horizon of south Texas ranch land.

Lance Rosenfield/Prime

Ramos sees it differently. If she gave in to the oil companies, she said, “I would be going against God because he gave us this land to take care of.”

Lessons from the Barnett Shale

Texas regulators and politicians had a clear idea of the problems that would arise in the Eagle Ford even before the drilling boom began.

Between 2003 and 2011, some

2,000 wells had been drilled within the city of Fort Worth, which lies atop the Barnett Shale formation, and six times that many were drilled in nearby communities. Tanker trucks rumbled past suburban lawns. Flares burned next to schools and playgrounds. An industry normally hidden in rural areas was suddenly visible to suburbanites, some of whom were frightened and incensed by the intrusion.

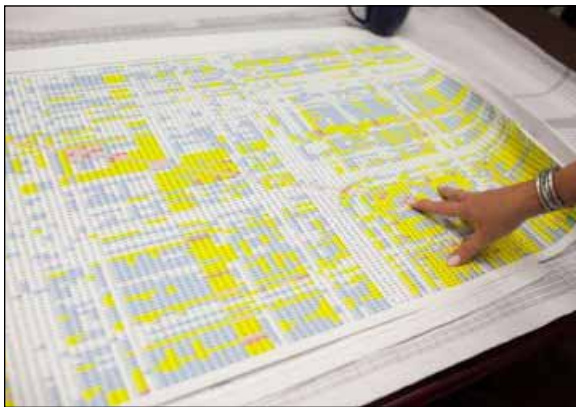
Under pressure from residents and the EPA, the TCEQ added more

air monitors in the Barnett and agreed to respond to complaints in a timelier fashion. It also tightened its permit-by-rule regulations in the region.

The TCEQ was going to extend the new rules statewide, but in 2011 the legislature stepped in and passed a bill that effectively blocked the plan. The following year, the TCEQ itself limited the rules' use in the Barnett, restricting them to 15 of its 24 counties.

A 2012 agency memo shows the TCEQ was fully aware that drilling companies needed more oversight. Titled "Findings and Lessons Learned from Barnett Shale Oil and Gas Activities," it said "nearly all of the issues documented [in the Barnett] arose from human or mechanical failure that were quickly remedied and could have been avoided through increase [sic] diligence on the part of the operator."

Soward said Barnett residents got at least a little protection because they "yelled and screamed" until the TCEQ responded. But yelling — and



Results of from fracking activities in the Barnett Shale around Fort Worth, Texas. Lance Rosenfield/Prime

organizing — doesn't come naturally to most residents in the Eagle Ford, who tend to have fewer resources and less political power than people in North Texas.

The demographic differences may help explain why the city of Dallas recently passed one of the strictest setback rules in the country: No well can be drilled within 1,500 feet of homes, schools, churches and other sensitive locations. In Colorado, the equivalent rule is 500 to 1,000 feet depending on the type of building; it's 500 feet in Pennsylvania.

Texas has no statewide setbacks, aside from a 1,320-foot buffer zone



Dusk in rural Karnes County Lance Rosenfield/Prime

for facilities with high levels of hydrogen sulfide. For all other oil and gas sites, it relies on communities to take the lead. Eagle Ford counties like Karnes, LaSalle and McMullen have no restrictions despite a glut of drilling.

No end in sight

Every month, the Texas Railroad Commission updates an online map of drilling activity in the Eagle Ford, using green dots to represent oil wells and red dots to represent gas

wells. Karnes County is almost entirely obscured by green and red; other counties aren't far behind.

“Karnes County is ground zero,” said its chief administrative officer, County Judge Barbara Shaw. “We always have fears that the federal government is going to stop it.” Shaw, whose husband works in the oil industry, admits that the boom has brought about some unpleasant changes in the county of 15,000. Traffic deaths rose from two in 2010 to 25 in 2012, trucks are tearing up the roads, and monthly rents on

houses have quadrupled, pricing out those with modest incomes.

Still, Shaw believes the benefits outweigh the disadvantages. Land that once sold for \$1,500 to \$2,000 acre now brings 10 or 20 times as much. Oil, the judge said, is “a natural resource that’s given by God to allow us to function I don’t think there’s anything wrong with that.”

The tax base for Karnes County’s industrial sector — which includes mineral rights, land and building values, and manufacturing — exploded from \$217 million in 2008 to \$6.2 billion in 2013, nearly a 28-fold increase.

“The Eagle Ford Shale is the biggest economic investment zone in the entire world. It may go down as the largest oil and gas field ever discovered in the United States,” said Steve Everley, who works in Washington, D.C., for Energy in Depth, a research, education and public-relations arm of the Independent Petroleum Association of America. A former aide to Newt Gingrich, he’s a polished, thoughtful evangelist for oil and gas extraction.

Asked how poorer residents of places like Karnes City could expect to benefit, Everley said they might be able to find jobs in restaurants, or as truck drivers. The latter can

make “six figures,” he said.

What about those whose lives have been disrupted, like the Buehrings and Mary Alice Longoria? Everley was not unsympathetic, saying they should complain to operators or the state if something is wrong, and that the industry “takes questions about air emissions or air pollution very seriously.”

Still, Everley made it clear he believes most of the naysayers are simply anti-drilling.

“I mean, are we going to prevent people from having jobs? Are we going to relegate an entire section of the state to continued poverty or are we going to move forward with economic development?”

Mary and Nolan Jonas accept the industry’s message — for now, at least. The couple, who were both born in Karnes County, began working the land soon after they were married 46 years ago. Nolan ran a farm and cattle ranch. Mary raised the children, two sons and a daughter, and taught math at Karnes City Junior High School for 20 years.

There were a few good years and a lot of bad ones, some really bad. Sometimes the land was so parched the crops withered, and the prairie grass dried so brittle the cattle had little to fill their stomachs.

But Nolan never gave up on his land. This was his home, his livelihood and his way of life.

Then came the Eagle Ford boom, and fortune was right underfoot. The Jonases sold their mineral rights to an oil development company. They won't say for how much, though Nolan said his grandchildren will never want.

"We had a lot of hard years on this land, but now it is giving back. It has made us prosperous," he said.

When the wind blows from the north, there's a piquant reminder of the bargain the Jonases have struck. A processing plant less than 150 yards from their property gives off an odor that Mary can't quite describe. Rotten eggs? Something oily? "It's an awful odor," she said. "I can't describe it because it's not like anything that I've ever smelled before." Will it harm them or their grandchildren, who play on a swing set as a bright orange flare trails smoke in the background? "I guess it's something to be concerned about, but I honestly hadn't thought



Pipes carrying water for fracking operations line a gravel road in rural Karnes County.

Lance Rosenfield/Prime

about it," Mary said. "I've always just said we take the bad with the good."

To hear Everley tell it, the good will continue indefinitely. The Eagle Ford figures to produce for many years to come, and the industry is eyeing a new area — the Cline Shale in West Texas — for development.

"There is no end in sight," Everley said. ■

Contributors to this report include Alex Cohen, Chris Zubak-Skees, Zahra Hirji, Sabrina Shankman and Marcus Stern.



Texas State Rep. Tom Craddick, R- Midland, joins others in the Pledge of Allegiance, January 2009, in Austin. Eric Gay/AP

Saturated with oil money, Texas legislature saved industry from pollution rule

By *David Hasemyer, Ben Wieder and Alan Suderman*

Published Online: February 18, 2014

KARNES CITY, Texas — In January 2011, with air quality worsening in Texas' booming oil and gas fields and the federal government beginning to take notice, state environmental

regulators adopted rules to reduce harmful emissions.

The industry rebelled. So did the state legislature.

A few months later, the legislature overwhelmingly approved SB1134,

a bill that effectively prevented the new regulations from being applied in the Eagle Ford Shale region of South Texas, the fastest-growing oil shale play in the nation and maybe the world. Since then, more than 2,400 air emissions permits have been issued in the Eagle Ford without additional safeguards that would have reduced the amounts of benzene, hydrogen sulfide, formaldehyde and other toxic chemicals that drift into the air breathed by 1.1 million people.

The Texas legislature's rush to protect the oil and gas industry reflects a culture in which politics and business are almost inseparable.

State Rep. Tom Craddick, who championed the House version of SB1134, owns stock in nine oil companies, five of which are active in the Eagle Ford. At the end of 2013, the stock was worth as much as \$1.5 million. That year Craddick, and the partnerships and corporations he controls, received royalties of as much as \$885,000 for mineral rights. For decades he had a lucrative partnership with Mustang Mud, an oilfield supply company.

Corporations, along with unions, are banned from giving directly to state candidates in Texas, but since 2000, industry employees and relat-

ed political action committees have contributed more than \$800,000 to Craddick's campaigns, according to an analysis of data from the National Institute on Money in State Politics.

The industry has also invested more than \$600,000 to help Craddick's daughter, Christi, win a seat on the Texas Railroad Commission

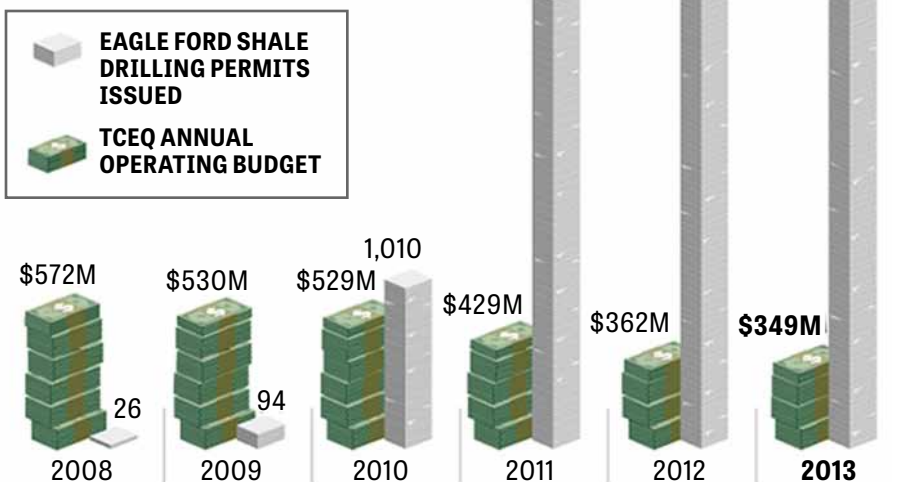
Craddick owns stock in nine oil companies, five of which are active in the Eagle Ford. At the end of 2013, the stock was worth as much as \$1.5 million.

in 2012. The Railroad Commission, which issues drilling permits, has been criticized for years for allowing its three commissioners to accept campaign contributions from the industry they regulate. But with support from the House Energy Resources Committee, of which Tom Craddick is a member, it has beaten back attempts at reform.

Other members of the Texas legislature also benefit from the oil and gas industry's largesse.

Permits Rise as Budgets Fall

From 2008 to 2013, the Eagle Ford Shale saw a 168-fold increase in the number of drilling permits issued. During that period, the Texas Commission on Environmental Quality — the agency that regulates air emissions — saw its operating budget cut 39%.



Note: The TCEQ budget is representative of a fiscal year (Sept. – Aug.), while the permits are for calendar years.

SOURCES: Texas Commission on Environmental Quality; Texas Railroad Commission.

Paul Horn/Inside Climate News

Forty-two of the body's 181 members or their spouses own stock or receive royalties from companies active in the Eagle Ford, according to

a Center for Public Integrity review of thousands of pages of financial disclosure records. Their holdings are worth as much as \$9.6 million,

according to a conservative estimate based on the 2012 data.

Gov. Rick Perry, who signed SB1134 soon after it landed on his desk, has collected more than \$11.5 million in campaign contributions from those in the industry since the 2000 election cycle. Attorney General Greg Abbott, the favorite to win the Republican nomination for governor, has raked in more than \$4 million. Since he has been in office, Abbott has sued the U.S. Environmental Protection Agency 18 times for interfering in Texas affairs.

Supporters say the oil and gas industry has been good to Texas, and they are right. The industry employed 315,000 people and paid \$8.5 billion in taxes in 2010. It has been particularly important to counties in the Eagle Ford. The tax base in Karnes County, at the epicenter of the drilling, exploded from \$489 million in 2008 to \$6.6 billion last year, a 1,200 percent increase.

The downside of this surge in prosperity is the introduction of industrial-type air pollution to a rural area where people of limited means rarely share in the bounty and have little defense against an industry as iconic in Texas as longhorn steers.

Rep. Tim Kleinschmidt, a Republican who represents Karnes County

in the state legislature, is no stranger to that industry. He has leased some of his own land to oil companies in the past, and the law firm where he practices specializes in negotiating oil and gas agreements. While his focus is now on commercial real estate, his first work for the firm was on those leases.

Supporters say the oil and gas industry has been good to Texas, and they are right. The industry employed 315,000 people and paid \$8.5 billion in taxes in 2010.

“I’ve practiced in an oil field my whole life,” he said.

He acknowledges that the boom had created environmental and infrastructure challenges. On tours of the region he hears complaints about both. But he says he hears just as often about fortunes made overnight by residents who’ve leased their land.

Kleinschmidt said the industry is proactively addressing people’s concerns.

“I can’t say too much in support of our oil and gas industry in Texas,” he said. “Our oil and gas industry is very environmentally concerned.”

That’s not how Sister Elizabeth Riebschlaeger sees it.

The 77-year-old nun-turned-activist speeds through the Eagle Ford in her white Honda Civic, intent on exposing the ills she believes have been forced on residents by the oil and gas industry.

“They do not like to complain,” she said. “They don’t want to make trouble. They don’t know they’re being taken advantage of.”

Most of the Eagle Ford’s residents live in small towns or on farms and have scant influence on lawmakers. About 23 percent have incomes below the federal poverty line, compared to 17 percent statewide and 15 percent nationally.

“Let’s be blunt. That is not really a body of voters that the power structure in Austin [the state capital] has any real concern about,” said Larry Soward, a former member of the Texas Commission on Environmental Quality. Soward is now president of the board of Air Alliance Houston, an organization dedicated to reducing air pollution.

While the situation in Texas may be extreme, it’s not unusual for poli-

ticians to be seduced by the industry, said Michael Nelson, a professor of environmental ethics and philosophy at Oregon State University.

“What’s going on is the masking of a moral decision in a utilitarian kind of debate that puts more weight on what can be seen, in this case the financial benefit, [than on] what can’t be as readily measured: the risks,” Nelson said. “Those risks to health and environment aren’t as perceptible as the financial benefit, so the cost benefit equation is tipped out of balance.”

Business comes first

People who suffer the effects of oil and gas emissions have few places to turn for help other than to the politicians and regulatory agencies that are often cheerleaders for, and financially beholden to, the industry.

“It doesn’t matter what the people say. It ... does ... not ... matter,” said Sharon Wilson, a leader in the Texas office of the environmental group Earthworks. An Earthworks study last year concluded “by failing to deter reckless operator behavior, [Texas] regulators practically condoned it, thereby increasing health risks for residents living near oil and gas development.”

Rep. Lon Burnam, a Fort Worth Democrat who has served 16 years in the Texas House, is the most outspoken of a handful of legislators trying to curb the oil companies' influence. He describes the legislature as "a wholly owned subsidiary of the oil and gas industry."

In the last legislative session, Burnam introduced 12 bills that would have regulated or taxed the industry in some way. Most died in the House Energy Resources Committee, where six of the 11 members, including Craddick, own stock or receive royalties from the industry, according to their personal financial disclosures.

Sometimes it seems that everyone in Texas is connected in some way to the oil business, including even Burnam. According to his disclosure forms, his wife inherited mineral rights from her parents worth as much as \$10,000.

The Energy Resources Committee is led by Republican Rep. Jim Keffer, whose investment portfolio includes stock in Plains All American Pipeline, Anadarko Petroleum and Chevron worth as much as \$1.2 million at the end of 2012.

The committee's vice-chair, Myra Crownover, is part owner of Robinson Drilling, a family-run West Texas

company with 14 rigs that can drill more than two miles deep, according to its website. Crownover says on her website that she was named the Texas oil and gas industry's "Legislative Champion" last year.

Over the years, Robinson Drilling has been penalized by the federal Occupational Safety and Health

Rep. Burnam introduced 12 bills in the last legislative session that would have regulated or taxed the industry in some way. Most died in the House Energy Resources Committee.

Administration for numerous safety violations. Four Robinson Drilling workers have died since 2004, according to OSHA records. One worker has been paralyzed.

Crownover said in a statement that she is not involved in the day-to-day operations of Robinson Drilling, but knows the company "is fully committed to maintaining a safe working environment for its employees."

"Incidents are down dramatically," she said, "and Robinson

Drilling has passed recent OSHA inspections without citations.”

Although Crossover benefits personally from the industry, she said she listens to diverse opinions when considering legislation before the committee. “Landowners, mineral owners, environmental groups, and the industry all have important and sometimes competing points of view,” she said in an emailed response to questions. “It is our job to sort it all out to ensure our environment is protected and all Texans benefit from the production of oil and gas.”

Soward, the former TCEQ commissioner who left in 2009, doesn’t see it that way.

“The interests of the people ... are irrelevant to the extent that they differ from the interest of the industry,” he said. “If someone has a problem with air quality or the roads being torn up or the land being ruined, they are not going to be listened to. They will not be heard because that is going against the interest of business.”

The TCEQ, like the state legislature, is intertwined with the industry.

The agency’s three commissioners are appointed by the governor and are paid \$150,000 a year.

Three of the last four commis-



Lance Rosenfield/Prime

“The interests of the people ... are irrelevant to the extent that they differ from the interest of the industry.”

— Larry Soward, a former commissioner with the Texas Commission on Environmental Quality (TCEQ)

sioners later registered as lobbyists, and collectively have taken in between \$160,000 and \$420,000 since 2010. Jeffrey Saitas, the TCEQ’s executive director from 1998 to 2002, also lobbies for oil and gas companies, among other clients.

In 2013 alone, Saitas banked between \$635,000 and \$1.3 million in fees, much of it from energy companies like Valero, Marathon Oil and DCP Midstream. That puts his total

earnings as a lobbyist between \$6 million and \$12.3 million, according to financial disclosure records filed with the Texas Ethics Commission.

Saitas declined to comment for this article.

Modest rules ignite uproar

Despite the industry's deep political ties, the TCEQ tightened its emissions standards in 2011.

Complaints from people in North Texas, where a gas-drilling boom had begun in the Barnett Shale in 2002, were drawing unwanted attention from the EPA. And a TCEQ study had found underestimated or previously undetected emissions at oil and gas sites.

"These are not isolated instances but have occurred statewide and indicate a pattern," Richard A. Hyde, then deputy director of TECQ's Office of Permitting and Registration, wrote in a Jan. 7, 2011, interoffice memo obtained by the Center for Public Integrity, InsideClimate News and The Weather Channel.

Soward, the former TCEQ commissioner, said the rules were a modest attempt to placate people in Dallas-Fort Worth and head off EPA intervention.

"The state didn't want the federal

government stepping in," Soward said. "I think TCEQ felt this was one thing they could do to have minimal impact on the industry but appear to strengthen regulatory action ... I think they were looking for a way out, not for a way to make things better."

The regulations required operators to install leak-detection systems and emission-control devices on equipment where none had been required before, and to reduce emissions when starting, shutting down and maintaining their wells. Operators of new wells would have to sample their releases and make the results available to state regulators. They would also be required to coat their storage tanks with reflective paint to reduce heat-generated emissions.

The rules were unexceptional when compared with regulations being considered in Colorado, also a major drilling state. But for the pro-industry Texas legislature, they went too far.

State Sen. Glenn Hegar, a Republican, led the opposition in the Senate while Craddick led the fight in the House. SB1134 prohibited the TCEQ from extending the new rules outside the Barnett Shale unless the agency first performed a time-consuming

and costly analysis for each well application, proving that the benefit of improved air quality justified the additional cost to the operator.

Hegar, who is now running for state comptroller, prepared talking points to show where the TCEQ had erred. The second most generous donor to Hegar's campaign so far is Charles Scianna, president of Sim-Tex, a pipe manufacturer that serves the oil and gas industry.

Instead of taking air samples in places where facilities were exceeding their state-approved emissions levels, samples should be taken in areas where facilities were in compliance, according to the undated talking points Hegar used to explain his objections to the rules.

"It would not be appropriate for TCEQ to use air quality monitoring data that has been, or will be, collected in areas where there are oil and gas facilities that are known to be operating out of compliance," the document said, because "TCEQ [should] address the non-compliant emissions from such facilities... through enforcement against those facilities, rather than by including more stringent requirements in the new or amended permit."

A few months later, Hegar further handcuffed the TCEQ by plac-

ing a rider on the state budget bill. It prohibited the agency from using tax dollars to perform the cost-benefit analyses.

TCEQ spokeswoman Andrea Morrow said in a written statement that the legislation did not "significantly affect TCEQ's ability to implement new regulations." She did not elaborate or respond to further questions.

Soon after the legislation became law, the TCEQ voluntarily narrowed the focus of its rules. Today the tighter standards apply in only 15 of the Barnett Shale's 24 counties.

While the legislature was slamming the door on the TCEQ's attempt to enforce new statewide emissions rules, it was also slashing the agency's budget.

Legislative appropriations for the TCEQ dropped 39 percent — from \$555 million in 2008 to \$341 million in 2013 — even as the Eagle Ford was experiencing unprecedented growth in drilling. During that same period, the legislature cut the entire Texas budget just 8 percent.

The TCEQ budget rose slightly in 2014, to \$372 million. But only \$3 million was allocated for regional air monitoring and just \$579,000 for air monitoring equipment. The legislature set aside a "maximum" of

\$200,000 to study the health effects of emissions.

Reforms fail again and again

As the legislature was limiting the new air pollution rules, it was also snuffing out an attempt to reform the Texas Railroad Commission, which has long been criticized for bowing to powerful interests. Like the legislature and the TCEQ, the Railroad Commission is powered by oil and gas industry money. Since 2010 the three current commissioners have accepted nearly \$2.3 million from the industry in campaign contributions.

The Sunset Advisory Commission, a legislative body charged with reviewing the efficiency of Texas agencies, urged legislators to dramatically reform the Railroad Commission. Among other things, it recommended that the Railroad Commission have one elected commissioner instead of three and that key decisions be made not by the commissioner but by independent administrative judges.

“Critics would argue that elected Commissioners pose a conflict for the agency’s regulatory role, as the costs of a statewide campaign often rely on campaign contributions from

the regulated industry,” the Sunset Commission’s 2011 report said.

Hegar, the state senator who with Craddick’s support had drawn up legislation to weaken the TCEQ emissions rules, chaired the Sunset Commission. He also introduced legislation to force the changes.

The reforms were necessary, he said in a statement at the time, to “meet the very tall test of balancing the protection of Texans and our environment while at the same time ensuring that the oil and gas industry remains vibrant in Texas.”

Hegar declined to discuss his support for Railroad Commission reforms or his pushback on the TCEQ rules. Legislative observers said Hegar’s pro-business bent likely motivated him to oppose tightening the emissions regulations and that growing public discontent with the Railroad Commission prompted him to support the commission reforms.

With Hegar’s support, the Senate voted 29 to 2 to approve the restructuring of the Railroad Commission. But the core reforms died in the House Energy Resources Committee, where Keffer, the nine-term Republican with hefty energy investments, presided over their demise. The committee, and then the full House, voted to keep three elected

commissioners, but the House and Senate could agree only to defer the issue for two years.

Last year the Sunset Commission again hammered away at the Railroad Commission's deficiencies. It recommended that commissioners be barred from taking campaign contributions from the industry they regulate — and that they be required to resign if they run for another office.

Again the reforms died in Kefauver's committee.

Tom Craddick, who sits on the committee, had a personal stake in the outcome of this fight.

Had the legislation been approved, his daughter, Christi, the railroad commissioner, would no longer be able to accept donations from the industry, whose contributions to her 2012 campaign accounted for 25 percent of her war chest.

"When rules intended to bring fairness and accountability to our public agencies are discounted the message is clear: the industry is setting the agenda," said Tom Smith, director of the Texas chapter of Public Citizen, a nonprofit public-interest advocacy organization.

The legislature later approved a bill that barred railroad commissioners from running for another office without first resigning from the com-

mission, but Gov. Perry vetoed that bill. Its provisions would have applied to Chairman Barry Smitherman, who is currently running for Texas attorney general. According to campaign information filed on Jan. 15, he has raised more than \$2 million for his campaign, with energy company employees among his top donors. That included \$3,500 from employees of Range Resources, which controls more than one million acres of land in Texas and Pennsylvania.

Range Resources employees also donated more than \$5,000 to Smitherman's 2012 campaign for his commission seat, including a contribution from Jeffrey L. Ventura, the company's CEO.

Industry boosters

The Railroad Commission defended Range Resources in a 2010 fight with the EPA.

Two families in a community just west of Fort Worth had complained that dangerous amounts of methane and benzene were poisoning their water wells. When the commission didn't act on the complaints, the EPA began investigating. It blamed the contamination on gas wells operated by Range Resources, and ordered the company to take a num-

ber of actions to solve the problem.

In 2010 the Railroad Commission, led at the time by Elizabeth Ames Jones, disputed the EPA's findings and conducted its own tests. It concluded that the methane and benzene were naturally occurring and voted 3-0 to absolve Range of the EPA's allegations.

"We'll see which is the real protection agency, and I'd say it's the Railroad Commission of Texas," Jones told The Texas Tribune after the vote.

Commissioner Michael Williams praised Range for standing up to the EPA.

"We owe an enormous thank you to Range Resources, because, quite frankly, they put up a diligent and aggressive defense of their operations," Williams said.

Both Williams and Jones received more than \$1 million in campaign contributions from the industry during their tenures. Jones resigned from the commission in 2012 to run unsuccessfully for the state senate. She is now a policy advisor at Patton Boggs, a Washington D.C.-based law and lobbying firm that advises U.S. and international clients on oil and gas projects.

Williams left the commission in 2011 to campaign for a U.S. Senate

seat. He soon switched gears to run for an open U.S. House seat instead, but lost in the Republican primary. In 2012, Gov. Perry made Williams commissioner of the Texas Education Agency, the state's top education post.

The EPA eventually withdrew its order against Range Resources, saying it wanted to avoid an expensive legal battle.

Money fuels influence

Burnam, the Fort Worth Democrat who has tried for years to rein in the industry, has grown accustomed to such defeats. "It's a political environment that is not conducive to regulating in the interest of public health," he said.

Last year Burnam introduced legislation that included many of the environmental safeguards Colorado has adopted to police the drilling method known as hydraulic fracturing. Had the bill passed, companies would have been required to notify local officials before drilling within 1,000 feet of nursing homes, schools, hospitals and other occupied buildings. Companies also would have had to provide safety and health information to nearby residents through a public outreach program.

But opposition materialized

quickly. The Texas Oil and Gas Association, Marathon, ConocoPhillips, Shell Oil, Chevron and other industry giants lined up to tell Texas legislators to kill the bill.

Bill Stevens, with the Texas Alliance of Energy Producers, told the House Energy Resources Committee that the requirements in Burnam's bill were too tough.

"You are establishing a baseline that is stricter and a higher standard than some people have or want in their communities," Stevens told Burnam in a cordial exchange captured by a video camera.

"That is definitely the purpose of this legislation," Burnam said. "I want to establish a baseline ... for the health, safety and welfare of the people."

After a short discussion of some of the bill's provisions, Stevens ended his testimony by saying: "If that is the baseline you are trying to establish for cities across the state, then that is something we oppose."

Burnam's bill died in committee. ■

Lisa Song, Zahra Hirji, Sabrina Shankman and Marcus Stern contributed to this report.

DIGITAL NEWSBOOK



In the fall of 2008, the U.S. economy nearly collapsed thanks to an unprecedented wave of mortgage foreclosures. In this series the Center revisits the subprime lenders, Wall Street banks and government regulators that were most responsible for the crash — and finds few if any have been held accountable.

 The Center for
Public Integrity

STAY CONNECTED

Subscribe to our e-mail newsletter and get the latest from our in-depth investigations, articles, interviews, blogs, videos, and more.

HELP SUPPORT OUR WORK

Your support will help us bring you more investigations, articles, interviews and news related materials relevant to U.S. politics and politics abroad.

TIP THE CENTER

Do you have important information for an investigative project? A question or comment? Pass it on to the Center.

www.publicintegrity.org

FOLLOW-UP

Tough new fracking rules in Colorado drawing keen attention in Texas, where boom rages on

By Zahra Hirji, Lisa Song and Jim Morris

Published Online: March 20, 2014

COLORADO'S tough, new air pollution rules for the oil and gas industry were approved only a month ago but already are making an impact in Texas, where lawmakers and energy companies have long resisted tightening air standards.

Several companies have approached the nonprofit Environmental Defense Fund and expressed interest in discussing whether Colorado's rules make sense for Texas, according to Jim Marston, a vice president at EDF. Marston didn't name the companies.

"The companies are often ahead of the Texas state government," said Marston, who works in the group's Austin office. "If some important industry leaders like the idea, it might move state government." EDF played a leading role among the environ-

mental organizations that helped craft the Colorado rules.

Many energy companies participated in Colorado's rule-making process, but only four of them — Anadarko Petroleum Corp., DCP Midstream, Encana Corp. and Noble Energy, Inc. — fully support the new regulations.

Anadarko and DCP Midstream also operate in Texas.

The Colorado Oil & Gas Association, a trade group, had strong objections to some of the rules. For example, the association argued against requiring regular leak inspections at small storage tanks.

Marston said the individual companies' support was crucial for the rules' approval — and would be necessary in Texas, too. "We don't pretend we could have done it ourselves," he said.

Luke Metzger, director of Environment Texas, a citizen advocacy group, also found hope in Colorado's actions. "Frequently, legislators in this state ask for other models to look to, and Colorado, being a big oil and gas state, is somewhere Texas officials will take seriously," he said.

Neither Metzger nor Marston expects much action in Texas during this election year, when key positions, including governor and energy regulators, are being contested.

In Colorado, Gov. John Hickenlooper's office and the state's Department of Public Health and Environment led the process. "I'd love to think we could have the support of the governor in Texas," Marston said, "but that's probably a lot less likely than in Colorado."

A recent eight-month investigation by the Center for Public Integrity, InsideClimate News and The Weather Channel revealed that nearly one in four of Texas' current legislators or their spouses own stock or receive royalties from companies operating in the Eagle Ford Shale, one of the nation's most active drilling regions. The report also found that Texas does little to monitor or limit the industry's air pollution. The number of drilling permits issued in the Eagle Ford increased

168-fold in six years — from 26 in 2008 to 4,416 in 2013 — while the budget of the state's environmental regulatory agency was slashed 39 percent. During that period residents filed hundreds of complaints about oil and gas drilling activities.

Colorado's rules require oil and gas companies to regularly monitor and repair unintentional, or "fugitive," leaks of gases that have adverse climate effects, like methane, a potent greenhouse gas. They also rein in gases that can cause health problems, including volatile organic compounds (VOCs) like benzene, a known carcinogen.

The rules exceed regulations issued by the U.S. Environmental Protection Agency in 2012, which won't fully be implemented until 2015. The EPA rules don't directly address methane and some of the most important apply only to gas wells.

A recent study commissioned by EDF and conducted by the consulting firm ICF International found that if the U.S. oil and gas industry adopted many of the same technologies that Colorado now requires, the industry's methane emissions could be cut 40 percent and could save the U.S. economy more than \$100 million a year.

John Christiansen, a spokesman

for Anadarko, said the Colorado rules offer “a very common-sense approach to constructively addressing something that is very important to the people of Colorado.” He hopes they will help “build public trust as we move forward with our operations there.”

Last year, four Colorado communities banned hydraulic fracturing, or fracking, an extraction technique used on oil and gas wells. People who live near drilling sites in other states have also voiced concern about the industry’s air pollution, the risk of groundwater contamination and the surge of earthquakes linked to underground disposal of fracking wastewater.

Christiansen said the Colorado rules also make financial sense for the industry. Instead of releasing some of the gases into the air, companies can collect and sell them.

When asked whether Anadarko would voluntarily adopt the Colorado standards at its Texas operations, Christiansen said the company would have to gauge their effectiveness in Colorado before “[we] determine whether or not it applies to other areas.” DCP Midstream, which also operates in Texas, did not respond to requests for comment.

The impacts of Colorado’s stan-

dards, which will be rolled out between this spring and May 1, 2016, are expected to be dramatic. State regulators predict they will eliminate at least 92,000 tons of VOCs annually — more than all the VOCs that Colorado’s cars emit each year.

Colorado vs. Texas

The more than 20 pages of rules passed by Colorado’s Air Quality Control Commission are groundbreaking because of the scope of gases they target, their rigorous monitoring guidelines and their inclusion of the industry’s smallest emitters. Here’s a rundown of five significant changes:

- Colorado’s rules will be applied statewide, rather than being adjusted for geology or population, as they are in many states. Texas, for instance, has stronger protections in 15 counties in the densely populated Barnett Shale near Dallas-Fort Worth. Other regions of the state, including the booming Eagle Ford Shale, have much weaker regulations.
- The rules directly address methane, a greenhouse gas that is 20 to 100 times more powerful than carbon dioxide. Texas has no

methane-specific standards, but like all other states, it enforces EPA regulations that indirectly limit methane.

- The rules recognize that small fugitive emissions can have a major cumulative impact on air quality. Both Colorado and Texas have rules that target these leaks during facility maintenance, startups and shutdowns. But fugitive emissions also occur at other times, and Colorado's rules better address them. For example, Colorado companies will have to inspect their largest-emitting facilities monthly and their smallest ones once a year using advanced technology. In Texas, quarterly inspections are required only for a limited number of facilities in the 15 Barnett counties.
- Colorado gives operators five working days to fix fugitive leaks unless they can prove more time is needed. The EPA rules, which only affect facilities built or modified after Aug. 23, 2011, require repairs within 5 to 15 days. In Texas, operators in the 15 Barnett counties have 30 to 60 days to repair leaks. (A few Texas counties that don't meet federal air quality standards must make

the repairs within 15 days.) Thousands of facilities in other Texas counties have no deadlines for repairs. In fact, regulators don't even know that many of them exist, because operators are allowed to audit their own emissions.

- Colorado requires all storage tanks that release more than six tons of VOCs a year to use technology that reduces emissions by at least 95 percent. The EPA has a similar requirement, but it applies only to tanks built or modified after Aug. 23, 2011. In Texas, most tanks can emit up to 25 tons of VOCs per year. In order to meet that limit, the majority of tanks use control devices that reduce VOCs by up to 98 or 100 percent, said spokesman Terry Clawson of the Texas Commission on Environmental Quality.

Change in Texas 'at least thinkable now'

Bruce Baizel, energy program director at the environmental group Earthworks, expects other states to follow Colorado's lead on air quality regulations.

Methane control and leak detection and repair "are the next wave

of issues for oil and gas,” Baizel said. Lawmakers in California and Pennsylvania are already considering adopting similar methane rules, he said, and in Texas the possibility “is at least thinkable now. Two years ago I would not have said this, but partly because of this effort, the earthquake issue, the groundwater issue, the situation has changed.”

Some environmentalists, including Sandra Steingraber, an environmental health scientist from New York who founded the nonprofit New Yorkers Against Fracking, believe no amount of regulation can

effectively mitigate the health problems associated with natural gas drilling. “What we need is no fracking,” she said.

But Louis Allstadt, a former executive vice president at Mobil who is now an outspoken fracking opponent in New York, said it can’t hurt to tighten regulations as long as fracking continues.

“It’s unrealistic to expect existing wells to be shut down...until the production falls off,” Allstadt said. In the meantime, “it is critical that they be required to do the best job possible at containing” emissions. ■

DIGITAL NEWSBOOK



More than 80,000 chemicals are on the market in the United States, with hundreds added each year. The Environmental Protection Agency and other regulators are supposed to protect the public from contaminants in air, water and consumer products that can cause cancer and other illnesses. But the chemical industry’s sway over science and policy is powerful. Toxic Clout explores how the industry’s actions create uncertainty and delay, threatening public health.



The Center for
Public Integrity

STAY CONNECTED

Subscribe to our e-mail newsletter and get the latest from our in-depth investigations, articles, interviews, blogs, videos, and more.

HELP SUPPORT OUR WORK

Your support will help us bring you more investigations, articles, interviews and news related materials relevant to U.S. politics and politics abroad.

TIP THE CENTER

Do you have important information for an investigative project? A question or comment? Pass it on to the Center.

www.publicintegrity.org

FOLLOW-UP

Natural gas boom advances with little study of public health effects, report finds

By Lisa Song and Jim Morris

Published Online: February 27, 2014

A NEW STUDY has underscored just how little is known about the health consequences of the natural gas boom that began a decade ago, when advances in high-volume hydraulic fracturing, or fracking, and directional drilling allowed companies to tap shale deposits across the United States.

“Despite broad public concern, no comprehensive population-based studies of the public health effects of [unconventional natural gas] operations exist,” concluded the report published Monday in the peer-reviewed journal *Environmental Science & Technology*.

Last week, The Center for Public Integrity, InsideClimate News and The Weather Channel reported on the health data gap in the Eagle Ford Shale, where a lack of air moni-

toring and research is aggravated by a Texas regulatory system that often protects the gas and oil industry over the public.

Scientists interviewed for the series said the uncertainties persist across the country. In the words of one expert, scientists “really haven’t the foggiest idea” how shale development impacts public health.

Gas and oil production releases many toxic chemicals into the air and water, including carcinogens like benzene and respiratory hazards like hydrogen sulfide. While residents near drilling areas in Texas reported symptoms that are known to be caused by these chemicals, including migraines and breathing problems, it was impossible to link them to the drilling boom because no studies could be found that prove cause and effect.

The new study, led by John Adgate at the Colorado School of Public Health, examined available research on the environmental, social and psychological impacts of shale gas drilling. It was the first time anyone had tried to tackle the question in a systematic way, Adgate said.

The researchers found that much of the existing work “isn’t explicitly tied to health.” Many studies analyzed the level of pollutants in the air or water, but didn’t track how the exposures are connected to local health trends. Other studies used health surveys, but didn’t compare the respondents’ results with the health of the larger surrounding community.

What’s needed, Adgate said, are comprehensive studies that examine possible connections between chemical exposures and community health trends. But these types of studies require substantial funding and good baseline data, both of which are hard to obtain.

“You’re not going to find anything if you don’t look, and some people think we shouldn’t be looking, or that it’s not worth looking,” he said. “We do know a lot of these things are hazardous, and we just need to develop a system ... [that] provides people with a reasonable

level of certainty [on the] effects, or lack thereof.”

Health impacts will vary based on local geology, weather patterns, operator practices and other factors, Adgate said, so it would make sense to set up a study that tracks people from different parts of the country.

Regulators are well aware of the knowledge gap. In 2012, the Government Accountability Office — an investigative arm of Congress — reviewed more than 90 studies from government agencies, the industry and academic researchers and concluded that oil and gas development “pose inherent environmental and public health risks, but the extent of these risks ... is unknown, in part, because the studies GAO reviewed do not generally take into account the potential long-term, cumulative effects.”

On the issue of air pollution, the GAO said the studies “are generally anecdotal, short-term, and focused on a particular site or geographic location ... [They] do not provide the information needed to determine the overall cumulative effect that shale oil and gas activities have on air quality.”

Bernard Goldstein, a professor emeritus at the University of Pittsburgh and a co-author of the paper,

pointed to a need for well-designed studies in large populations. Scientists could analyze a community before, during and after drilling begins, or compare the health of residents in communities close to and far from a shale play, he said.

Both Adgate and Goldstein cited major barriers in funding. “There hasn’t been a lot of money thrown at this problem,” Adgate said. “It’s a contentious issue as everybody knows, and nobody’s stepped up to say we’re going to fund independent research.”

Goldstein said the National Institute of Environmental Health Sciences — part of the National Institutes of Health — has started to fund some studies, but the results won’t emerge for years. Adgate suggested more public-private partnerships like the Health Effects Institute, an independent research organization that studies vehicular air pollution. It is jointly funded by the Environmental Protection Agency and the auto industry.

Goldstein, a doctor and toxicologist who served as an assistant EPA administrator under President Reagan, sees the lack of research as a failure of transparency. “The impression I have is, there’s at least some part of industry that believes it’s bet-

ter not to have these studies, because they believe it will lead to toxic tort lawyers suing the industry.”

There seems to be little interest in obtaining better data, he said. Two years ago, he led a study that analyzed the membership of three advisory committees established by President Obama and the governors of Maryland and Pennsylvania. All three groups were tasked with studying the impacts of shale gas, yet Goldstein and his colleagues found that none of the 51 members had a medical or health background.

“The current lack of almost any support for research directly related to the health effects of unconventional gas drilling is shortsighted and counterproductive,” he said in 2012 in testimony before the House Energy and Environment Subcommittee. “This is not a one-time event in a single location whose health effects could be hidden by simply not looking for them ... [The] only cost-effective time ... to make this investment is now rather than to wait until the inevitable clamor for such research when diseases begin to appear that are associated with natural gas drilling activities.” ■



A flare from a well site is situated near a rural home in Karnes County.
Lance Rosenfield/Prime

FOLLOW-UP

Air monitoring in fracking areas fails to detect spikes in toxic emissions, new study says

By Lisa Song and Jim Morris

Published Online: April 3, 2014

PEOPLE in natural gas drilling areas who complain about nauseating odors, nosebleeds and other symptoms they fear could be caused by shale development

usually get the same response from state regulators: monitoring data show the air quality is fine.

A new study helps explain this discrepancy. The most commonly

used air monitoring techniques often underestimate public health threats because they don't catch toxic emissions that spike at various points during gas production, researchers reported Tuesday in the peer-reviewed journal *Reviews on Environmental Health*. The study was conducted by the Southwest Pennsylvania Environmental Health Project, a nonprofit based near Pittsburgh.

A health survey the group released last year found that people who live near drilling sites in Washington County, Pa., in the Marcellus Shale, reported symptoms such as nausea, abdominal pain, breathing difficulties and nosebleeds, all of which could be caused by pollutants known to be emitted from gas sites. Similar problems have been reported by people who live in the Eagle Ford Shale in South Texas, the subject of a recent investigation by the Center for Public Integrity, *InsideClimate News* and *The Weather Channel*.

While residents want to know whether gas drilling is affecting the air near their homes — where emissions can vary dramatically over the course of a day — regulators generally use methods designed to assess long-term, regional air quality.

They're "misapplying the technol-

ogy," said lead author David Brown, who conducted the study with three of his colleagues at the Environmental Health Project.

Stuart Batterman, an environmental health sciences professor at the University of Michigan, said the study underscores the need for specialized monitoring programs that target community health.

But creating these programs is difficult, Batterman said, because scientists don't fully understand the emissions coming from natural gas facilities. Air pollutants ebb and flow based on equipment malfunctions, maintenance activities and the weather. They're released from storage tanks, compressor stations and pipelines during every step of the process: drilling, hydraulic fracturing, production, and processing.

"Unfortunately, the states don't have much in the way of discretionary funds," to add monitors, Batterman said. "Their programs have been cut back because most legislatures are not funding their environmental agencies generously."

No easy solutions

The Pennsylvania report is the latest demonstration of how little is known about the health impacts of

unconventional natural gas development, which uses hydraulic fracturing to extract tightly bound gas. In February, 190 experts from industry, government and the medical community gathered in Philadelphia to discuss major data gaps. The conclusions they reached were almost identical to those in a recent study in Environmental Science & Technology that cited a lack of “comprehensive” public health research.

Isobel Simpson, an atmospheric scientist at the University of California-Irvine who was not involved with the Pennsylvania study, said the group’s paper shows the lack of a one-size-fits-all solution.

“Air quality monitoring is complex, so you need a range of [methods] depending on what your goal is,” she said. Is the research about asthma or cancer? Overall air quality or human health? “All of those weigh into the strategy you’re using.”

Many federal and state-run monitors average their data over 24 hours or take samples once every few days. It’s a technique that’s been used for decades to assess regional compliance with the Clean Air Act. But natural gas facilities have sporadic emission spikes that last just a few hours or minutes. These fleeting events, which release particulate

The averaging technique is “useless” for detecting pollution spikes. “If the police had to use 24-hour averaging for enforcing speed limits, nobody would ever speed. It would average out.”

— Neil Carman, clean air director of the Sierra Club’s Lone Star Chapter in Texas

matter, volatile organic compounds and other harmful toxins into the air, can quickly lead to localized health effects. When averaged over 24 hours, however, the spikes can easily be ignored.

The averaging technique is “useless” for detecting pollution spikes, said Neil Carman, clean air director of the Sierra Club’s Lone Star Chapter in Texas. “If the police had to use 24-hour averaging for enforcing speed limits, nobody would ever speed. It would average out.”

The situation in Texas’ Eagle Ford Shale, which spans an area nearly twice the size of Massachusetts, is particularly problematic because

there's little monitoring of any kind. The Texas Commission on Environmental Quality (TCEQ) — the state's environmental regulator — operates just five permanent air monitors in the region, none of them located in heavily drilled areas.

Instead, most of the monitoring in the Eagle Ford is conducted through sporadic TCEQ surveys or investigations of citizen complaints.

But spot monitoring can only catch a fraction of the emission spikes.

“Attempts to capture these peaks with 24-hour [averages]; through periodic or one-time spot sampling (under 24 hours); or after a complaint has been filed, will most often miss times of peak exposure,” the authors of the new study wrote.

Batterman, the University of Michigan professor, said 24-hour samples are still useful for long-term health studies, since pollutants like benzene and particulate matter can lead to chronic effects that don't show up until years or decades later.

Ideally, scientists should use a combination of methods to monitor long-term and acute impacts, he said, “but there are technology and cost issues.”

The best way to analyze short-term impacts like skin rashes and

headaches is to take frequent samples over a sustained period of time, said Beth Weinberger, a co-author of the new study. She and her colleagues assessed indoor air quality in 14 homes near drilling sites by taking measurements of fine particulate matter once a minute for up to 24 hours. After examining their data, they found that some homes had very high levels of particulate matter more than 30 percent of the time.

“It was alarming, because we realized if fine particulate matter was getting into the house, other things, like benzene and formaldehyde, probably were as well,” Brown said.

Weinberger said her group is now working with other organizations to find affordable monitors that would allow them to take indoor and outdoor samples so they can design better studies.

Flawed investigations

The limits of air monitoring are especially apparent when regulators respond to citizen complaints near drilling sites.

“The plume touchdowns or emission events are often quite short, and by the time anybody comes out there and sets up their monitoring [equipment], there's nothing to

measure,” Batterman said. “I have some sympathies for the regulated community because it’s very difficult to validate these exceedances that certainly occur.”

In the Eagle Ford, the TCEQ has up to 30 days to investigate a complaint. In Pennsylvania, the deadline is usually two weeks. In Colorado, inspectors often respond within 24 hours, according to a spokesman for the state’s Air Pollution Control Division. (The TCEQ refused to make any of its experts available for phone interviews.)

InsideClimate News and the Center for Public Integrity reviewed more than a dozen TCEQ investigation reports on Eagle Ford oil and gas-related complaints. In most cases, regulators responded by taking instantaneous air readings next to industrial facilities. Some inspectors conducted an initial survey by sniffing the air for detectable odors, then returned days later with monitoring equipment. On several occasions, the instruments detected such high levels of contaminants that inspectors fled the site.

Weinberger said the TCEQ’s practice of taking quick “grab samples” is “the perfect design” to miss detecting emission spikes.

“That’s what you do if you’re not

interested in capturing episodic exposures,” she said.

Weinberger said more frequent and consistent sampling is needed, such as monitoring once an hour for two weeks. Regulators can then compare the individual data points with existing health standards to see how often they’re exceeded.

Even when scientists use the right monitoring techniques, it can be hard to figure out what the numbers mean.

Federal air quality standards exist for only six chemicals: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead. All other pollutants, including dozens of volatile organic compounds, are managed by a patchwork of occupational standards and state guidelines.

Texas, for instance, uses short-term exposure guidelines of 180 parts per billion for benzene and 4,000 parts per billion for toluene to determine whether a situation requires further investigation.

Other states have different guidelines, and some chemicals have none at all because little is known about their health impacts. The guidelines have another flaw: They don’t fully consider what happens when people are exposed to many chemicals at once, as is common near gas and oil production sites. ■