

Reckless Endangerment While Fracking the Eagle Ford

Summary, September 2013 / For the full report, go to
eaglefordreport.earthworksaction.org

GOVERNMENT FAILS, PUBLIC HEALTH SUFFERS AND INDUSTRY PROFITS FROM THE SHALE OIL BOOM



EARTHWORKS™

OIL & GAS ACCOUNTABILITY PROJECT

Reckless Endangerment:

**GOVERNMENT FAILS.
PUBLIC HEALTH SUFFERS.
AND INDUSTRY PROFITS FROM THE
SHALE OIL BOOM.**

Without exception – rules governing oil and gas development are inadequate to protect the public. What rules there are, are inadequately enforced.

In an unprecedented investigation of oil and gas operations and government oversight in Texas's Eagle Ford Shale, Earthworks reports a toxic mix of irresponsible industry operators and negligent regulators, and the families who suffer the consequences. Specifically, Reckless Endangerment while Fracking the Eagle Ford, reveals:

- 1 Residents requested state regulators provide relief from oil and gas air pollution
- 2 Regulators discovered pollution so dangerous they evacuated themselves
- 3 Regulators took no subsequent action to warn or otherwise protect the residents at risk
- 4 Regulators took no subsequent action to penalize the responsible company
- 5 Residents continue to live with exposure to dangerous oil and gas air pollution

Oil and gas operations in shale formations release chemicals to air, water, and soil that are hazardous to human health.

Government shares the blame for these releases because rules governing oil and gas development don't protect the public. Adding insult to injury, state regulators don't

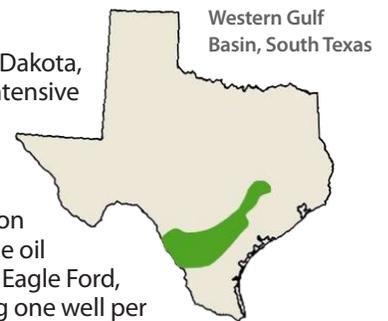
reliably enforce these rules. By failing to deter reckless operator behavior, regulators practically condone it, thereby increasing health risks for residents living near oil and gas development.

THE EAGLE FORD SHALE BOOM

Like the Bakken Shale in North Dakota, the Eagle Ford Shale is under intensive development because in addition to natural gas, it produces oil.

Because shale oil well production declines extremely rapidly, shale oil drilling is very intensive: In the Eagle Ford, some operators are now drilling one well per 40 acres meaning there are cases where more than a dozen wells could be drilled within one mile of a family's home.

The more wells and facilities near a home, the more likely accidental, scheduled and negligent releases of large quantities of toxic air pollutants will occur in close proximity to that home.



Very short distance to homes

A typical scene in southern Texas. Note the home on the left directly downwind of the flaring. The windsock (circled center) is used by the well operators to indicate wind direction so they can stay clear of the fumes of VOCs and hydrogen sulfide emissions. Of course homes and families cannot move themselves to a safer location. Another home is on the right, circled.

THE CERNY FAMILY

The Cerny family lives in Karnes County in the heart of the Eagle Ford Shale. Since November 2010, 18 oil wells have been drilled and fractured within a mile of the Cernys. Within approximately 2 miles of the Cernys are 37 existing oil wells, several oil and gas processing facilities and a saltwater injection facility. Dozens of additional wells and facilities are within 4 miles.

In 2012, Myra Cerny contacted Earthworks because her family was experiencing a variety of new health problems caused by the strong odors and fumes from shale oil and gas development surrounding her home. Without positive result, they had filed numerous complaints with state regulators before contacting Earthworks.

In March 2013, representatives of Earthworks and ShaleTest traveled to Karnes County to investigate the Cernys' complaints, take air quality samples, and look for fugitive emissions from Eagle Ford Shale facilities close to the Cerny home.

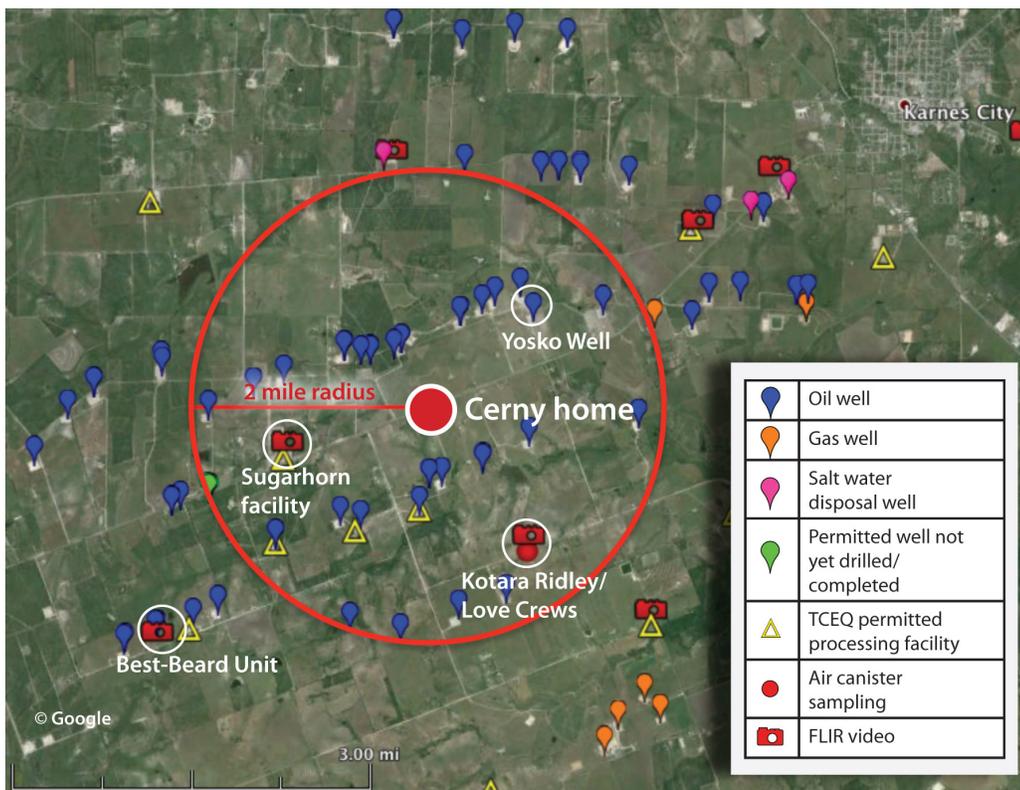


Mike, Myra, and son Cameron Cerny. Click for a short interview with the Cerny family www.youtube.com/watch?v=rhuDUWLx9rE

STATE REGULATORS FAIL TO PROTECT THE PUBLIC

The Cernys and other Karnes County residents have filed more than 30 air complaints with Texas state regulators (Texas Commission on Environmental Quality / TCEQ, and the Railroad Commission / RRC) related to oil and gas operations. The reported problems include:

- Odors described by residents as bad, terrible, sulfur-like, hydrogen sulfide, rotten egg, crude, petroleum, chemical, dust, and more.
- Health impacts associated with odor events: headaches, nausea, rashes, vomiting, burning eyes/nose/throat, nosebleeds and other effects.



37
number of wells within a two mile radius of the Cerny residence.

>30
number of complaints Karnes County residents have filed with state regulators.

0
number of records of penalties issues by state regulators.

Two mile radius around the Cerny home. Since November 2010, 18 oil wells have been drilled and fractured within a mile of the Cernys. Within approximately 2 miles of the Cernys are 37 existing oil wells, several oil and gas processing facilities and a saltwater injection facility. Dozens of additional wells and facilities are within 4 miles.

TCEQ Tests Facilities Near the Cerny Family

1 TCEQ'S SUGARHORN INVESTIGATION Air pollution too dangerous to measure

An Open Records request filed with TCEQ revealed four visits by TCEQ inspectors and two additional compliance investigations in 2012 at the Sugarhorn Central Facility operated by Marathon Oil EF LLC. The Sugarhorn facility is approximately 1.3 miles southwest of the Cerny home. (See map on previous page.)

A TCEQ investigation summary related, "upwind and downwind Summa canister samples would be taken only when the TVA monitor reads 5 parts per million (ppm) or greater above background and a receptor was within a quarter of a mile." Note: TVA is a Toxic Vapor Analyzer—a handheld device used to measure volatile organic compounds.

But no canister samples were taken during these investigations even though TCEQ's testing requirements were met. The June 15, 2012 investigation notes stated:

"TVA measured 132 ppm VOCs downwind of the facility. Canister samples were not taken as the VOC measurement was **too high to safely obtain the samples** [emphasis added]."

Despite these findings, TCEQ has no record of warning nearby residents. Nor did they take canister samples at nearby receptors in order to try to determine residents' potential exposure to the chemicals emanating from the facility.

SUGARHORN: Pollution too dangerous to measure, not dangerous enough to penalize

On January 24, 2013 Marathon was issued Notices of Violation for: 1) failing to operate the facility with all air pollution emissions capture and abatement equipment working; and 2) late reporting of emissions events; exceeding emissions represented in an air permit.



Photo: TCEQ

On February 19, 2013 Marathon sent a letter to TCEQ indicating that the company had provided various awareness trainings to its employees to make sure that they knew how to operate flares properly and could recognize emissions events. According to TCEQ, these trainings resolved the violations.

There is no record of further enforcement action, such as issuing a fine or penalty.

2 TCEQ'S YOSKO INVESTIGATION Pollution required evacuation of investigators

On March 1, 2012 investigators visited the Yosko Number 1 Production Facility, operated by Marathon Oil EF LLC, approximately 1.13 miles northeast of the Cerny home.

At this site, Volatile Organic Compounds (VOCs) were detected at 1,100 ppm. According to the investigation report:

"The **Recon team evacuated the area quickly to prevent exposure** [...] This facility is located less than a mile from the Complainant's residence."



The complainant's residence is 0.7 miles away, and the closest residence is approximately 400 feet from the facility. TCEQ did not measure VOC levels at nearby residences.

YOSKO: Too dangerous for TCEQ staff, not dangerous enough to issue a violation

No violation was issued for this pollution event. TCEQ emailed Marathon on March 2, "Repair, replacement, or shut down of this unit should occur as soon as possible, as the alternative shall be recommendation of a nuisance violation." On March 5, Marathon responded stating that the leak had been repaired on March 1.

The investigation report concluded that, "No nuisance was verified by the investigator during this investigation at this time... although no nuisance violation was verified, it is possible that the leak [...] at the Yosko Number 1 Production Facility [...] may have created a nuisance odor situation."

VOC levels were so high that the inspectors left the site. But they did not take further action to reduce pollution, cite the operator, nor warn residents.

Earthworks and Shale Test Investigate near the Cerny Family

To identify the presence of pollutants linked to both shale oil development and health symptoms being experienced by the Cerny family, Earthworks/ShaleTest tested air using Summa Canisters – for methane and VOCs such as benzene, and a FLIR GasFindIR Camera – an infrared camera which makes invisible VOC and methane emissions, visible.

Summa Canister tests at and near the Cerny home showed VOCs and methane in concentrations that exceed TCEQ’s long-term Air Monitoring Comparison Values (AMCVs). FLIR camera showed large volumes of VOCs emitted at oil and gas operations near the Cerny home as well.

Many of the chemicals detected in the canister samples are known to be associated with both oil and gas operations and with the health symptoms being experienced by the Cerny family members.

The Cernys filled out a health survey provided by Earthworks. They reported symptoms parallel to what Earthworks found in its survey of more than 100 residents living near Marcellus shale gas operations in Pennsylvania.

As shown in the table below, health problems experienced by the Cerny family are in close agreement to health effects from chemicals known to be released from nearby oil and gas operations. Several of these chemicals were detected in the air samples collected by Earthworks. Additionally, it is important to specifically mention hydrogen sulfide, which is known to be associated with shale oil and gas development in the Eagle Ford area. Information from Texas Railroad Commission (RRC) shows that hydrogen sulfide is present in all three of the major Eagle Ford Shale fields, including the one being developed around the Cernys.

Summa Canister tests at and near the Cerny home showed VOCs and methane in concentrations that exceed TCEQ’s long-term Air Monitoring Comparison Values.



SHALE TEST INFRARED VIDEO: Recorded VOC Emissions
FLIR GasFindIR Camera

Sugarhorn Central Facility
Operator: Marathon Oil EF LLC
Lat 28.83075, Long -97.95397
Date: March 4, 2013
1.3 miles from Cernys
<http://eaglefordreport.earthworksaction.org>

Symptom experienced by all three Cernys	Ranking of the same symptom in the Pennsylvania surveys
Increased fatigue	1
Nasal irritation	2
Throat irritation	3
Sinus problems	4
Eye burning	5
Joint pain	7
Severe headaches	9
Difficulty breathing	14
Skin rashes	20

Comparison of Cerny symptoms to those experienced by Pennsylvania Marcellus shale residents. Some of the health symptoms experienced by all three Cerny family members, compared to the top ranked symptoms among Pennsylvania survey participants. (#1 being most commonly reported.)

All three of the Cernys also experienced tension, agitation, dry eyes, persistent cough, and ringing in ears.

Table: Health effects of chemicals detected in Karnes County air samples (after Colborn et al.)

Chemical name	Sensory	Respiratory System	Gastro-intestinal	Brain / Nervous	Immune System	Kidney	Cardio/Blood	Cancer/Tumor	Geno-toxic	Endo-crine	Liver/Met	Other
Benzene												
Toluene												
m-Toluene												
p-Toluene												
1,2,4-Trinitrobenzene												
n-Heptane												
n-Hexane												
Cyclohexane												
n-Octane												
n-Nonane												
Methane												
Overlap with Cerny symptoms	✓	✓	✓	✓			✓				✓	✓

Sensory = skin/eye/sensory organ; Brain/Nerv = brain/nervous system; Immune = immune system; Kidney = kidney; Card/Blood = cardiovascular/blood; Cancer/Tumor = cancer/tumorigen; Geno-toxic = genotoxic; Endocrine = endocrine system; Liver/Met = liver/metabolic

Conclusions

Evidence from TCEQ and Earthworks/ShaleTest investigations indicate that air pollution from oil and gas development in the Eagle Ford Shale definitely threatens, and likely harms, the health of Karnes County Texas residents, including the Cerny family. Despite these findings, no action has been taken by regulators to rein in irresponsible operations, or otherwise protect area residents. Specifically:

HEALTH THREATS

- TCEQ discovered air pollution from oil and gas development operations in Karnes County, close to the Cernys and other residents, so dangerous that TCEQ evacuated its onsite investigators.
- Canister samples detected chemicals of concern close to an Eagle Ford Shale facility and the Cerny home.
- FLIR camera videos revealed that numerous facilities in Karnes County, including facilities close to the Cerny home, have gaseous emissions.
- There are many sources of permitted and unpermitted pollution from oil and gas facilities close to the Cerny family.
- Hydrogen sulfide is present in the Eagle Ford Shale at concentrations that may pose a threat to public health.

REGULATORY FAILURES

- Despite finding oil and gas air pollution too dangerous for its own investigators, TCEQ did not act to protect the public.
- TCEQ did not take any meaningful steps to penalize the operator or prevent future violations.

These conclusions highlight a lack of attention and concern for the citizens by government regulators to even try to understand and prevent the impacts of Eagle Ford Shale development on public health.

By failing to measure and monitor toxic emissions from shale oil facilities in the Eagle Ford Shale, the TCEQ, RRC and industry are treating the Cernys as inconveniences to be ignored, and are endangering the health of many residents living amidst this shale oil boom.

Recommendations

Although existing data strongly indicate that the public needs to be concerned about the public health impacts from exposure to air pollution from oil and gas development, regulators are not taking this public health threat seriously – as expressed in their lack of oversight, and in their inaction when problems are brought to their attention.

Such inaction helps explain why communities across the nation are considering bans to fracking-enabled oil and gas development.

To put communities first, Earthworks recommends the state of Texas take the following actions:

Protect affected communities

- Regulators must be required to act quickly to protect the public.
- TCEQ should immediately set up a network of long-term air quality monitoring sites in the Eagle Ford Shale. This is important for determining the potential for residents to be exposed to hazardous air pollutants.
- The state of Texas, working with appropriate federal agencies (e.g, the the Agency for Toxic Substances and Disease Registry with the Center for Disease Control and Prevention) or others, must rigorously investigate the current and future health impacts of oil and gas development in the Eagle Ford Shale.

Fix regulatory failures

- Regulation and enforcement of oil and gas development must be overhauled so as to deter potential violators and prevent repeat violations.

Recognize oil and gas development isn't sacrosanct

- Until the state can demonstrate that it can adequately oversee oil and gas development and protect public health, the state must not permit new development. Currently, Texas regulators are putting industry economic interests before public health.

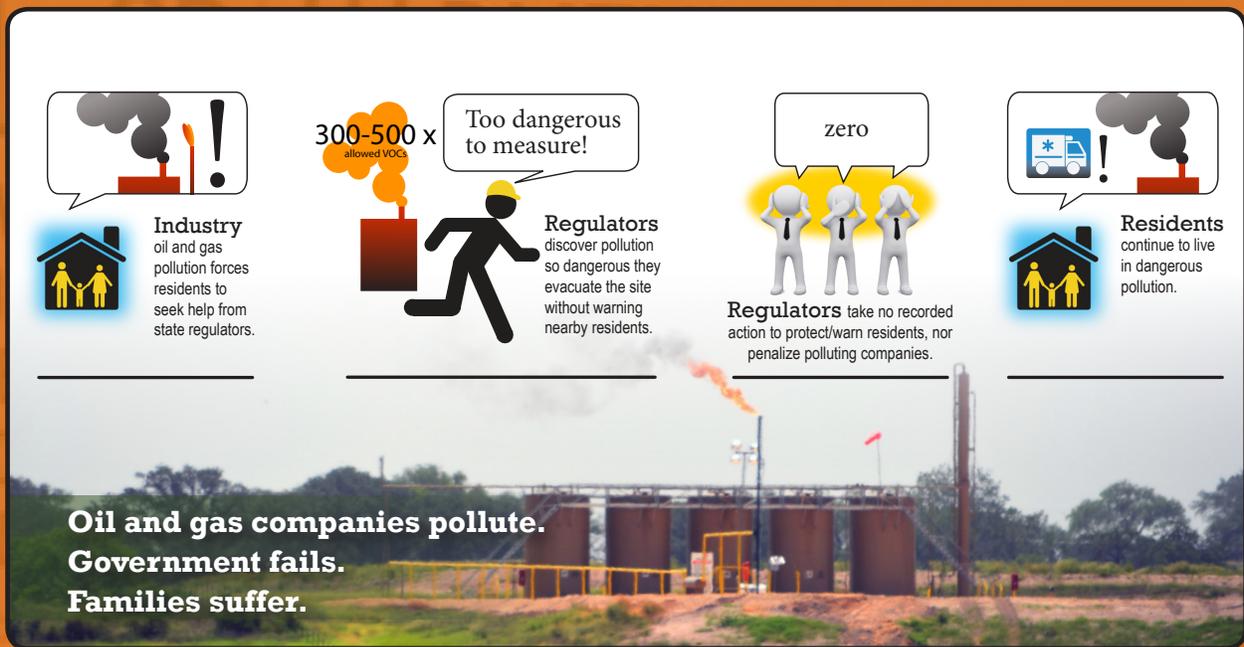


A warning sign in Karnes County, Texas at a wellsite.

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The Summary



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For 25 years, Earthworks has been working with communities and residents living in close proximity to oil and gas development to address potential links between health impacts and oil and gas development.