

Citizen Concerns regarding the Cumulative Impacts to Communities from Shale Gas Development

Project Title: *Expanding Shale Gas Operations: Is Current Monitoring Enough?*

Location: Robinson Township, Smith Township and West Pike Run Township, Washington County, PA

Project Goal: The goal of this citizen-driven project was to demonstrate the need for additional monitoring on a long-term, more permanent basis so that members of the public can better understand the potential risks to their health and their communities posed by the rapid expansion of the oil and gas buildout in western Pennsylvania. This project was intended to influence state and local decision makers so they might consider the cumulative impacts of this buildout and limit the number of permitted sites in concentrated geographic areas.

The Team:

- Concerned residents in the Washington County, PA communities of Buffalo Township, Robinson Township, Smith Township, West Pike Run Township, led by Cathy Lodge, Robinson Township resident
- Dr. Albert Presto, Associate Research Professor, Mechanical Engineering, Carnegie Mellon University
- Leann Leiter, Oil and Gas Field Advocate, Earthworks
- Lisa Graves Marcucci, Environmental Integrity Project, Pittsburgh, Allegheny County, PA
- SW Pennsylvania Environmental Health Project team, McMurray, Washington County, PA

The Initial Challenge:

Areas like Washington County, PA are home to massive industrial buildouts of the shale gas industry. In fact, some communities are, literally, being surrounded by increased infrastructure. For some, this increased industrialization is being unfairly focused on areas chosen by companies with a vested interest with little to no regard for the ever increasing risks to the same communities. As oil and gas operations continue to dot the landscape, many continue to ask the following important questions:

- How can concerned residents get much needed attention on the risks?
- When will the cumulative impacts be considered?
- Who will be responsible for determining when the public risks outweigh the private benefit – i.e., when stepping forward to perform the necessary evaluations to properly and objectively consider when is too much, too much?
- And, how can concerned citizens seek to achieve this additional oversight?

In an attempt to answer some of these long-standing questions, local citizens in Robinson Township, Smith Township, and West Pike Run Township sought help from Southwestern Pennsylvania Environmental Health Project (SWPA EHP) as well as experts from the Environmental Integrity Project (EIP), Earthworks, and engineers at Carnegie Mellon University (CMU).

The team faced a difficult challenge: how to demonstrate the need for monitoring and oversight within a permitting scheme that had too few monitors and a state regulatory agency that is overwhelmed, understaffed and severely underfunded. The project faced a challenging dilemma: using very limited

resources and severely limited access to permitted sites, how could the team create awareness to the need for more monitoring?

The Methods:

The team had several in-person planning meetings, including a tour of shale gas development sites in Buffalo Township, Robinson Township, Smith Township and West Pike Run Township – all in Washington County, PA.

Additional phone meetings were held and fieldtrips were conducted – specifically, with regard to FLIR (Forward Looking Infrared) camera imaging and some limited in-home and exterior monitoring. Team members also met with families who participated in the project.

Participants in the project accepted the fact that the project would be limited in scope, but would attempt to identify locations where increased infrastructure could be posing increased risk exposures and where additional monitoring made sense. This was a challenge given limited resources meant limited monitoring – all while seeking to find a method to demonstrate the need for increased monitoring by state and local authorities.

Sites for inclusion in the project were chosen using the following factors:

- Visual line of sight close enough to the facility without causing trespass
- Known resident living near the site willing to participate in the project
- Compatibility for FLIR imaging

The Washington County, PA sites selected included:

- EQT Blue Moon Compressor Station, West Pike Run Township, PA
- EQT Twilight Compressor Station, West Pike Run Township, PA
- ETC Bulger Compressor Station, Smith Township, PA
- MarkWest 3 Brothers Compressor Station, Smith Township, PA
- MarkWest Harmon Creek Cryogenic Plant, Smith Township, PA
- MarkWest Welling Compressor Station, Buffalo Township, PA

Limited resources provided for some additional monitoring that included:

- Speck monitors for particulate matter
- Summa canisters for total VOC monitoring
- Aldehyde badge monitoring
- A review of current air quality monitoring sites currently in place and overseen by the PA Department of Environmental Protection (PA DEP) and/or the Allegheny County Health Department (ACHD)

Additionally, the project also sought to accomplish the following:

- **Petition the PA DEP to add more permanent, stationary air quality monitors** – closer to the affected communities in Washington County, PA.

- **Seek additional, stationary Volatile Organic Compound (VOC) air quality monitors** to be placed on properties adjacent to a select number of compressor stations and cryogenic processing plants, including those sites included in this project.
- **Seek meetings with regulatory agencies including the PA DEP, the US EPA and the Allegheny County Health Department** in order to share first-hand accounts from families impacted by the massive industrialization of these Washington County communities. The goal of these meetings would be to urge a change in how applications for additional facilities and/or modifications to existing operations are evaluated and reviewed by regulatory authorities. Specifically, **seek a commitment from regulators to require mapping of the current and proposed facilities by staff members as part of the permit application review process so that cumulative impacts can be considered.**

The Results:

Although we knew our project would not provide a definitive data outcome, our goal was to use existing public file documents coupled with limited, real-world monitoring data, news accounts, and citizen testimonials to call attention to the fact that there are certain rural communities that are experiencing disproportionate risks when it comes to impacts from oil and gas expansion. In addition, citizens want decision-makers to recognize that a single project cannot be considered in a vacuum; full consideration must be given to cumulative impacts when weighing whether another project should go forward.

As expected, achieving compelling data was difficult for the following reasons:

- Limited visual access to some of the sites
- Limited access to monitoring equipment on a more regular basis
- Lack of on-going monitoring for longer periods of time
- Lack of funding for continuing summa canister monitoring/testing

However, some important results were obtained as a result of the project. These include:

- FLIR images of emissions from project sites were obtained, where possible. Although FLIR images, themselves, are not conclusive of exactly what is being emitted, those images are a valuable means to begin important conversations involving citizens, local leaders, scientific experts and overseeing regulators. And, when more definitive information can be discerned from FLIR images, that information could be used to urge more oversight and accountability by decision makers. Links to the FLIR images captured as part of the project are included in Table 1 in the *Observations and Other Resources* section, below.
- Due, in part, to the concerned citizen teams participating in this project, key local, regional and national news stories resulted. Links to key news stories are included in *Observations and Other Resources, News Stories* section, below. Additional news stories are included at the end of this report in the *Additional Resources* section.
- In the final phase of the project, a day-long tour involving in-person meetings with local families in the communities and two air quality team members from the PA DEP, SW Regional Office was arranged. Families participating in the project were able to meet with the head of the air quality inspection team as well as the newly assigned air quality inspector for their area. This meeting provided a foundation for future, constructive dialogue between concerned community members and key regulatory staff members.

- In the following weeks, additional meetings between the PA DEP staff and local concerned residents, local government officials and advocacy teams took place. The results included the possibility of a Notice of Violation (NOV) being issued to one of the sites included in the project: MarkWest's Harmon Creek cryogenic plant.
- A tentative commitment from the PA DEP to consider the addition of at least one more stationary monitor closer to some of the project's sites.
- Increased oversight by a newly hired PA DEP Air Quality Inspector, specifically assigned to the Robinson Township and Smith Township areas.
 - This oversight now involves more communications between the PA DEP Inspector, local concerned residents, Smith Township officials and their Solicitor. Important lines of communication are being created where none previously existed.
- And, as part of discussions with team members from Carnegie Mellon University (CMU) CREATE Lab, expanded monitoring for total VOCs is now underway. Monitors will be placed in four Washington County, PA locations – near several of the project sites – on a permanent basis. Those monitors will assist in determining when additional summa canister monitoring can be done in a more precise timeline.

Reflections:

The challenges with this project were significant as our resources were limited. Although the team is grateful for the assistance and resources provided by partner groups, those resources were not enough to achieve sufficient data-driven evidence that could be used to require more monitoring and analysis of cumulative impacts. However, in the absence of sufficient scientific evidence, the team did achieve some meaningful results including more engagement between the PA DEP and concerned local residents. Important conversations have begun that could very well yield additional oversight of several of the project sites. And, there is serious consideration by the state regulators to add more, stationary air quality monitoring. Last, our team has a new commitment for the placement of four, total VOC monitors by the CMU CREATE Lab team. Those developments could be significant in achieving some of the data-driven evidence this project was unable to obtain. Important progress is underway.

Given the challenges of this project, the effort was worthwhile. Future attempts to replicate this project should include more resources to ensure long-term, stationary monitoring earlier in the process.

Conclusions:

This project sought to obtain scientific evidence pointing to a need for more air quality monitoring in these heavily affected communities. However, the goals outlined in the initial project proved daunting without more dedicated resources in order to provide the necessary long-term monitoring. The lack of sufficient data-driven monitoring information made it difficult for our scientific lead, Dr. Albert Presto, to provide definitive recommendations even though the team was in agreement that additional, increased consistent, stationary monitoring would be important for these communities in an effort to better understand the risks posed by the shale gas buildout.

We greatly appreciate Dr. Presto's interest in the project and his time in reviewing the limited data collected, however, without more definitive data, scientific recommendations were also limited. It is the

hope of the citizen team involved in this project that should a commitment be made by the PA DEP to add air quality monitors in these communities, we could call upon Dr. Presto as well as the CREATE Lab and SW PA EHP teams to assist the residents in making recommendations on exactly where those newly added monitors should be placed in order to facilitate increased data collection.

And, as a result of the project several key developments were realized. Those include:

- Important meetings between the PA DEP staff, local concerned residents, local government officials and advocacy teams have now paved the way for more regulatory oversight and the inclusion of local families' concerns.
- Increased oversight by a newly hired PA DEP Air Quality Inspector, specifically assigned to the Robinson Township and Smith Township areas.
- A tentative commitment from the PA DEP to consider the addition of at least one more stationary monitor closer to some of the project's sites.
- And, for the first time, expanded total VOC monitoring made possible by the Carnegie Mellon University (CMU) CREATE Lab is now underway. Monitors will be placed in four Washington County, PA locations – near several of the project sites – on a permanent basis. Those monitors will assist in determining when additional summa canister monitoring can be done in a more precise timeline.

There remains much to be done, however, we see this as the beginning of a long overdue process.

Thanks to our project team members including the following:

- Cathy Lodge, resident Robinson Township, Washington County, PA
- Lois Bjornson, resident of Scenery Hill, Washington County, PA
- Kasey and Sam Duran, residents of Smith Township, Washington County, PA
- Trina and Mike Tokarski, residents of Smith Township, Washington County, PA
- Dave Matijevich and Robin Walker, residents of Smith Township, Washington County, PA
- Jim Powell, resident of Buffalo Township, Washington County, PA
- Lisa Graves Marcucci, Environmental Integrity Project, Pittsburgh, Allegheny County, PA
- Leann Leiter, Earthworks, Canonsburg, Washington County, PA
- Dr. Albert Presto, Associate Research Professor, Mechanical Engineering, Carnegie Mellon University, Allegheny County, PA and members of the CMU CREATE Lab.
- The wonderful team of health professionals and community outreach team with the SW Pennsylvania Environmental Health Project including:
 - Raina Rippel, Director
 - Jill Kriesky, Ph. D, Associate Director
 - Nathan Ribar, MS, Environmental Health Educator
 - Hannah Blinn, Environmental Health Educator
 - Sara Rankin, MPH, BSN, OCN, Public Health Nurse
- And, a special thanks to the American Geological Union for the opportunity to initiate this project under the leadership of Natasha Udu-gama, Ph. D., Senior Specialist, Thriving Earth Exchange. We are grateful for her help in initiating the project, introducing the team to Dr. Albert Presto and guiding the team throughout the entirety of the process.

Project Observations and Other Resources:

Table 1 – Washington County sites Earthworks included as part of the limited project with links to videos

Site	Township	Company	Findings
Blue Moon Compressor Station	West Pike Run Township	EQT	<p>8 Earthworks site inspections since Sept. 2016. 7 publicly-available FLIR videos: https://youtu.be/d9PG3UESILs, https://youtu.be/DqX2M86wMcQ, https://youtu.be/840oHMtIb8, https://youtu.be/kIFB2IaLpNQ, https://youtu.be/MEM2RCIf_Xk, https://youtu.be/N5_k_BpRYak, https://youtu.be/hDgQgvUjTeE</p> <p>2 complaints filed; both closed with no action taken.</p>
Bulger Compressor Station	Smith Township	Energy Transfer Partners/ETC/Sunoco	<p>No successful emissions documentation with FLIR camera. However, the team submitted a complaint on the Revolution Cryogenic Plant using digital video recorded by a local resident showing emissions visible to the unaided eye, seen here: https://youtu.be/khJnVSQvAUg</p> <p>Complaint closed with no action taken.</p>
Harmon Creek Cryogenic Plant	Smith Township	MarkWest Energy Partners/Marathon/MPLX LP	<p>Several Earthworks site inspections prior to plant operation. 1 publicly-available FLIR video, from March 2019: https://youtu.be/ijq_3kzkVCE</p>
Twilight Compressor Station	West Pike Run Township	EQT	<p>6 Earthworks site inspections since July 2016. 6 publicly-available FLIR videos: https://youtu.be/0x4RC0mc-mg, https://youtu.be/WiBnsm8oems, https://youtu.be/1h1DIpfknZA, https://youtu.be/LVVdE5ovxaE,</p>

			https://youtu.be/hmshkjZVKYI , https://youtu.be/nAFDYi7EBuc 2 formal complaints filed; both closed with no action taken.
Welling Compressor Station	Buffalo Township	MarkWest Energy Partners/Marathon/MPLX LP	6 Earthworks site inspections with FLIR camera since April 2015. 4 publicly-available FLIR videos: https://youtu.be/KaCCzVfbekc , https://youtu.be/bj3uwAAfAYc , https://youtu.be/dAVK3p82K7Q , https://youtu.be/rvbttofJDGQ 1 formal complaint filed (still open) based on 3/14/19 site inspection.

Photos:



Driving tour of shale gas operations, Washington County with Dr. Albert Presto, CMU



MarkWest 3 Brothers Compressor Station, Smith Township, PA.
Photo courtesy of Bob Donnan.



Citizen team member showing mapping project, shale gas operations permitted in several Washington County communities.



Two cryogenic plants in Smith Township, PA. Photo courtesy of Bob Donnan.

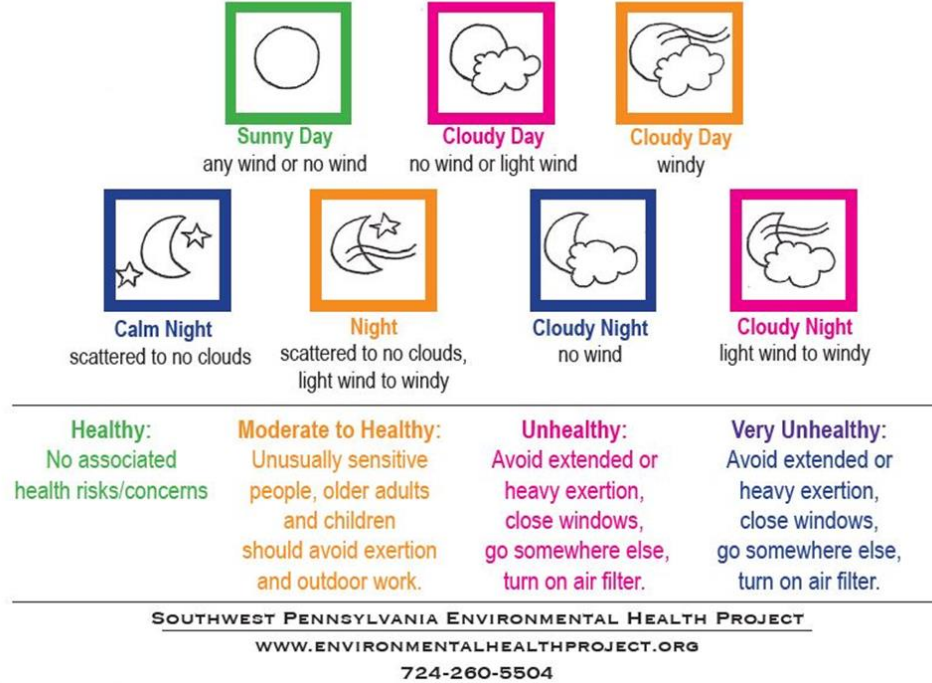
PA Citizens' Toolkit: Another valuable resource for local citizens and their elected officials can be found at the *Environmental Integrity Project's PA Citizens' Toolkit*:

<https://www.environmentalintegrity.org/what-we-do/oil-and-gas/> This informational toolkit provides descriptions of key portions the public notification and participation requirements, as well as fact sheets and example templates, so that citizens and decision makers can better prepare themselves for the onslaught of shale gas development. Being familiar with the permitting processes and industry submitted documentation can be instrumental in ensuring the local communities' seat at the decision making table.

Helpful Guide for Residents in Shale Gas Communities, from SW PA Environmental Health Project (SW PA EHP) <https://www.environmentalhealthproject.org/>:

In order to assist local residents living near shale gas sites understand potential air quality risks, SWPA EHP developed a helpful guide linking certain meteorological conditions with potential health risks. In particular, this guide may help folks determine when it's best to keep windows closed so as to reduce exposures within their homes or planned outdoor activities. Because some of sporadic and often episodic nature of emissions from unconventional shale gas operations, citizens must remain proactive in their attempts to reduce their risks.

Air Quality Near Shale Gas Sites



This SWPA EHP chart/resource is available as a magnet that families can put on their refrigerators. If you are interested in obtaining one for your home, or want more information, contact the team at SWPA EHP.

News stories:

Inside Climate News, Plastics: The New Coal in Appalachia?

<https://insideclimatenews.org/news/25022019/plastics-hub-appalachian-fracking-ethane-cracker-climate-change-health-ohio-river>

The Nation, The Toxic Consequences of America's Plastics Boom:

<https://www.thenation.com/article/plastics-pollution-crisis-fracking-petrochemicals/>

Additional Resources:

Pittsburgh Post-Gazette, September 19, 2017: <http://www.post-gazette.com/powersource/policy-powersource/2017/09/19/Pig-launcher-health-study-DEP-Mount-Pleasant-Pennsylvania-Agency-for-Toxic-Substances-natural-gas-emissions/stories/201709150053>

ATSDR Health Consultation, Carter Impoundment, Mt. Pleasant Township:

https://www.atsdr.cdc.gov/HAC/pha/CarterImpoundment/CarterImpoundment_HC_%2007-30-2015_508.pdf

ATSDR Health Consultation, Brighc Compressor Station, Chartiers Township:

[https://www.atsdr.cdc.gov/HAC/pha/Brighc Compressor Station/Brighc Compressor Station EI HC 01-29-2016_508.pdf](https://www.atsdr.cdc.gov/HAC/pha/Brighc%20Compressor%20Station/Brighc%20Compressor%20Station%20EI%20HC%2001-29-2016_508.pdf)

SW Pennsylvania Environmental Health Project:

Main web page: <https://www.environmentalhealthproject.org/>

Environmental Health Channel: <https://envhealthchannel.org/>

Observer Reporter:

October 7, 2019, Department of Health explains cancer cluster results; parents, concerned groups call on Gov. Wolf, DOH to investigate cancers - https://observer-reporter.com/news/localnews/departement-of-health-explains-cancer-cluster-results-parents-concerned-groups/article_f8aea092-e932-11e9-ace0-1f7ba421c309.html

Pittsburgh Post-Gazette articles:

May 14, 2019, Human Toll, Part One - <https://newsinteractive.post-gazette.com/blog/childhood-cancer-pittsburgh-pennsylvania-canon-mcmillan-pollution/>

July 18, 2019, Human Toll, Part Two - <https://newsinteractive.post-gazette.com/blog/fracking-and-health-2/>

October 4, 2019, Health officials to discuss Canon-McMillan Ewing sarcoma cases - <https://www.post-gazette.com/news/health/2019/10/04/Pennsylvania-Health-meeting-Monday-Ewing-sarcoma-Canon-McMillan-deaths/stories/201910040038>

September 19, 2017: <http://www.post-gazette.com/powersource/policy-powersource/2017/09/19/Pig-launcher-health-study-DEP-Mount-Pleasant-Pennsylvania-Agency-for-Toxic-Substances-natural-gas-emissions/stories/201709150053>

Pennsylvania Capital Star: July 26, 2019, Washington County Reps Call for Federal Study of Rare Cancer – <https://www.penncapital-star.com/blog/washington-county-reps-call-for-federal-study-of-rare-cancer/>

Pitt News Editorial Board:

October 8, 2019, University of Pittsburgh - <https://pittnews.com/article/151191/opinions/editorial-better-response-needed-from-state-health-officials-in-canon-mcmillan-school-district/>

StateImpact NPR:

June 28, 2019, – ‘Something’s wrong here’: Washington County parents want Pa. to look deeper at whether fracking could be related to cancer cases - <https://stateimpact.npr.org/pennsylvania/2019/06/28/somethings-wrong-here-washington-county-parents-want-pa-to-look-deeper-at-whether-fracking-could-be-related-to-cancer-cases/>

TribLIVE: October 12, 2019, – Southwestern Pennsylvania Residents Renew Calls for Research on Possible Health Impact of Fracking - <https://triblive.com/local/regional/southwestern-pennsylvania-residents-renew-calls-for-research-on-possible-health-impact-of-fracking/>