THE THREAT OF OIL & GAS POLLUTION

Pennsylvania

Methane, the primary component of gas, is an invisible, odorless greenhouse gas that is a powerful driver of climate change—87 times as powerful as carbon dioxide during the time it remains in the atmosphere.[1] The oil and gas sector is the largest source of methane in the U.S., leaking or intentionally venting large quantities of this dangerous pollutant into our air every day. In 2014, the oil and gas industry emitted over 9.8 million metric tons of methane, a number 34% higher than previous estimates.[2] The near-term climate impact of these emissions is equal to the pollution caused by more than 200 coal-fired power plants over 20 years.

Along with methane, oil and gas facilities often release other air pollutants that can harm our health, including formaldehyde, benzene, acetaldehyde, and ethyl benzene. These toxins can cause cancer, respiratory symptoms, anemia, brain damage and birth defects, eye irritation, and blood and neurological disorders.

THE THREAT RADIUS

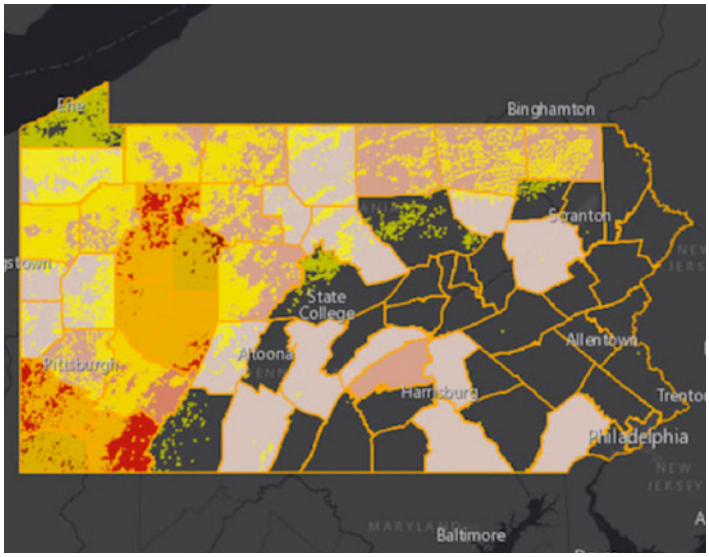
Peer-reviewed studies have documented higher levels of harmful air pollutants in and around areas with oil and gas production activity, and have shown that oil and gas facilities are the source of the excess pollution. Research indicates links between risks and/or prevalence of disease and proximity to facilities.[3] The half mile "threat radius" is a very conservative estimate of the area within which higher levels of toxic pollution are seen, and the distance within which health impacts have most clearly been correlated with the presence of oil and gas facilities.[4]

There are currently 12.4 million people living within a half mile of one of 1,193,118 active oil and gas wells, compressors, and processors in the United States. In total, 184,578 square miles are covered by the threat radius[5], which includes 11,543 schools and 639 medical facilities. Nationwide, 238 counties in 21 states face a cancer risk that exceeds EPA's one-in-a-million threshold level of concern, **including 8 counties in Pennsylvania.**[6]

OIL & GAS THREATENS PENNSYLVANIANS

Approximately 12% of all Pennsylvanians live within a half mile threat radius of an oil or gas facility. In addition to the 8 counties exceeding EPA's cancer risk level of concern, two counties' cancer risk, Clearfield and Westmoreland, is in the highest 10%. One county, Washington, both exceeds the EPA cancer risk level of concern and exceeds the EPA respiratory hazard risk level of concern (county-wide average respiratory hazard index is equal or greater than 1). Three counties, Armstrong, Greene, and Indiana, exceed the cancer risk level of concern and have a county respiratory health risk in the top 2%.

The Appalachian Basin, covering nearly all of Pennsylvania and sections of other neighboring states, was the fifth highest methane-emitting oil- and gas-producing basin in 2014, emitting 3,455,036 metric tons of carbon dioxide



MAP: OILANDGASTHREATMAP.COM/THREAT-MAP/PENNSYLVANIA

equivalent from 76,800 wells.[7] In 2014, Pennsylvania's oil and gas producers reported polluting almost 100,000 metric tons of methane[8], which is the equivalent of the greenhouse emissions generated by over 500,000 passenger vehicles in one year.[9]

THE NUMBERS[10]

TOTAL POPULATION Living in the Threat Radius (within a half mile of a facility)	**1.5 million**
TOTAL NUMBER of Active Oil and Gas Wells, Compressors, and Processors	**103,984**
NUMBER OF COUNTIES that Exceed EPA's Cancer Risk Level of Concern	**8** Armstrong, Clarion, Fayette, Forest, Greene, Indiana, Jefferson, and Washington
NUMBER OF SCHOOLS in the Threat Radius	**1,335**
NUMBER OF MEDICAL FACILITIES in the Threat Radius	**48**
SQUARE MILES COVERED by the Threat Radius	**11,317**

STRONG FEDERAL STANDARDS ARE KEY

Pennsylvania was the first state in the country to start a natural gas leak detection and repair program. The program requires operators to monitor for leaks at compressor stations and processing facilities and repairs must eliminate the leak within 15 days.[11] Pennsylvania is currently in the process of developing comprehensive state regulations for both new and existing sources that will be some of the strongest in the country. At the same time, strong nationwide standards are critical to addressing this issue.

On May 12, 2016, the Environmental Protection Agency (EPA) finalized the first-ever federal standards addressing new and modified sources of methane pollution from the oil and gas sector. These standards require, among other things, that companies regularly monitor for and repair leaks.[12] The EPA expects this rule to cut 510,000 tons of methane pollution from oil and gas facilities and equipment, the emissions equivalent of 11 coal-fired power plants or taking 8.5 million cars off the road every year.[13] These standards will also significantly impact public health by curbing emissions of smog-forming volatile organic compounds (VOCs) and toxic air pollutants.

The 2016 standards were an important first step, but in 2018, nearly 90% of methane emissions will come from *existing* sources not covered by this rule.[14] Strong methane standards for both new and existing sources are key to the Administration's ability to meet its Paris climate commitments to reduce greenhouse gas emissions 26-28% below 2005 levels by 2025.[15] Therefore, the EPA must develop strong and effective standards for existing sources as soon as possible, both to meet its legal commitments and to protect public health and welfare. **Without strong standards on existing sources, millions of people—including the 1.5 million in Pennsylvania within the threat radius—will continue to be at risk.**

COMMON-SENSE SOLUTIONS ARE READILY AVAILABLE

Thankfully, common-sense solutions exist not only to clean-up and fix methane leaks, but to boost local economies as well. More than 500 locations in 46 states are already manufacturing the equipment and providing the services needed to reduce methane pollution, **including 20 locations in Pennsylvania.** These businesses are helping to grow the local economy by creating highly skilled, good-paying jobs.[16]

ENDNOTES

1 http://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_Chapter08_FINAL.pdf
2 https://www3.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2016-Main-Text.pdf
3 http://ehp.niehs.nih.gov/1306722/
4 http://oilandgasthreatmap.com/about/threat/
5 http://oilandgasthreatmap.com/threat-map/
6 http://oilandgasthreatmap.com/threat-map/pennsylvania/
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8 http://www2.epa.gov/ghgreporting
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10 http://oilandgasthreatmap.com/threat-map/pennsylvania/
11 http://files.dep.state.pa.us/air/AirQuality/AQPortalFiles/Permits/gp/MethaneRegulations.pdf
12 https://www.epa.gov/newsreleases/epa-releases-first-ever-standards-cut-methane-emissions-oil-and-gas-sector
13 https://www.epa.gov/newsreleases/epa-releases-first-ever-standards-cut-methane-emissions-oil-and-gas-sector
14 https://www.edf.org/sites/default/files/methane_cost_curve_report.pdf
15 https://www.whitehouse.gov/the-press-office/2015/03/31/fact-sheet-us-reports-its-2025-emissions-target-unfccc
16 https://www.edf.org/sites/default/files/us_methane_mitigation_industry_report.pdf

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APPENDIX

PA Counties	Total Population	Threatened Population	Number of Facilities	Threatened Schools	Threatened Medical Facilities	Threatened Square Miles	Other Risks
Allegheny County	1,223,348	284,261	1,242	148	6	267.86	
Erie County	280,566	248,795	2,718	144	12	618.87	
Westmoreland County	365,169	211,613	6,204	101	6	615.40	County cancer risk in highest 10%
Washington County	207,820	109,462	3,422	71	3	542.82	Exceeds EPA level of concern for cancer risk* AND exceeds EPA level of concern for respiratory hazard risk**
Mercer County	116,638	91,844	3,314	82	4	556.89	
Indiana County	88,880	83,113	11,539	63	1	762.76	Exceeds EPA level of concern for cancer risk* AND county respiratory health risk in top 2%
Armstrong County	68,941	63,364	8,907	53	1	640.21	Exceeds EPA level of concern for cancer risk* AND county respiratory health risk in top 2%
Fayette County	136,606	58,454	3,374	57	0	347.25	Exceeds EPA level of concern for cancer risk*
Butler County	183,862	48,235	1,363	32	0	319.61	
Crawford County	88,765	44,084	3,137	123	1	729.24	
Warren County	41,815	36,084	11,164	59	2	581.51	
Jefferson County	45,200	35,329	5,294	94	1	556.57	Exceeds EPA level of concern for cancer risk*
Greene County	38,686	32,181	3,228	15	1	488.24	Exceeds EPA level of concern for cancer risk* AND county respiratory health risk in top 2%
Venango County	54,984	32,009	6,100	55	0	444.30	
McKean County	43,450	31,289	9,624	41	2	530.20	
Clarion County	39,988	27,007	3,684	45	2	452.88	Exceeds EPA level of concern for cancer risk*
Clearfield County	81,642	23,755	4,630	51	0	477.76	County cancer risk in highest 10%
Beaver County	170,539	13,726	182	6	0	57.08	
Cambria County	143,679	12,685	636	11	3	109.23	
Bradford County	62,622	12,500	1,164	18	0	342.67	
Susquehanna County	43,356	10,105	1,230	6	0	260.93	
Elk County	31,946	9,609	2,200	3	1	304.34	
Lawrence County	91,108	7,506	232	13	0	63.39	
Tioga County	41,981	5,099	819	4	0	169.68	
Lycoming County	116,111	4,090	858	7	0	146.49	
Potter County	17,457	4,014	1,113	13	0	221.31	
Somerset County	77,742	3,456	99	5	0	63.22	
Wyoming County	28,276	2,760	236	2	1	48.63	
Forest County	7,716	2,340	4,492	5	1	221.80	Exceeds EPA level of concern for cancer risk*
Centre County	153,990	1,376	956	3	0	146.73	
Sullivan County	6,428	880	104	1	0	41.68	
Clinton County	39,238	632	557	1	0	128.57	
York County	434,972	396	0	0	0	0.79	
Lackawanna County	214,437	289	0	0	0	2.36	
Blair County	127,089	247	7	0	0	3.52	
Bedford County	49,762	183	35	1	0	14.70	
Pike County	57,369	105	0	0	0	1.57	
Bucks County	625,249	99	1	0	0	0.79	

APPENDIX, CONT.

PA Counties	Total Population	Threatened Population	Number of Facilities	Threatened Schools	Threatened Medical Facilities	Threatened Square Miles	Other Risks
Luzerne County	320,918	86	0	0	0	0.79	
Wayne County	52,822	77	0	0	0	1.57	
Cameron County	5,085	68	113	1	0	29.68	
Huntingdon County	45,913	39	4	1	0	1.87	
Schuylkill County	148,289	19	2	0	0	0.84	
Franklin County	149,618	10	0	0	0	0.79	
Adams County	101,407	0	0	0	0	0.00	
Berks County	411,442	0	0	0	0	0.00	
Carbon County	65,249	0	0	0	0	0.00	
Chester County	498,886	0	0	0	0	0.00	
Columbia County	67,295	0	0	0	0	0.00	
Cumberland County	235,406	0	0	0	0	0.00	
Dauphin County	268,100	0	0	0	0	0.00	
Delaware County	558,979	0	0	0	0	0.00	
Fulton County	14,845	0	0	0	0	0.00	
Juniata County	24,636	0	0	0	0	0.00	
Lancaster County	519,445	0	0	0	0	0.00	
Lebanon County	133,568	0	0	0	0	0.00	
Lehigh County	349,497	0	0	0	0	0.00	
Mifflin County	46,682	0	0	0	0	0.00	
Monroe County	169,842	0	0	0	0	0.00	
Montgomery County	799,874	0	0	0	0	0.00	
Montour County	18,267	0	0	0	0	0.00	
Northampton County	297,735	0	0	0	0	0.00	
Northumberland County	94,528	0	0	0	0	0.00	
Perry County	45,969	0	0	0	0	0.00	
Philadelphia County	1,526,006	0	0	0	0	0.00	
Snyder County	39,702	0	0	0	0	0.00	
Union County	44,947	0	0	0	0	0.00	

*County-wide average cancer risk is equal to or greater than 1 in 1 million.

**County-wide average respiratory hazard index is equal to or greater than 1.