



THE THREAT OF OIL & GAS POLLUTION

Kentucky

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

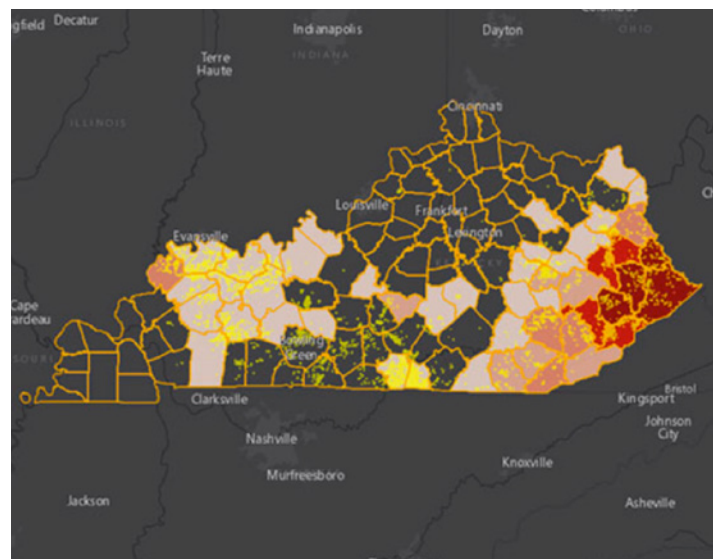
Peer-reviewed studies have documented higher levels of harmful air pollutants in and around areas with oil and gas production activity, and have shown that oil and gas facilities are the source of the excess pollution. Research indicates links between risks and/or prevalence of disease and proximity 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 radius⁵, 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 Kentucky.**⁶

OIL & GAS THREATENS KENTUCKIANS

Over 150 thousand Kentuckians live within a half mile threat radius of an oil and gas facility. The Appalachian Basin, covering part of Kentucky and sections of other neighboring states, was the fifth highest methane emitting oil- and gas-producing basin in 2014, emitting



MAP: OILANDGASTHREATMAP.COM/THREAT-MAP/KENTUCKY

3,455,036 metric tons of carbon dioxide equivalent from 76,800 wells.⁷

Eight counties exceed EPA's cancer risk level of concern. Four of these, Floyd, Knott, Martin, and Pike, also have a county respiratory health risk in the top 2%. In addition to those 8 counties, 5 counties have a county cancer risk in the highest 10%: Bell, Clay, Lawrence, Leslie, and Union.

THE NUMBERS⁸

TOTAL POPULATION Living in the Threat Radius (within a half mile of a facility)	151,000
TOTAL NUMBER of Active Oil and Gas Wells, Compressors, and Processors	11,771
NUMBER OF COUNTIES that Exceed EPA's Cancer Risk Level of Concern	8 Floyd, Johnson, Knott, Letcher, Magoffin, Martin, Perry, and Pike
NUMBER OF SCHOOLS in the Threat Radius	282
NUMBER OF MEDICAL FACILITIES in the Threat Radius	5
SQUARE MILES COVERED by the Threat Radius	2,666

STRONG FEDERAL STANDARDS ARE KEY

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.⁹ 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.¹⁰ 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.¹¹ 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 2025.¹² 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 151 thousand in Kentucky 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 two locations in Kentucky.** These businesses are helping to grow the local economy by creating highly skilled, good-paying jobs.¹³

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/kentucky/>
- 7 <https://cdn.americanprogress.org/wp-content/uploads/2016/06/20070044/MethanePollution-report.pdf>
- 8 <http://oilandgasthreatmap.com/threat-map/kentucky/>

- 9 <https://www.epa.gov/newsreleases/epa-releases-first-ever-standards-cut-methane-emissions-oil-and-gas-sector>
- 10 <https://www.epa.gov/newsreleases/epa-releases-first-ever-standards-cut-methane-emissions-oil-and-gas-sector>
- 11 https://www.edf.org/sites/default/files/methane_cost_curve_report.pdf
- 12 <https://www.whitehouse.gov/the-press-office/2015/03/31/fact-sheet-us-reports-its-2025-emissions-target-unfccc>
- 13 https://www.edf.org/sites/default/files/us_methane_mitigation_industry_report.pdf

APPENDIX

KY Counties	Total Population	Threatened Population	Number of Facilities	Threatened Schools	Threatened Medical Facilities	Threatened Square Miles	Other Risks
Warren County	113,792	10,569	562	0	0	105.91	
Pike County	65,024	9,344	176	28	1	88.89	Exceeds EPA level of concern for cancer risk* AND county respiratory health risk is in top 2%
Barren County	42,173	8,751	145	1	1	50.18	
Letcher County	24,519	7,317	331	33	0	108.46	Exceeds EPA level of concern for cancer risk*
Daviess County	96,656	7,062	584	3	0	120.67	
Clinton County	10,272	6,184	794	28	1	122.71	
Floyd County	39,451	6,129	94	3	0	47.60	Exceeds EPA level of concern for cancer risk* AND county respiratory health risk is in top 2%
Whitley County	35,637	5,938	88	8	0	43.25	
Henderson County	46,250	5,888	725	1	0	154.49	
Clay County	21,730	5,629	213	24	1	74.19	County Cancer Risk is in highest 10%
Knox County	31,883	4,632	69	7	0	27.25	
McLean County	9,531	4,498	296	0	0	77.00	
Muhlenberg County	31,499	4,080	451	1	0	104.98	
Allen County	19,956	4,047	167	1	0	53.29	
Fayette County	295,803	3,790	2	0	0	1.57	
Magoffin County	13,333	3,579	447	10	0	42.62	Exceeds EPA level of concern for cancer risk*
Hopkins County	46,920	3,349	205	0	0	65.63	
Cumberland County	6,856	3,144	879	20	0	160.58	
Lee County	7,887	3,109	937	2	0	62.60	
Union County	15,007	3,037	220	1	0	63.59	County Cancer Risk is in highest 10%
Ohio County	23,842	2,540	446	0	0	95.26	
Webster County	13,621	2,452	249	0	0	58.19	
Leslie County	11,310	2,069	120	12	0	60.94	County Cancer Risk is in highest 10%.
Knott County	16,346	1,740	75	8	0	43.17	Exceeds EPA level of concern for cancer risk* AND county respiratory health risk is in top 2%
Perry County	28,712	1,665	68	10	0	27.10	Exceeds EPA level of concern for cancer risk*
Lawrence County	15,860	1,646	188	10	0	50.07	County Cancer Risk is in highest 10%
Carter County	27,720	1,612	69	7	0	25.27	
Adair County	18,656	1,500	526	1	0	48.53	
Taylor County	24,512	1,468	25	0	0	9.98	
Laurel County	58,849	1,419	26	3	0	12.04	
Johnson County	23,356	1,402	168	3	0	26.04	Exceeds EPA level of concern for cancer risk*
Green County	11,258	1,385	297	3	0	42.22	
Oldham County	60,316	1,236	41	0	0	6.11	
Grayson County	25,746	1,221	149	1	0	40.31	
Wolfe County	7,355	1,181	121	1	0	18.67	
Martin County	12,929	1,175	66	7	0	31.51	Exceeds EPA level of concern for cancer risk* AND county respiratory health risk is in top 2%
Metcalfe County	10,099	1,050	104	1	0	30.19	
Breathitt County	13,878	1,046	37	0	0	18.97	

APPENDIX, CONT.

KY Counties	Total Population	Threatened Population	Number of Facilities	Threatened Schools	Threatened Medical Facilities	Threatened Square Miles	Other Risks
Logan County	26,835	1,041	48	0	0	22.10	
Bell County	28,691	1,011	59	2	1	26.41	County Cancer Risk is in highest 10%
Monroe County	10,963	852	90	6	0	33.90	
Wayne County	20,813	803	53	4	0	25.09	
Boyd County	49,542	766	5	0	0	3.73	
Hancock County	8,565	706	99	2	0	25.09	
Todd County	12,460	706	61	0	0	23.57	
Russell County	17,565	551	78	4	0	22.00	
Elliott County	7,852	549	83	4	0	20.99	
Estill County	14,672	548	172	6	0	28.90	
Hart County	18,199	518	69	0	0	18.06	
Edmonson County	12,161	506	24	1	0	10.47	
Casey County	15,955	473	82	3	0	16.36	
McCreary County	18,306	441	23	1	0	11.03	
Simpson County	17,327	419	29	0	0	9.95	
Christian County	73,955	365	221	0	0	37.15	
Powell County	12,613	320	198	2	0	22.19	
Menifee County	6,306	256	28	2	0	7.24	
Butler County	12,690	255	50	2	0	16.35	
Bath County	11,591	244	6	0	0	4.07	
Morgan County	13,923	231	15	1	0	7.82	
Madison County	82,916	183	2	0	0	1.57	
Pulaski County	63,063	178	9	0	0	3.77	
Breckinridge County	20,059	170	23	0	0	11.03	
Trigg County	14,339	162	4	0	0	2.47	
Caldwell County	12,984	151	14	0	0	5.51	
Lincoln County	24,742	143	13	0	0	4.42	
Clark County	35,613	142	12	1	0	4.15	
Garrard County	16,912	125	6	0	0	2.43	
Rowan County	23,333	94	1	0	0	1.09	
Hardin County	105,543	90	1	0	0	0.79	
Harlan County	29,278	80	4	1	0	2.43	
Owsley County	4,755	52	6	0	0	3.12	
Greenup County	36,910	45	5	1	0	2.26	
Montgomery County	26,499	40	2	0	0	1.24	
Marion County	19,820	37	10	0	0	2.48	
Larue County	14,193	27	0	0	0	0.44	
Grant County	24,662	22	1	0	0	0.79	
Owen County	10,841	22	1	1	0	0.79	
Fleming County	14,348	17	1	0	0	0.79	
Rockcastle County	17,056	9	1	0	0	0.79	
Anderson County	21,421	0	0	0	0	0.00	
Ballard County	8,249	0	0	0	0	0.00	
Boone County	118,811	0	0	0	0	0.00	
Bourbon County	19,985	0	0	0	0	0.00	
Boyle County	28,432	0	0	0	0	0.00	
Bracken County	8,488	0	0	0	0	0.00	

APPENDIX, CONT.

KY Counties	Total Population	Threatened Population	Number of Facilities	Threatened Schools	Threatened Medical Facilities	Threatened Square Miles	Other Risks
Bullitt County	74,319	0	0	0	0	0.00	
Calloway County	37,191	0	0	0	0	0.00	
Campbell County	90,336	0	0	0	0	0.00	
Carlisle County	5,104	0	0	0	0	0.00	
Carroll County	10,811	0	0	0	0	0.00	
Crittenden County	9,315	0	0	0	0	0.00	
Franklin County	49,285	0	0	0	0	0.00	
Fulton County	6,813	0	0	0	0	0.00	
Gallatin County	8,589	0	0	0	0	0.00	
Graves County	37,121	0	0	0	0	0.00	
Harrison County	18,846	0	0	0	0	0.00	
Henry County	15,416	0	0	0	0	0.00	
Hickman County	4,902	0	0	0	0	0.00	
Jackson County	13,494	0	0	0	0	0.00	
Jefferson County	741,096	0	0	0	0	0.00	
Jessamine County	48,586	0	0	0	0	0.00	
Kenton County	159,720	0	0	0	0	0.00	
Lewis County	13,870	0	0	0	0	0.00	
Livingston County	9,519	0	0	0	0	0.00	
Lyon County	8,314	0	0	0	0	0.00	
McCracken County	65,565	0	0	0	0	0.00	
Marshall County	31,448	0	0	0	0	0.00	
Mason County	17,490	0	0	0	0	0.00	
Meade County	28,602	0	2	0	0	1.16	
Mercer County	21,331	0	0	0	0	0.00	
Nelson County	43,437	0	0	0	0	0.00	
Nicholas County	7,135	0	0	0	0	0.00	
Pendleton County	14,877	0	0	0	0	0.00	
Robertson County	2,282	0	0	0	0	0.00	
Scott County	47,173	0	0	0	0	0.00	
Shelby County	42,074	0	0	0	0	0.00	
Spencer County	17,061	0	0	0	0	0.00	
Trimble County	8,809	0	0	0	0	0.00	
Washington County	11,717	0	0	0	0	0.00	
Woodford County	24,939	0	0	0	0	0	

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