



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.<sup>1</sup> 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.<sup>2</sup> 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

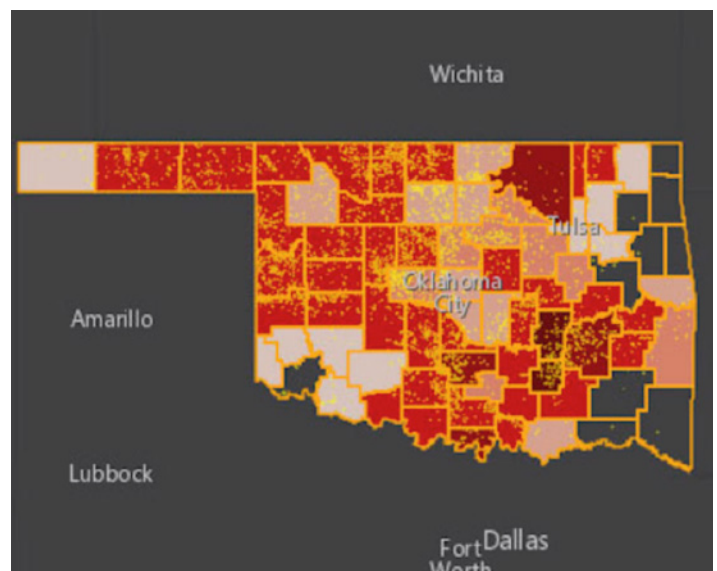
Peer-reviewed studies have documented higher levels of harmful air pollutants in and around areas with oil and gas production activity, and have shown that oil and gas facilities are the source of the excess pollution. Research indicates links between risks and/or prevalence of disease and proximity to facilities.<sup>3</sup> 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.<sup>4</sup>

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<sup>5</sup>, 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 more than 50% of the counties in Oklahoma.**<sup>6</sup>

#### OIL & GAS THREATENS OKLAHOMANS

**More than 99 thousand of Oklahoma’s residents live within a half mile threat radius of one of the state’s 29,912 methane-emitting facilities. In addition to the 40 counties, or 52% of the state’s total counties, that exceed**



MAP: [OILANDGASTHREATMAP.COM/THREAT-MAP/OKLAHOMA](http://OILANDGASTHREATMAP.COM/THREAT-MAP/OKLAHOMA)

**the EPA's cancer risk level of concern, nine other counties have cancer risks in the highest 10%.**

The Anadarko Basin, which covers parts of Oklahoma and several other states, was the highest methane emitting oil- and gas-producing basin in the country in 2014, emitting 5,855,333 metric tons of carbon dioxide equivalent from 43,536 wells—a rate of 128 metric tons per well. Oklahoma is also in the Arkoma Basin, the seventh highest methane emitting basin, and the basin with second highest emissions rate per well at 212 metric tons of carbon dioxide equivalent per well from 11,471 wells.<sup>7</sup>

**THE NUMBERS<sup>8</sup>**

<b>TOTAL POPULATION</b> Living in the Threat Radius (within a half mile of a facility)	<b>99,482</b>
<b>TOTAL NUMBER</b> of Active Oil and Gas Wells, Compressors, and Processors	<b>29,912</b>
<b>NUMBER OF COUNTIES</b> that Exceed EPA's Cancer Risk Level of Concern	<b>40</b>
<b>NUMBER OF SCHOOLS</b> in the Threat Radius	<b>69</b>
<b>NUMBER OF MEDICAL FACILITIES</b> in the Threat Radius	<b>7</b>
<b>SQUARE MILES COVERED</b> by the Threat Radius	<b>3,812</b>

**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.<sup>9</sup> 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.<sup>10</sup> 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.<sup>11</sup> 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.<sup>12</sup> 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 nearly 100,000 in Oklahoma 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. **Oklahoma is home to 47 of these locations, including seven company headquarters, twelve manufacturing facilities, 24 service facilities, and two sales locations.** These businesses are helping to grow the local economy by creating highly skilled, good-paying jobs.<sup>13</sup>

**ENDNOTES**

- 1 [http://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5\\_Chapter08\\_FINAL.pdf](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://www.catf.us/resources/publications/files/FossilFumes.pdf>
- 7 <https://cdn.americanprogress.org/wp-content/uploads/2016/06/20070044/MethanePollution-report.pdf>

- 8 <http://oilandgasthreatmap.com/threat-map/oklahoma/>
- 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](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](https://www.edf.org/sites/default/files/us_methane_mitigation_industry_report.pdf)

**APPENDIX**

<b>OK Counties</b>	<b>Total Population</b>	<b>Threatened Population</b>	<b>Number of Facilities</b>	<b>Threatened Schools</b>	<b>Threatened Medical Facilities</b>	<b>Threatened Square Miles</b>	<b>Other Risks</b>
Oklahoma	718,633	40,099	238	15	2	44.98	
Beckham	22,119	4,555	1,186	4	0	92.18	Exceeds EPA level of concern for cancer risk*
Pittsburg	45,837	3,687	593	0	2	128.95	Exceeds EPA level of concern for cancer risk*
Canadian	115,541	2,865	1,213	1	0	150.66	County Cancer Risk in highest 10%
Tulsa	603,403	2,843	21	0	0	6.20	
Seminole	25,482	2,797	616	3	0	79.91	Exceeds EPA level of concern for cancer risk*
Stephens	45,048	2,471	1,394	5	0	107.33	Exceeds EPA level of concern for cancer risk*
Grady	52,431	2,374	1,171	2	0	151.45	Exceeds EPA level of concern for cancer risk*
Payne	77,350	2,371	375	0	0	79.83	County Cancer Risk in highest 10%
Pottawatomie	69,442	2,309	409	2	0	57.04	
Garvin	27,576	2,209	1,284	4	0	101.53	Exceeds EPA level of concern for cancer risk*
McClain	34,506	2,196	3,786	1	0	63.46	Exceeds EPA level of concern for cancer risk*
Creek	69,967	2,064	362	5	1	44.86	County Cancer Risk in highest 10%
Carter	47,557	1,841	1,714	0	0	104.63	Exceeds EPA level of concern for cancer risk*
Cleveland	255,755	1,786	58	0	0	11.88	
Washington	50,976	1,549	193	1	0	12.37	Exceeds EPA level of concern for cancer risk*
Caddo	29,600	1,531	280	2	0	60.73	Exceeds EPA level of concern for cancer risk*
Custer	27,469	1,475	189	1	0	50.06	Exceeds EPA level of concern for cancer risk*
Logan	41,848	1,434	689	0	0	85.21	County Cancer Risk in highest 10%
Texas	20,640	1,252	506	1	0	125.32	Exceeds EPA level of concern for cancer risk*
Kingfisher	15,034	1,193	1,247	2	0	190.63	Exceeds EPA level of concern for cancer risk*
Harper	3,685	1,165	376	2	1	49.48	Exceeds EPA level of concern for cancer risk*
Washita	11,629	1,064	292	4	0	84.78	Exceeds EPA level of concern for cancer risk*
Blaine	11,943	863	812	2	0	135.84	Exceeds EPA level of concern for cancer risk*
Pawnee	16,577	833	428	2	0	30.84	County Cancer Risk in highest 10%
Garfield	60,580	725	1,203	0	0	134.69	
Lincoln	34,273	689	74	0	0	30.69	Exceeds EPA level of concern for cancer risk*
Hughes	14,003	550	271	0	0	53.96	Exceeds EPA level of concern for cancer risk*
Marshall	15,840	525	103	0	0	26.59	Exceeds EPA level of concern for cancer risk*
Pontotoc	37,492	496	502	0	0	19.88	Exceeds EPA level of concern for cancer risk*
Kay	46,562	488	751	0	0	72.32	
Noble	11,561	488	549	0	0	63.81	
Alfalfa	5,642	428	1,188	0	0	183.28	Exceeds EPA level of concern for cancer risk*
Coal	5,925	414	313	2	0	56.35	Exceeds EPA level of concern for cancer risk*
Roger Mills	3,647	394	829	0	0	209.23	Exceeds EPA level of concern for cancer risk*

**APPENDIX, CONT.**

OK Counties	Total Population	Threatened Population	Number of Facilities	Threatened Schools	Threatened Medical Facilities	Threatened Square Miles	Other Risks
Latimer	11,154	362	168	2	0	30.19	Exceeds EPA level of concern for cancer risk*
Atoka	14,182	357	36	2	0	10.56	Exceeds EPA level of concern for cancer risk*
Le Flore	50,384	349	56	0	0	16.59	County Cancer Risk in highest 10%
Love	9,423	338	113	0	0	26.32	Exceeds EPA level of concern for cancer risk*
Okfuskee	12,191	331	503	0	0	31.11	Exceeds EPA level of concern for cancer risk*.
Tillman	7,992	313	104	0	1	12.90	
Bryan	42,416	298	17	0	0	4.38	
Woods	8,878	260	432	0	0	108.93	Exceeds EPA level of concern for cancer risk*
Johnston	10,957	259	43	1	0	12.26	Exceeds EPA level of concern for cancer risk*
Haskell	12,769	235	46	0	0	17.84	Exceeds EPA level of concern for cancer risk*
Wagoner	73,085	235	23	0	0	4.54	
Major	7,527	212	251	0	0	53.60	Exceeds EPA level of concern for cancer risk*
Grant	4,527	200	843	0	0	149.46	Exceeds EPA level of concern for cancer risk*
Okmulgee	40,069	188	21	0	0	9.68	County Cancer Risk in highest 10%
McIntosh	20,252	181	29	0	0	10.20	Exceeds EPA level of concern for cancer risk*
Ellis	4,151	164	425	0	0	107.39	Exceeds EPA level of concern for cancer risk*
Beaver	5,636	146	395	0	0	99.84	Exceeds EPA level of concern for cancer risk*
Dewey	4,810	137	193	0	0	72.06	Exceeds EPA level of concern for cancer risk*
Muskogee	70,990	135	6	0	0	2.71	
Woodward	20,081	127	128	0	0	36.18	County Cancer Risk in highest 10%
Sequoyah	42,391	123	5	0	0	3.14	
Nowata	10,536	114	160	3	0	19.33	Exceeds EPA level of concern for cancer risk*
Rogers	86,905	95	106	0	0	9.10	
Murray	13,488	68	23	0	0	3.36	County Cancer Risk in highest 10%
Osage	47,472	67	27	0	0	15.07	Exceeds EPA level of concern for cancer risk*
Mayes	41,259	36	26	0	0	2.36	
Comanche	124,098	33	5	0	0	3.93	
Cotton	6,193	22	17	0	0	3.23	Exceeds EPA level of concern for cancer risk*
Pushmataha	11,572	19	6	0	0	3.14	
McCurtain	33,151	15	4	0	0	0.79	
Jefferson	6,472	14	45	0	0	5.31	Exceeds EPA level of concern for cancer risk*
Cimarron	2,475	8	187	0	0	11.05	
Cherokee	46,987	6	4	0	0	0.79	
Choctaw	15,205	6	6	0	0	0.79	
Kiowa	9,446	4	26	0	0	3.14	
Jackson	26,446	2	217	0	0	9.42	
Craig	15,029	0	1	0	0	0.79	

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