



# THE THREAT OF OIL & GAS POLLUTION

## Colorado

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>

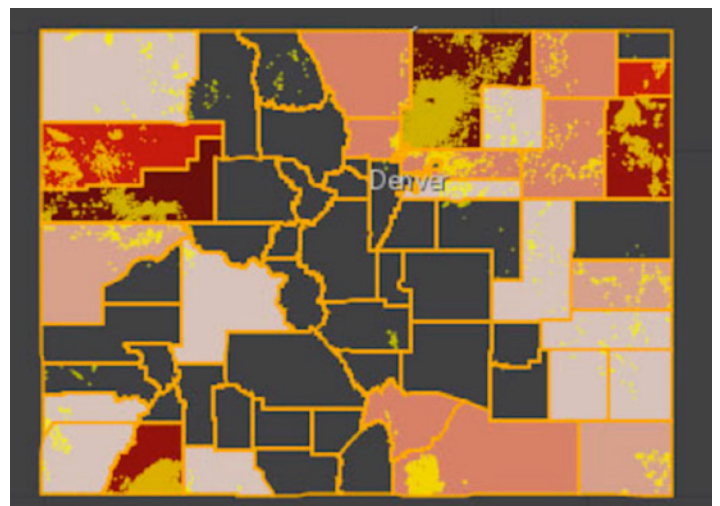
There are currently 12.4 million people living within a half mile of one of 1,193,118 active oil and gas wells, compressors, and processors in the United States. In total, 184,578 square miles are covered by the threat radius<sup>5</sup>, which includes 11,543 schools and 639 medical facilities. Nationwide,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

### OIL & GAS THREATENS COLORADANS

Over 250,000 people live within half a mile of the 51,273 active oil and gas wells, compressors, and processors in

**Colorado—approximately 5% of Colorado’s total population. In addition to the 6 counties that exceed EPA’s cancer risk level of concern—Garfield, La Plata, Phillips, Rio Blanco, Weld, and Yuma—7 counties fall into the next category of alarm with a county cancer risk in the highest 10%.**

In 2014, Colorado was in five of the fifteen highest methane emitting oil- and gas-producing basins in the country, including Anadarko and San Juan. The Anadarko Basin was the highest methane emitting oil- and gas-producing basin in 2014, emitting 5,855,333 metric tons of carbon dioxide equivalent from 43,536 wells—a rate of 128 metric tons per well. The San Juan Basin was the third highest methane emitting oil- and gas-producing basin in 2014, emitting 5,202,528 metric tons of carbon dioxide equivalent from



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

22,579 wells—a rate of 227 metric tons per well, the highest rate of any of the top fifteen methane emitting basins.<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>256,000</b>
<b>TOTAL NUMBER</b> of Active Oil and Gas Wells, Compressors, and Processors	<b>51,273</b>
<b>NUMBER OF COUNTIES</b> that Exceed EPA's Cancer Risk Level of Concern	<b>6</b> Garfield, La Plata, Phillips, Rio Blanco, Weld, and Yuma
<b>NUMBER OF SCHOOLS</b> in the Threat Radius	<b>83</b>
<b>NUMBER OF MEDICAL FACILITIES</b> in the Threat Radius	<b>5</b>
<b>SQUARE MILES COVERED</b> by the Threat Radius	<b>5,875</b>

## COLORADO HAS LED THE WAY

In 2014, Colorado became the first state in the country to directly regulate methane emissions.<sup>9</sup> These regulations cover both new and existing facilities and equipment. They require oil and gas producers to utilize low-emitting equipment and routinely inspect well sites for leaks. When leaks are discovered, they must be fixed within 15 days.<sup>10</sup> Research shows that these regulations have been highly successful and cost-effective. Colorado companies interviewed since the rule went into effect conducted more than 1,100 site inspections on average at their oil and gas operations over the past year and found more than 800 methane leaks. Representatives of these companies believe that in the long run they are not incurring significant cost impacts and that **the benefits to finding and fixing methane leaks under Colorado's rule outweigh the costs.**<sup>11</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](https://www3.epa.gov/climatechange/Downloads/ghgemissions/US_GHG-Inventory-2016-Main-Text.pdf)
- [3 http://ehp.niehs.nih.gov/1306722/](http://ehp.niehs.nih.gov/1306722/)
- [4 http://oilandgasthreatmap.com/about/threat/](http://oilandgasthreatmap.com/about/threat/)
- [5 http://oilandgasthreatmap.com/threat-map/](http://oilandgasthreatmap.com/threat-map/)
- [6 http://oilandgasthreatmap.com/threat-map/colorado/](http://oilandgasthreatmap.com/threat-map/colorado/)
- [7 https://cdn.americanprogress.org/wp-content/uploads/2016/06/20070044/MethanePollution-report.pdf](https://cdn.americanprogress.org/wp-content/uploads/2016/06/20070044/MethanePollution-report.pdf)
- [8 http://oilandgasthreatmap.com/threat-map/colorado/](http://oilandgasthreatmap.com/threat-map/colorado/)
- [9 https://www.colorado.gov/pacific/sites/default/files/AP\\_Memo-14-04-Reg7-LDAR-OpenEnd.pdf](https://www.colorado.gov/pacific/sites/default/files/AP_Memo-14-04-Reg7-LDAR-OpenEnd.pdf)

## 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>12</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>13</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>14</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>15</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 256,000 in Colorado 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 19 locations in Colorado.** These businesses are helping to grow the local economy by creating highly skilled, good-paying jobs.<sup>16</sup>

- [10 http://www.methanesolutions.org/latest-news/2016/6/10/first-of-its-kind-case-study-on-compliance-with-methane-emissions-released](http://www.methanesolutions.org/latest-news/2016/6/10/first-of-its-kind-case-study-on-compliance-with-methane-emissions-released)
- [11 http://static1.squarespace.com/static/558c5da5e4b0df58d729899de/t/57110da386db43c4be349dd8/1460735396217/Methane+Study.pdf](http://static1.squarespace.com/static/558c5da5e4b0df58d729899de/t/57110da386db43c4be349dd8/1460735396217/Methane+Study.pdf)
- [12 https://www.epa.gov/newsreleases/epa-releases-first-ever-standards-cut-methane-emissions-oil-and-gas-sector](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](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](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](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](https://www.edf.org/sites/default/files/us_methane_mitigation_industry_report.pdf)

**APPENDIX**

<b>CO 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>
Weld County	252,825	158,157	22,382	50	0	1,608.37	Exceeds EPA level of concern for cancer risk*
Boulder County	294,567	24,678	308	9	1	53.45	County cancer risk is in highest 10%
Adams County	441,603	22,768	908	8	1	273.07	County cancer risk is in highest 10%
La Plata County	51,334	17,605	3,181	2	1	550.46	Exceeds EPA level of concern for cancer risk*
Broomfield County	55,889	8,733	96	2	1	14.07	
Larimer County	299,630	5,331	200	1	0	36.63	County cancer risk is in highest 10%
Garfield County	56,389	5,203	10,885	2	0	504.77	Exceeds EPA level of concern for cancer risk*
Fremont County	46,824	4,897	62	1	0	23.65	
Rio Blanco County	6,666	2,634	2,372	1	1	497.21	Exceeds EPA level of concern for cancer risk*
Las Animas County	15,507	1,345	2,848	3	0	409.13	County cancer risk is in highest 10%
Arapahoe County	572,003	1,158	190	0	0	77.54	
Yuma County	10,043	865	3,833	0	0	571.07	Exceeds EPA level of concern for cancer risk*
Mesa County	146,723	558	936	2	0	160.46	
Archuleta County	12,084	435	106	0	0	30.22	
Morgan County	28,159	252	171	0	0	57.05	
Moffat County	13,795	216	515	0	0	150.59	
Elbert County	23,086	211	71	0	0	28.56	
Washington County	4,814	132	407	0	0	154.81	County cancer risk is in highest 10%
Phillips County	4,442	129	268	0	0	56.49	Exceeds EPA level of concern for cancer risk*
Jefferson County	534,543	128	2	0	0	1.57	
Lincoln County	5,467	124	106	0	0	42.86	
Logan County	22,709	107	134	0	0	62.49	County cancer risk is in highest 10%
Prowers County	12,551	83	26	1	0	18.81	
Montezuma County	25,535	70	125	0	0	55.40	
Bent County	6,499	61	31	0	0	17.40	
Baca County	3,788	59	173	0	0	83.42	
Dolores County	2,064	50	43	0	0	22.09	
Cheyenne County	1,836	43	353	0	0	115.44	
Kiowa County	1,398	21	107	0	0	55.48	
Routt County	23,509	21	33	0	0	23.48	
Jackson County	1,394	20	114	0	0	30.19	
Gunnison County	15,324	16	37	0	0	19.15	
Huerfano County	6,711	9	39	0	0	9.56	County cancer risk is in highest 10%
Sedgwick County	2,379	8	16	0	0	5.38	
El Paso County	622,263	2	1	0	0	0.79	
Pitkin County	17,148	2	10	0	0	5.03	
Kit Carson County	8,270	1	13	0	0	7.57	
San Miguel County	7,359	1	121	0	0	21.32	
Alamosa County	15,445	0	0	0	0	0.00	
Chaffee County	17,809	0	0	0	0	0.00	
Clear Creek County	9,088	0	0	0	0	0.00	
Conejos County	8,256	0	0	0	0	0.00	

**APPENDIX, CONT.**

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Costilla County	3,524	0	0	0	0	0.00	
Crowley County	5,823	0	0	0	0	0.00	
Custer County	4,255	0	0	0	0	0.00	
Delta County	30,952	0	4	0	0	3.01	
Denver County	600,158	0	46	1	0	17.06	
Douglas County	285,465	0	0	0	0	0.00	
Eagle County	52,197	0	0	0	0	0.00	
Gilpin County	5,441	0	0	0	0	0.00	
Grand County	14,843	0	0	0	0	0.00	
Hinsdale County	843	0	0	0	0	0.00	
Lake County	7,310	0	0	0	0	0.00	
Mineral County	712	0	0	0	0	0.00	
Montrose County	41,276	0	0	0	0	0.00	
Otero County	18,831	0	0	0	0	0.00	
Ouray County	4,436	0	0	0	0	0.00	
Park County	16,206	0	0	0	0	0.00	
Pueblo County	159,063	0	0	0	0	0.00	
Rio Grande County	11,982	0	0	0	0	0.00	
Saguache County	6,108	0	0	0	0	0.00	
San Juan County	699	0	0	0	0	0.00	
Summit County	27,994	0	0	0	0	0.00	
Teller County	23,350	0	0	0	0	0.00	
Poinsett County	24,583	0	0	0	0	0.00	
Polk County	20,662	0	0	0	0	0.00	
Prairie County	8,715	0	0	0	0	0.00	
Pulaski County	382,748	0	0	0	0	0.00	
Randolph County	17,969	0	0	0	0	0.00	
St. Francis County	28,258	0	0	0	0	0.00	
Saline County	107,118	0	0	0	0	0.00	
Searcy County	8,195	0	0	0	0	0.00	
Sharp County	17,264	0	0	0	0	0.00	
Woodruff County	7,260	0	0	0	0	0.00	

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