Virginia Section

with Introduction

2012

The States View of the Air Quality

Keith Baugues,

Assistant Commissioner

Office of Air Quality, IDEM

State of Indiana

1/1/2012

THE STATE VIEW OF THE AIR – 2012

Every year the American Lung Association (ALA) produces a report called "The State of the Air." The report focuses on a recent three year period of data for ozone and fine particles (PM-2.5) to determine how states and cities compare. While we appreciate the effort, the grading system that ALA uses to rate counties and cities is not consistent with the form of the national ambient air quality standards (NAAQS) for ozone and PM-2.5.

This report starts with the same data used by the ALA. For this report it includes data for the period 2008 – 2010. The review of data in this report differs from ALA in a few significant ways. First, the design values used for both ozone and PM-2.5 are based on average values for each county. This is an important distinction. While EPA's guidance for attainment/nonattainment designation purposes focuses on the worst design value for a county, this is not consistent with what people are breathing. For example, if a county has ten monitors and nine are below the standard and one is slightly above the standard, EPA and ALA would assume that everyone in the county were breathing air at levels above the standard. That is obviously not correct. If you combine counties into metropolitan statistical areas (cities) consisting of several counties, the entire area would be assumed to be above the standard based on the one monitor described above. This report averages design values for all monitors in a county to determine the average level that is breathed by the residents of that county.

A second difference is that when design values for a number of counties are being grouped to determine the overall value for a state or a metropolitan statistical area, the individual design values for each county are weighted by the population of each county to determine a population weighted average. This value is more consistent with what the population is being exposed to.
A new grading system has been established for ozone and PM-2.5 in this report. Any grading system is arbitrary in nature. The key to this grading system is that any area meeting the national ambient air quality standards should not be rated lower than a "C". In essence, we have set the standard as a "C". Any level between 90 and 100% of the standard is rated as "C". Any level between 80 and 90% of the standard is rated a "B". Any level below 80% is set as an "A". Any level between 101 and 110% is set as a "D". Any level above 110% of the standard is rated as an "F". This translates into the following ranges:

Grade	Ozone (ppm)	24-hr PM-2.5 (µg/m3)	Annual PM-2.5 (µg/m3)
A	< 0.060	< 28.0	<12.0
B	0.060 – 0.067	28.0 – 31.4	12.0 – 13.4
C	0.068 – 0.075	31.5 – 35.0	13.5 – 15.0
D	0.076 – 0.082	35.1 – 38.5	15.1 – 16.5
F	➢ 0.082	➢ 38.5	➢ 16.5

One other difference than the ALA report are the county, city and state totals for population groups (under 18, 65 and over, etc.). We do not have access to the data used by ALA. To estimate values for this report we have scaled up the values based on total county populations for 2010 versus those used in the previous ALA report. This provides an estimate of these values that while not totally accurate, will at least be within reason.

The remainder of this report provides similar tables to those contained in the ALA reports.

People at Risk from Short-Term Particle Pollution (24-Hour PM-2.5)

	Chronic Diseases							Age Groups			
Counties Grade	Adult Asthma	Pediatric Asthma	Chronic Bronchitis	Emphysema	CV Disease	Diabetes	Poverty	Under 18	65 and Over	Total Population	No. of Counties
A	9,798,058	3,212,025	4,994,646	2,483,890	41,733,500	10,254,790	20,578,475	37,003,246	19,019,771	152,377,980	505
B	3,157,148	979,404	1,605,306	751,929	12,647,775	3,148,875	7,229,176	11,665,963	5,748,640	47,871,967	80
C	299,982	84,237	150,209	82,127	1,269,466	288,807	514,743	1,035,677	605,595	4,422,808	19
D	280,611	87,417	145,584	68,500	1,194,673	265,207	633,125	1,257,021	513,463	4,702,274	13
F	304,752	109,996	159,265	72,621	1,289,218	312,461	957,154	1,623,364	529,960	5,457,247	15
Subtotals	13,840,551	4,473,079	7,055,010	3,459,067	58,134,532	14,270,140	29,912,673	52,585,271	26,417,249	214,832,276	632
Not Monitored	5,796,658	1,957,587	3,022,435	1,809,788	25,340,244	6,340,454	12,138,789	22,418,015	11,456,284	92,933,152	2511
Totals	**19,637,209**	**6,430,666**	**10,077,445**	**5,268,855**	**83,474,776**	**20,610,594**	**42,051,462**	**75,003,286**	**37,873,713**	**307,765,428**	**3143**

People at Risk from Year-Round Particle Pollution (Annual PM-2.5)

	Chronic Diseases							Age Groups			
Counties Grade	Adult Asthma	Pediatric Asthma	Chronic Bronchitis	Emphysema	CV Disease	Diabetes	Poverty	Under 18	65 and Over	Total Population	No. of Counties
A	11,292,718	3,644,843	5,751,012	2,827,082	48,309,482	11,525,650	23,771,951	42,753,385	21,554,899	174,585,715	551
B	2,347,225	759,276	1,204,123	585,472	9,009,323	2,533,382	5,506,129	8,871,717	4,516,513	36,908,911	74
C	163,813	55,278	80,703	37,748	660,475	171,856	499,650	754,461	281,257	2,670,036	4
D	36,795	13,682	19,172	8,765	155,352	39,252	134,943	205,708	64,760	667,614	3
F	0	0	0	0	0	0	0	0	0	0	0
Subtotals	13,840,551	4,473,079	7,055,010	3,459,067	58,134,632	14,270,140	29,912,673	52,585,271	26,417,429	214,832,276	632
Not Monitored	5,796,658	1,957,587	3,032,435	1,809,788	25,340,244	6,340,454	12,138,789	22,418,015	11,456,284	92,933,152	2511
Totals	**19,637,209**	**6,430,666**	**10,077,445**	**5,268,855**	**83,474,776**	**20,610,594**	**42,051,462**	**75,003,226**	**37,873,713**	**307,765,428**	**3143**

People at Risk from Ozone

	Chronic Diseases							Age Groups			
Counties Grade	Adult Asthma	Pediatric Asthma	Chronic Bronchitis	Emphysema	CV Disease	Diabetes	Poverty	Under 18	65 and Over	Total Population	No. of Counties
A	1,077,164	237,613	521,287	251,726	4,187,906	954,741	1,809,956	3,462,483	1,846,532	15,225,948	66
B	3,318,589	1,038,125	1,729,038	868,700	14,272,823	3,506,578	7,414,134	12,202,079	7,051,967	51,515,674	244
C	6,917,558	2,276,969	3,415,392	1,680,074	28,446,571	7,007,141	14,360,609	25,534,355	12,829,210	104,026,444	359
D	2,704,652	978,740	1,426,567	690,960	11,997,856	3,016,513	5,547,106	11,346,714	5,151,453	45,277,509	77
F	496,653	176,933	264,002	124,293	2,167,205	560,749	1,384,287	2,550,474	925,985	8,775,283	13
Subtotals	14,514,616	4,708,380	7,356,286	3,615,753	61,072,361	15,045,722	30,516,092	55,096,105	27,805,147	224,820,858	759
Not Monitored	5,192,208	1,749,204	2,769,594	1,680,255	22,768,048	5,588,603	11,706,248	20,180,458	10,181,968	82,944,570	2384
Totals	**19,706,824**	**6,457,584**	**10,125,860**	**5,296,008**	**83,840,409**	**20,634,325**	**42,222,340**	**75,276,563**	**37,987,115**	**307,762,428**	**3143**

Footnote – The totals for these three tables should agree. However, due to the methodology used in estimating values there are small differences.

People at Risk in 25 U.S. Cities Most Polluted by Year-Round Particle Pollution (Annual PM-2.5)

Rank	MSA	PW DV	Grade	Total Population	Under 18	65 & Over	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	CV Disease	Diabetes	Poverty
1	Visalia, CA	16.49	D	442,179	145,393	41,569	9,645	23,281	12,347	5,654	100,132	26,063	100,382
2	Hanford, CA	15.19	D	152,982	42,246	11,791	2,802	8,708	4,341	1,770	33,540	8,521	25,242
3	Bakersfield, CA	15.01	C	839,631	260,561	75,566	17,284	45,493	23,930	10,720	192,341	50,022	177,423
4	Fresno, CA	14.49	C	930,450	280,483	91,013	18,666	50,977	26,986	12,338	218,584	56,858	195,834
5	Fairbanks, AK	13.58	C	97,581	25,360	6,103	1,756	6,411	2,868	1,133	21,942	3,781	7,339
6	Indianapolis, IN	13.38	B	1,756,241	455,802	189,748	44,818	118,388	55,311	26,078	454,598	114,917	239,821
7	Canton, OH	13.28	B	404,422	92,335	64,121	8,657	30,507	14,202	7,612	123,557	33,218	58,385
8	Merced, CA	13.21	B	255,793	81,810	25,199	5,427	13,634	7,245	3,347	58,954	15,332	61,882
9	Modesto, CA	13.19	B	514,453	150,414	53,965	9,978	28,548	15,409	7,249	126,454	33,140	86,265
10	Parkersburg, WV	13.08	B	166,056	34,509	27,715	3,042	11,672	5,850	3,201	51,337	15,297	24,560
11	Louisville, KY	12.99	B	1,284,068	305,015	164,651	29,059	97,357	42,845	21,804	348,896	108,876	181,647
12	Dayton, OH	12.87	B	841,502	191,195	124,245	17,828	64,083	28,970	15,043	248,328	66,777	118,836
13	Steubenville, OH	12.82	B	124,454	24,957	23,558	2,241	9,214	4,668	2,643	41,663	12,087	19,414
14	Springfield, OH	12.76	B	138,333	32,404	22,450	3,039	10,343	4,823	2,609	42,122	11,330	21,918
15	Lancaster, PA	12.61	B	519,445	128,836	77,697	3,272	35,389	17,473	9,195	150,651	35,196	47,468
16	Johnstown, PA	12.56	B	143,679	28,333	27,050	2,919	10,247	5,350	3,004	47,536	11,207	20,944
17	Charleston, WV	12.51	B	304,284	64,242	49,625	5,448	21,146	10,888	5,870	94,698	29,932	45,098
18	Columbus, GA	12.50	B	294,865	76,858	34,736	7,412	15,273	9,288	4,475	79,561	22,004	50,307
19	Akron, OH	12.46	B	703,200	157,482	97,773	14,766	53,927	24,242	12,356	206,194	55,422	100,565
19	Rome, GA	12.46	B	96,317	24,227	13,793	2,390	4,939	3,166	1,631	27,025	7,705	18,183
21	Pittsburgh, PA	12.36	B	2,356,285	478,197	403,062	48,967	167,754	85,721	46,570	750,529	176,069	279,645
22	Evansville, IN	12.34	B	358,676	82,760	51,134	8,042	25,463	12,286	6,373	104,843	28,142	46,444
23	Albany, GA	12.30	B	157,308	41,882	17,746	4,132	7,880	4,900	2,338	17,412	11,287	34,994
24	Bloomington, IN	12.28	B	192,714	35,845	22,327	3,504	14,267	6,355	2,859	51,066	12,476	35,557
25	Atlanta, GA	12.27	B	5,268,860	1,415,305	443,741	139,603	257,034	157,220	69,493	1,258,335	347,098	738,114

MSA – Metropolitan Statistical Area

PW DV – Population Weighted Design Value

People at Risk in 25 U.S. Cities Most Polluted by Short-term Particle Pollution (24-hour PM-2.5)

Rank	MSA	PW DV	Grade	Total Population	Under 18	65 & Over	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	CV Disease	Diabetes	Poverty
1	Fairbanks, AK	62.7	F	97,581	25,360	6,103	1,756	6,411	2,868	1,133	21,942	3,781	7,339
2	Visalia, CA	50.8	F	442,179	145,393	41,569	9,645	23,281	12,347	5,654	100,132	26,063	100,382
3	Hanford, CA	49.3	F	152,982	42,246	11,791	2,802	8,708	4,341	1,770	33,540	8,521	25,242
4	Fresno, CA	47.5	F	930,450	280,483	91,013	18,666	50,977	26,986	12,338	218,584	56,858	195,834
5	Modesto, CA	46.3	F	514,453	150,414	53,965	9,978	28,548	15,409	7,249	126,454	33,140	86,265
6	Stockton, CA	45.5	F	685,306	205,264	69,235	13,617	37,672	20,291	9,474	166,020	42,527	105,383
7	Merced, CA	44.9	F	255,793	81,810	25,199	5,427	13,634	7,245	3,347	58,954	15,332	61,882
8	Logan, UT	42.9	F	125,442	38,143	10,171	2,682	6,954	3,405	1,410	26,437	4,961	20,064
9	Bakersfield, CA	42.4	F	839,631	260,561	75,566	17,284	45,493	23,930	10,720	192,341	50,022	177,423
10	Salt Lake City, UT	41.0	F	1,124,197	331,402	97,066	24,110	62,882	32,141	13,958	254,901	48,071	116,632
11	Ogden, UT	37.5	D	547,184	174,314	49,900	12,681	29,595	15,326	6,877	123,198	23,506	50,984
12	Provo, UT	37.2	D	526,810	182,673	34,227	13,290	27,241	13,041	5,054	98,627	17,744	73,157
13	Reno, NV	36.8	D	425,417	103,923	51,882	7,183	28,680	13,968	6,836	116,689	25,810	55,215
14	Yuba City, CA	36.4	D	166,892	44,658	20,336	2,961	9,610	5,257	2,575	43,874	11,539	23,917
15	Green Bay, WI	35.4	D	306,241	73,431	36,347	5,085	22,944	10,055	4,863	85,584	18,247	32,007
16	Lima, OH	35.2	D	106,331	25,394	15,738	2,431	7,903	3,606	1,892	31,062	8,353	19,106
17	Grand Junction, CO	34.5	C	146,723	35,209	21,020	3,894	9,054	4,956	2,561	42,398	7,143	16,982
18	Appleton, WI	33.5	C	225,666	55,492	28,257	3,842	17,026	7,530	3,697	65,618	13,819	21,282
19	Sacramento, CA	32.8	C	2,149,127	538,541	256,140	35,724	126,211	69,480	33,713	578,075	152,514	282,463
20	Lancaster, PA	32.7	C	519,445	128,836	77,697	3,272	35,389	17,473	9,195	150,651	35,196	47,468
20	Minneapolis, MN	32.7	C	3,278,833	798,729	351,455	55,564	156,235	159,765	49,736	872,233	151,267	327,826
22	Harrisburg, PA	32.5	C	549,475	119,962	80,180	12,358	38,962	19,174	9,907	164,056	38,251	51,942
23	Milwaukee, WI	32.4	C	1,555,908	381,215	194,547	26,396	115,251	51,281	25,336	430,154	94,612	220,480
24	Canton, OH	31.7	C	404,422	92,335	64,121	8,657	30,507	14,202	7,612	123,557	33,218	58,385
25	Waterloo, IA	31.5	C	167,819	36,865	24,421	1,757	8,884	5,683	2,886	52,041	9,531	24,935

MSA – Metropolitan Statistical Area
PW DV – Population Weighted Design Value

People at Risk in 25 Most Ozone-Polluted Cities

Rank	MSA	PW DV	Grade	Total Population	Under 18	65 & Over	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	CV Disease	Diabetes	Poverty
1	Hanford, CA	0.095	F	152,982	42,246	11,791	2,802	8,708	4,341	1,770	33,540	8,521	25,242
2	Visalia, CA	0.094	F	442,179	145,393	41,569	9,645	23,281	12,347	5,654	100,132	26,063	100,382
3	Merced, CA	0.092	F	255,793	81,810	25,199	5,427	13,634	7,245	3,347	58,954	15,332	61,882
4	Fresno, CA	0.091	F	930,450	280,483	91,013	18,666	50,977	26,986	12,338	218,584	56,858	195,834
5	Bakersfield, CA	0.090	F	839,631	260,561	75,566	17,284	45,493	23,930	10,720	192,341	50,022	177,423
5	Riverside, CA	0.090	F	4,224,851	1,250,542	427,278	82,292	234,115	125,263	58,069	1,021,421	266,893	636,999
7	Madera, CA	0.088	F	150,865	44,301	15,651	2,938	8,357	4,498	2,107	36,843	9,646	29,141
8	Modesto, CA	0.087	F	514,453	150,414	53,965	9,978	28,548	15,409	7,249	126,454	33,140	86,265
9	Sacramento, CA	0.081	D	2,149,127	538,541	256,140	35,724	126,211	69,480	33,713	578,075	152,514	282,463
10	Bridgeport, CT	0.079	D	916,809	227,599	114,237	27,288	64,598	30,616	15,536	259,942	45,593	73,544
10	Trenton, NJ	0.079	D	366,513	84,052	45,785	7,647	21,797	12,021	5,953	101,743	23,624	37,390
12	Sheboygan, WI	0.078	D	115,507	27,115	16,467	1,877	8,559	3,975	2,059	34,045	7,618	10,138
13	Atlanta, GA	0.077	D	5,268,860	1,415,305	443,741	139,603	257,034	157,220	69,493	1,258,335	347,098	738,114
13	Dallas, TX	0.077	D	6,371,803	1,788,298	545,339	146,138	295,248	188,693	82,443	1,501,838	408,262	894,433
13	Houston, TX	0.077	D	5,946,800	1,697,131	511,409	138,688	273,697	175,704	77,329	1,402,897	381,376	950,838
13	Philadelphia, PA	0.077	D	5,965,343	1,401,102	790,322	145,071	381,265	199,853	100,074	1,685,896	390,104	701,153
13	Reading, PA	0.077	D	411,442	98,134	59,112	10,110	28,464	13,944	7,213	119,333	27,821	48,287
13	Stockton, CA	0.077	D	685,306	205,264	69,235	13,617	37,672	20,291	9,474	166,020	42,527	105,383
19	Greensboro, NC	0.076	D	723,801	172,159	91,959	14,821	43,079	23,333	11,759	199,950	52,986	116,061
19	Lancaster, PA	0.076	D	519,445	128,836	77,697	3,272	35,389	17,473	9,195	150,651	35,196	47,468
19	Los Angeles, CA	0.076	D	12,828,837	3,244,796	1,385,675	215,243	751,647	402,312	186,928	3,283,448	857,664	1,863,994
19	Norwich, CT	0.076	D	274,055	59,691	38,403	7,155	20,083	9,541	4,867	81,194	14,263	20,664
19	Richmond, VA	0.076	D	1,258,251	312,992	133,828	25,830	73,777	40,679	19,155	334,409	75,414	97,713
19	Spartanburg, SC	0.076	D	284,307	69,281	39,179	5,941	16,872	9,474	4,826	80,515	22,459	41,116
19	Vineland, NJ	0.076	D	156,898	38,997	19,763	3,548	9,095	5,067	2,485	42,317	9,860	23,673

MSA – Metropolitan Statistical Area
PW DV – Population Weighted Design Value

People at Risk in 25 Counties Most Polluted by Short-term Particle Pollution (24-hour PM-2.5)

Rank	County/State	DV	Grade	Total Population	Under 18	65 & Over	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	CV Disease	Diabetes	Poverty
1	Fairbanks, AK	62.7	F	97,581	25,360	6,103	1,756	6,411	2,868	1,133	21,942	3,781	7,339
2	Santa Cruz, AZ	61.7	F	47,420	15,030	6,580	1,226	3,454	1,470	784	12,758	3,000	11,812
3	Butte, CA	50.9	F	220,000	46,080	32,915	3,057	13,558	7,623	3,910	64,936	17,126	39,613
4	Tulare, CA	50.8	F	442,179	145,393	41,569	9,645	23,281	12,347	5,654	100,132	26,063	100,382
5	Kings, CA	49.3	F	152,982	42,246	11,791	2,802	8,708	4,341	1,770	33,540	8,521	25,242
6	Fresno, CA	47.5	F	930,450	280,483	91,013	18,606	50,977	26,986	12,338	218,584	56,858	195,834
7	Stanislaus, CA	46.3	F	514,453	150,414	53,965	9,978	28,548	15,409	7,249	126,454	33,140	86,265
8	Franklin, ID	45.6	F	12,786	4,408	1,563	203	695	366	187	3,112	693	1,349
9	San Joaquin, CA	45.5	F	685,306	205,264	69,235	13,617	37,672	20,291	9,474	166,020	42,527	105,383
10	Klamath, OR	45.0	F	66,380	15,362	10,876	863	5,588	2,339	1,271	20,472	4,507	13,124
11	Merced, CA	44.9	F	255,793	81,810	25,199	5,427	13,634	7,245	3,347	58,954	15,332	61,882
12	Cache, UT	42.6	F	112,656	34,686	8,703	2,523	6,177	3,005	1,218	23,125	4,230	18,319
13	Box Elder, UT	42.5	F	49,975	16,672	5,384	1,213	2,649	1,427	692	11,864	2,329	4,755
14	Kern, CA	42.4	F	839,631	260,561	75,566	17,284	45,493	23,930	10,720	192,341	50,022	177,423
15	Salt Lake, UT	41.9	F	1,029,655	299,595	89,498	21,796	57,907	29,618	12,874	234,984	44,332	108,432
16	Pierce, WA	37.9	D	795,225	196,091	86,000	13,408	52,472	25,517	11,969	209,279	44,395	95,228
17	Silver Bow, MT	37.8	D	34,200	7,502	5,841	480	2,163	1,223	668	10,731	1,911	4,817
18	Davis, UT	37.7	D	306,479	103,382	24,983	7,521	16,110	8,267	3,608	65,708	12,418	21,396
18	Lake, OR	37.7	D	7,895	1,628	1,650	91	676	304	180	2778	606	1448
20	Utah, UT	37.2	D	516,564	179,470	33,325	13,057	26,682	12,757	4,930	96,370	17,318	71,988
20	Weber, UT	37.2	D	231,236	67,972	24,083	4,945	12,969	6,796	3,154	55,404	10,694	28,508
22	Washoe, NV	36.8	D	421,407	102,884	51,432	7,111	28,416	13,842	6,776	115,647	25,595	54,720
23	Sacramento, CA	36.7	D	1,418,788	366,156	159,625	24,289	82,531	44,845	21,317	369,720	97,125	213,470
24	Sutter, CA	36.4	D	94,737	26,197	12,243	1,738	5,351	2,977	1,496	25,125	6,616	13,923
25	Shoshone, ID	35.6	D	12,765	2,628	2,451	121	836	484	277	4,349	993	1,851

People at Risk in 25 Counties Most Polluted by Year-round Particle Pollution (Annual PM-2.5)

Rank	County/State	DV	Grade	Total Population	Under 18	65 & Over	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	CV Disease	Diabetes	Poverty
1	Tulare, CA	16.49	D	442,179	145,393	41,569	9,645	23,281	12,347	5,654	100,132	26,063	100,382
2	Kings, CA	15.19	D	152,982	42,246	11,791	2,802	8,708	4,341	1,770	33,540	8,521	25,242
3	Chelan, WA	15.07	C	72,453	18,069	11,400	1,235	4,806	2,484	1,341	21,680	4,668	9,319
4	Kern, CA	15.01	C	839,631	260,561	75,566	17,284	45,493	23,930	10,720	192,341	50,022	177,423
5	Fresno, CA	14.49	C	930,450	280,483	91,013	18,606	50,977	26,986	12,338	218,584	56,858	195,834
6	Hamilton, OH	13.72	C	802,374	188,057	108,575	17,632	60,932	26,919	13,557	227,608	61,195	119,054
7	Fairbanks, AK	13.58	C	97,581	25,360	6,103	1,756	6,411	2,868	1,133	21,942	3,781	7,339
8	Butler, OH	13.38	B	368,130	90,968	42,170	8,530	27,748	11,892	5,686	98,332	26,422	46,981
9	Brooks, WV	13.36	B	24,069	4,686	4,666	397	1,699	906	515	8,100	2,564	3,148
10	Stark, OH	13.28	B	375,586	85,597	60,191	8,025	28,322	13,229	7,119	115,304	31,009	54,056
11	Merced, CA	13.21	B	255,793	81,810	25,199	5,427	13,634	7,245	3,347	58,954	15,332	61,882
12	Montgomery, OH	13.20	B	535,153	122,142	81,178	11,452	40,653	18,411	9,638	158,355	42,593	84,002
12	Clark, IN	13.20	B	110,232	25,920	14,267	2,532	7,655	3,689	1,836	31,036	7,968	12,930
14	Stanislaus, CA	13.19	B	514,453	150,414	53,965	9,978	28,548	15,409	7,249	126,454	33,140	86,265
15	Marshall, WV	13.14	B	33,107	6,695	5,559	567	2,325	1,223	666	10,731	3,397	5,681
16	Cabell, WV	13.12	B	96,319	19,283	15,676	1,636	6,795	3,380	1,770	29,045	9,158	19,405
17	Marion, IN	13.10	B	903,393	230,857	98,023	26,548	61,314	28,320	13,218	231,601	58,089	174,274
18	Beaver, PA	13.09	B	170,539	34,678	31,185	3,572	12,026	6,346	3,554	56,348	13,287	19,158
19	Wood, WV	13.08	B	86,956	18,783	14,978	1,593	5,995	3,126	1,713	27,470	8,687	14,121
20	Okanogan, WA	13.07	B	41,120	9,604	4,714	657	2,763	1,353	645	11,174	2,375	4,766
21	Jefferson, KY	13.03	B	741,096	174,429	99,305	,16,510	57,518	24,871	12,510	210,220	65,739	114,737
22	Dubois, IN	13.00	B	41,889	10,644	5,964	1,040	2,826	1,414	740	12,175	3,183	2,951
23	Wilkinson, GA	12.99	B	9,563	2,526	1,450	249	482	321	173	2,795	806	1,968
23	Chester, GA	12.99	B	498,886	122,828	63,062	12,654	14,241	16,678	8,352	140,874	32,716	30,546
25	Marion, WV	12.91	B	56,418	11,211	9,616	951	3,981	2,029	1,090	17,651	5,574	9,413

People at Risk in 25 Most Ozone-Polluted Counties

Rank	County/State	DV	Grade	Total Population	Under 18	65 & Over	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	CV Disease	Diabetes	Poverty
1	Kings, PA	0.095	F	152,982	42,246	11,791	2,802	8,708	4,341	1,770	33,540	8,521	25,242
1	San Bernardino, CA	0.095	F	2,035,210	616,326	174,408	40,221	112,462	59,055	26,065	472,015	123,068	338,236
3	Tulare, CA	0.094	F	442,179	145,393	41,569	9,645	23,281	12,347	5,654	100,132	26,063	100,382
4	Merced, CA	0.092	F	255,793	81,810	25,199	5,427	13,634	7,245	3,347	58,954	15,332	61,882
5	Fresno, CA	0.091	F	930,450	280,483	91,013	18,606	50,977	26,986	12,338	218,584	56,858	195,834
6	Kern, CA	0.090	F	839,631	260,561	75,566	17,284	45,493	23,930	10,720	192,341	50,022	177,423
7	Madera, CA	0.088	F	150,865	44,301	15,651	2,938	8,357	4,498	2,107	36,843	9,646	29,141
8	Stanislaus, CA	0.087	F	514,453	150,414	53,965	9,978	28,548	15,409	7,249	126,454	33,140	86,265
9	Riverside, CA	0.086	F	2,189,641	634,216	254,870	42,071	121,653	66,208	32,004	549,406	143,825	298,763
9	Harford, MD	0.086	F	244,826	60,346	30,187	7,203	16,649	8,172	4,065	68,820	17,685	15,091
11	Placer, CA	0.085	F	348,432	83,579	54,743	5,544	20,633	12,016	6,440	104,506	27,891	25,044
12	Calaveras, CA	0.084	F	45,572	8,725	8,701	578	2,871	1,791	1,029	16,122	4,401	5,113
13	Bucks, PA	0.083	F	625,249	142,074	90,322	14,636	43,387	22,004	11,505	189,488	44,297	25,871
14	Tuolumne, CA	0.082	F	55,365	9,581	11,133	635	3,552	2,164	1,239	19,420	5,231	7,221
14	Camden, NJ	0.082	D	513,657	124,734	65,695	11,349	29,963	17,007	8,455	143,032	33,332	56,937
14	Tarrant, TX	0.082	D	1,809,034	512,814	157,664	41,907	83,473	53,600	23,650	428,387	116,562	257,303
17	Amador, CA	0.081	D	38,091	6,416	7,415	425	2,463	1,500	851	13,404	3,621	3,783
17	El Dorado, CA	0.081	D	181,058	42,430	22,035	2,815	10,926	6,373	3,223	54,188	14,728	13,689
17	Sacramento, CA	0.081	D	1,418,788	366,156	159,625	26,289	,82,531	44,845	21,317	369,720	97,125	213,470
17	Cecil, MD	0.081	D	101,108	25,004	12,015	2,984	6,902	3,333	1,631	27,863	7,134	9,934
17	Gloucester, NJ	0.081	D	288,288	68,316	35,001	6,216	16,968	9,620	4,712	80,429	18,636	21,755
17	Morris, NJ	0.081	D	492,276	117,559	66,665	10,696	28,777	16,887	8,666	144,197	33,739	18,204
17	Ocean, NJ	0.081	D	576,567	132,828	121,638	12,085	33,546	20,916	12,407	190,525	46,605	46,423

Cleanest U.S. Cities for Short-term Particle Pollution (24-hour PM-2.5)

Rank	MSA	PW DV	Grade	2010 Population
1	Santa Fe, NM	7.6	A	44,170
2	Cheyenne, WY	9.2	A	91,738
3	Casper, WY	10.3	A	75,450
4	Prescott, AZ	10.8	A	211,033
5	Tucson, AZ	11.3	A	980,263
6	Santa Cruz, CA	12.4	A	262,382
7	Lake Havasu, AZ	12.5	A	200,186
8	Flagstaff, AZ	12.7	A	134,421
9	Farmington, NM	13.6	A	130,044
10	Cape Coral, FL	13.7	A	618,754
10	Great Falls, MT	13.7	A	81,327
12	Albuquerque, NM	14.0	A	887,077
13	Honolulu, HI	14.1	A	953,207
13	Pueblo, CO	14.1	A	159,063
15	Miami, FL	14.4	A	5,564,635
16	Amarillo, TX	15.0	A	249,881
17	Lakeland, FL	15.1	A	602,095
18	Orlando, FL	15.4	A	2,134,411
19	Billings, MT	15.7	A	158,050
19	Palm Bay, FL	15.7	A	543,326
19	Santa Barbara, CA	15.7	A	423,895
22	Bismarck, ND	15.8	A	108,779
23	North Park, FL	15.9	A	702,281
23	Odessa, TX	15.9	A	137,130
23	Yuma, AZ	15.9	A	195,751

MSA – Metropolitan Statistical Area
PW DV – Population Weighted Design Value

Top 25 Cleanest U.S. Cities for Year-round Particle Pollution (Annual PM-2.5)

Rank	MSA	PW DV	Grade	2010 Population
1	Santa Fe, NM	4.10	A	44,170
2	Cheyenne, WY	4.18	A	91,738
3	Casper, WY	4.48	A	75,450
4	Pocatello, ID	4.84	A	90,656
5	Honolulu, HI	4.85	A	953,207
6	Prescott, AZ	4.96	A	211,033
7	Bend, OR	5.11	A	157,733
8	Great Falls, MT	5.17	A	81,327
9	Albuquerque, NM	5.24	A	887,077
9	Farmington, NM	5.24	A	130,044
11	Lake Havasu, AZ	5.46	A	200,186
12	Tucson, AZ	5.84	A	980,263
13	Altoona, PA	5.91	A	127,089
14	Redding, CA	5.94	A	177,223
15	Amarillo, TX	5.98	A	249,881
16	Anchorage, AK	6.05	A	380,841
17	Flagstaff, AZ	6.13	A	134,421
18	Duluth, MN	6.28	A	279,771
19	Burlington, VT	6.31	A	211,261
20	Santa Cruz, CA	6.33	A	262,382
21	Pueblo, CO	6.51	A	159,063
22	Billings, MT	6.54	A	158,050
23	Fort Collins, CO	6.65	A	299,630
24	Miami, FL	6.75	A	5,564,635
25	Boise City, ID	6.76	A	616,561

MSA – Metropolitan Statistical Area
PW DV – Population Weighted Design Value

Cleanest U.S. Cities for Ozone Air Pollution

Rank	MSA	PW DV	Grade	2010 Population
1	Honolulu, HI	0.045	A	953,207
2	Bellingham, WA	0.047	A	201,140
3	Santa Rosa, CA	0.050	A	483,878
4	Lincoln, NE	0.051	A	302,157
5	Missoula, MT	0.054	A	109,299
6	Omaha, NE	0.056	A	865,350
6	St. Cloud, MN	0.056	A	189,093
8	Bend, OR	0.057	A	157,733
8	Coeur d Alene, ID	0.057	A	138,494
8	Des Moines, IA	0.057	A	599,633
8	Laredo, TX	0.057	A	250,304
8	Santa Cruz, CA	0.057	A	262,382
8	Spokane, WA	0.057	A	471,221
14	Bismarck, ND	0.058	A	108,779
14	Duluth, MN	0.058	A	279,771
14	Fargo, ND	0.058	A	208,776
14	Olympia, WA	0.058	A	252,264
14	Rapid City, SD	0.058	A	126,382
14	Salinas, CA	0.058	A	415,057
14	San Francisco, CA	0.058	A	4,335,391
14	Seattle, WA	0.058	A	3,439,809
22	Ames, IA	0.059	A	89,542
22	Bangor, ME	0.059	A	153,923
22	Florence, AL	0.059	A	147,137

MSA – Metropolitan Statistical Area
PW DV – Population Weighted Design Value

Cleanest Counties for Short-term Particle Pollution (24-hour PM-2.5)

Rank	City/State	DV	Grade	2010 Population
1	Rio Blanco, CO	5.8	A	6,666
2	Santa Fe, NM	7.6	A	144,170
3	Sandoval, NM	8.6	A	131,561
4	Laramie, WY	9.2	A	91,738
5	Converse, WY	9.8	A	13,833
6	Elbert, CO	9.9	A	23,086
6	La Plata, CO	9.9	A	51,334
8	Natrona, WY	10.3	A	75,450
9	Grant, NM	10.5	A	29,514
10	Yavapai, AZ	10.8	A	211,033
11	Billings, ND	10.9	A	783
11	Custer, SD	10.9	A	8,216
13	Teton, WY	11.0	A	21,294
14	Pima, AZ	11.3	A	980,263
15	Lea, NM	11.8	A	64,727
16	Essex, NY	12.3	A	39,370
16	Jackson, SD	12.3	A	3,031
18	Monterey, CA	12.4	A	415,057
18	Santa Cruz, CA	12.4	A	262,382
20	Mohave, AZ	12.5	A	201,186
21	Chaves, NM	12.7	A	65,645
21	Coconino, AZ	12.7	A	134,421
23	Campbell, WY	12.8	A	46,133
24	Siskiyou, CA	13.1	A	44,920
25	Cochise, AZ	13.5	A	131,346

DV – design value

Top 25 Cleanest Counties for Year-round Particle Pollution (Annual PM-2.5)

Rank	City/State	DV	Grade	2010 Population
1	Rio Blanco, CO	2.47	A	6,666
2	Converse, WY	3.28	A	13,833
3	Sandoval, NM	4.02	A	131,561
4	Santa Fe, NM	4.10	A	144,170
5	La Plata, CO	4.12	A	51,334
6	Maui, HI	4.15	A	154,834
7	Laramie, WY	4.18	A	91,738
8	Jackson, SD	4.35	A	3,031
9	Essex, NY	4.38	A	39,370
10	Hancock, ME	4.41	A	44,418
11	Billings, ND	4.46	A	783
12	Natrona, WY	4.48	A	75,450
13	Lake, CA	4.62	A	64,665
14	Teton, WY	4.72	A	21,294
15	Cass, MN	4.74	A	28,567
16	Custer, SD	4.75	A	8,216
17	Bannock, ID	4.84	A	80,839
17	Park, WY	4.84	A	28,205
17	Grant, NM	4.84	A	24,514
17	Elbert, CO	4.84	A	23,086
21	Honolulu, HI	4.85	A	953,207
22	Yavapai, AZ	4.96	A	211,033
23	Deschutes, OR	5.11	A	157,733
24	Cascades, MT	5.17	A	81,327
25	Campbell, WY	5.19	A	46,133

DV – design value

Cleanest Counties for Ozone Air Pollution

Rank	City/State	DV	Grade	2010 Population
1	Anchorage, AK	0.044	A	291,826
2	Honolulu, HI	0.045	A	953,207
3	Humboldt, CA	0.047	A	134,623
3	Whatcom, WA	0.047	A	201,140
5	San Francisco, CA	0.048	A	805,235
6	Becker, MN	0.049	A	32,504
7	Mendocino, CA	0.050	A	87,841
7	Sonoma, CA	0.050	A	483,878
9	Lancaster, NE	0.051	A	285,407
10	Aroostook, ME	0.053	A	71,870
10	Chippewa, MI	0.053	A	38,520
10	Goodhue, MN	0.053	A	46,183
13	Marin, CA	0.054	A	252,409
13	Missoula, MT	0.054	A	109,299
15	Jackson, SD	0.055	A	3,031
15	Big Horn, WY	0.055	A	11,668
17	Carlton, MN	0.056	A	35,386
17	Stearns, MN	0.056	A	150,642
17	Flathead, MT	0.056	A	90,928
17	Powder River, MT	0.056	A	1,743
17	Douglas, NE	0.056	A	517,110
17	Franklin, NY	0.056	A	51,599
17	Columbia, OR	0.056	A	49,351
17	Clallam, WA	0.056	A	71,404

DV – design value

VIRGINIA

	AT RISK GROUPS									
County	**Total Population**	**Under 18**	**65 & Over**	**Pediatric Asthma**	**Adult Asthma**	**Chronic Bronchitis**	**Emphysema**	**Cardio vascular Disease**	**Diabetes**	**Poverty**
Albemarle	98,970	21,238	12,730	1,753	6,086	3,367	1,651	28,139	6,369	8,107
Arlington	207,627	34,163	17,850	2,819	13,592	6,724	2,690	51,539	11,101	13,354
Caroline	28,545	6,709	3,621	554	1,708	954	472	8,004	1,817	2,914
Charles City	7,256	1,331	1,318	110	463	285	160	2,536	594	739
Chesterfield	316,236	83,776	25,257	6,913	18,019	9,950	4,420	79,973	17,971	19,084
Fairfax	1,081,726	269,105	105,596	22,208	63,230	34,958	16,160	285,360	64,319	60,021
Fauquier	65,203	16,378	7,616	1,352	3,800	2,185	1,082	18,383	4,206	3,838
Frederick	78,305	20,067	8,911	1,657	4,545	2,538	1,229	21,121	4,789	7,098
Hanover	99,863	24,954	12,735	2,060	5,842	3,376	1,714	28,698	6,584	4,744
Henrico	306,935	73,042	39,045	6,028	18,319	10,146	5,001	84,983	19,249	30,200
Loudoun	312,311	93,173	19,865	7,689	17,042	8,864	3,615	68,706	15,071	10,441
Madison	13,308	2,853	2,332	235	821	489	272	4,326	1,005	1,414
Page	24,042	5,076	4,224	419	1,492	869	478	7,646	1,767	2,961
Prince William	402,002	117,623	26,850	9,706	22,106	11,622	4,824	90,734	19,997	23,892
Roanoke	92,376	21,517	14,720	1,775	5,550	3,276	1,776	28,672	6,639	5,460
Rockbridge	22,307	4,620	4,030	381	1,388	830	465	7,373	1,716	2,465
Rockingham	76,314	17,553	11,015	1,448	4,604	2,624	1,357	22,455	5,139	7,806
Stafford	128,961	37,649	8,408	3,107	7,081	3,788	1,588	29,724	6,591	5,987
Wythe	29,235	6,040	5,338	498	1,826	1,068	595	9,456	2,189	4,110
Alexandria	139,966	25,610	14,984	2,113	8,972	4,603	2,018	36,613	8,040	12,583
Bristol	17,835	3,539	4,211	292	1,138	666	403	6,124	1,426	3,486
Hampton	137,436	30,629	16,128	2,528	8,375	4,475	2,098	36,641	8,188	18,580
Lynchburg	75,568	15,260	12,643	1,259	4,776	2,564	1,332	21,901	4,938	13,412
Newport New	180,719	47,848	20,559	3,949	10,884	5,810	2,708	47,463	10,599	24,580
Norfolk	242,803	56,728	24,138	4,682	14,603	7,460	3,252	59,184	12,974	39,456
Roanoke	97,032	20,509	16,786	1,692	6,036	3,418	1,849	29,804	6,833	18,878
Salem	24,802	4,927	4,254	406	1,565	888	476	7,721	1,770	2,182
Suffolk	84,585	21,873	9,846	1,805	4,901	2,725	1,325	22,702	5,142	10,203
Virginia Beach	437,994	107,587	46,489	8,879	25,835	13,915	6,441	113,439	25,384	29,183
Subtotals	4,830,262	1,191,377	501,499	98,317	284,599	154,437	71,451	1,259,420	282,407	387,178
Not Monitored	3,070,655	757,373	318,809	67,501	180,923	98,177	26,351	800,628	179,529	246,134
Totals	**7,900,917**	**1,948,750**	**820,308**	**160,818**	**465,522**	**252,614**	**67,802**	**2,060,048**	**461,936**	**633,312**

VIRGINIA
2008 – 2010

	Ozone		Particle Pollution (PM-2.5)			
County	**Avg. DV**	**Grade**	**Avg. 24-hr DV**	**Grade**	**Avg. Ann DV**	**Grade**
Albemarle	0.070	C	21.1	A	9.37	A
Arlington	0.079	D	22.8	A	10.83	A
Caroline	0.073	C	ND	---	ND	---
Charles City	0.075	C	20.4	A	9.49	A
Chesterfield	0.075	C	21.1	A	10.25	A
Fairfax	0.075	C	22.8	A	10.37	A
Fauquier	0.066	B	ND	---	ND	---
Frederick	0.069	C	24.0	A	11.09	A
Hanover	0.075	C	ND	---	ND	---
Henrico	0.077	D	22.0	A	9.82	A
Loudoun	0.075	C	22.4	A	10.33	A
Madison	0.074	C	ND	---	ND	---
Page	0.067	B	23.4	A	9.85	A
Prince William	0.070	C	ND	---	ND	---
Roanoke	0.069	C	ND	---	ND	---
Rockbridge	0.066	B	ND	---	ND	---
Rockingham	0.067	B	23.9	A	10.83	A
Stafford	0.070	C	ND	---	ND	---
Wythe	0.067	B	ND	---	ND	---
Alexandria	0.074	C	24.0	A	11.29	A
Bristol	ND	---	22.2	A	10.22	A
Hampton	0.079	D	23.9	A	10.70	A
Lynchburg	ND	---	21.4	A	9.36	A
Newport New	0.066	B	19.5	A	8.97	A
Norfolk	ND	---	23.2	A	11.09	A
Roanoke	ND	---	25.4	A	11.21	A
Salem	ND	---	20.4	A	9.93	A
Suffolk	0.072	C	ND	---	ND	---
Virginia Beach	ND	---	27.5	A	10.27	A

DV –design value
ND –no data