AMERICAN LUNG ASSOCIATION®

State of the Air

2000

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STATE OF THE AIR: 2000

INTRODUCTION

National statistics indicate that the air in some of America's cities is getting cleaner each year. But any driver gridlocked squarely behind the greasy black exhaust of a city bus, dump truck or some other diesel vehicle knows that however much progress has been made, it isn't enough. So, too, do those who live downwind of refineries and paper mills, power plants and incinerators. Yet this knowledge on the part of everyday citizens is intuitive. They may know in their hearts that the air isn't clean enough, that their children and parents are at risk, but intuitive concern is often no match for the cold, hard numbers that polluters bring to bear when they argue that enough has already been done, and that the next increment of cleanup will cost too much.

This report, *State of the Air: 2000*, initiates an annual assessment by the American Lung Association to provide citizens with easy-to-understand air pollution summaries of the quality of the air in their communities that are based concrete data and sound science. Cities and counties are assigned grades ranging from "A" through "F" based on how often their air quality exceeds the "unhealthful" categories of the U.S. Environmental Protection Agency's Air Quality Index. This report, and the analysis that underlies it, confirms what most citizens already know: air pollution remains a major threat to Americans, contributing substantially to the nation's ill health burden.

For example, as this report demonstrates—

- More than 132 million Americans live in areas that received an "F" in this report. That is approximately 72 percent of the nation's population who live in counties where there are ozone monitors.
- Of the 678 counties examined, almost half (333) received an "F."
- Living within the counties that received a "Failing" grade, there are an estimated 16 million Americans over 65, over 7 million asthmatics (5 million adults and 2 million children with asthma), 29 million children under age 14, and 7 million adults with chronic bronchitis.

While emissions of some air pollutants have generally gone down and the nation's overall air quality has improved over the past 30 years, much of that progress has been in eliminating obvious pollution and sources–bans on open burning, for example. Many of the pollutants that are literally invisible, such as ozone, have been reduced far less, and as understanding of the health effects of air pollution has advanced, it has become clear that much of the nation still faces major air pollution problems. *State of the Air* is the first annual "report card" on America's air quality. It focuses on the nation's most widespread air pollutant, ozone, sometimes called smog.

THE IMPORTANCE OF OZONE

This report focuses on ground level ozone for several reasons.

First, ozone is among the most dangerous of the common air pollutants.

Second, ozone is pervasive. Many major metropolitan areas in the United States are plagued by high levels of ozone. As of 1998, almost 100 million Americans still lived in areas classified as not meeting the earlier one-hour national ozone standard.

Third, as levels of some of the easier-to-control pollutants, such as carbon monoxide, have declined, ozone dominates as the source of unhealthy air days. From 1988 to 1997, for example, the percentage of unhealthy air days attributable to ozone rose from 92 percent to 97 percent.[1]

Finally, there is better historical data on ozone levels than other common air pollutants. This makes it possible to observe trends that, in turn, reveal how well or poorly agencies are doing in fulfilling their legal obligations to reduce air pollution. It is true that levels of ozone can vary, sometimes substantially, from year to year. But if ozone levels in any given area fail to trend downward over several years, it is persuasive evidence of a lack of commitment on the part of government and polluting companies alike. And, if they are failing to discharge their duties with respect to this pollutant, what reason is there to believe that any greater attention is being paid to extremely dangerous substances that can kill on contact, or can cause permanent, serious and irreversible injury?

Ozone: Searing Our Lungs

At levels routinely encountered in most American cities, ozone burns through cell walls in lungs and airways. Tissues redden and swell.[2] Cellular fluid seeps into the lungs[3,4,5,6,7] and over time their elasticity drops.[8,9,10,11,12,13] Macrophage cells rush to the lung's defense, but they too are stunned by the ozone.[14,15] Susceptibility to bacterial infections increases, probably because ciliated cells that normally expel foreign particles and organisms have been killed and replaced by thicker, stiffer, non-ciliated cells.[16,17] Scars and lesions form in the airways.[18] At ozone levels that prevail through much of the year in California and other warm-weather cities, healthy, non-smoking young men who exercise can't breathe normally. Breathing is rapid, shallow and painful.[19]

As ozone levels rise, hospital admissions and emergency department visits do the same.[20,21,22] In some laboratory animals, cancers appear.[23] Children at summer camp lose the ability to breathe normally as ozone levels rise—even when the air is clean by reference to the federal standard—and these losses continue for up to a week.[24] In New Jersey, emergency room visits for asthma increased 28 percent at ozone concentrations half the federal standard[25].

Source: See ozone references at State of the Air's end

SUMMARY OF FINDINGS

The recent ozone monitoring data collected by the U. S. Environmental Protection Agency demonstrate that not only is air pollution a continuing and major threat to public health in many major metropolitan areas, but that it seems to be actually worsening in some areas. In Charlotte, N.C., for example, the number of days in which the 0.08 part per million eight-hour ozone standard was exceeded rose from 12 in 1989 to 26 in 1997. In Atlanta, the number jumped from 17 to 26, while in Houston rose from 43 to 47.[26]

A number of other conclusions can also be drawn from the data, including the following:

No Region is Immune. Ozone levels continue to violate the health-based standard of the Clean Air Act in the major cities and counties of every region of the United States. In the Rocky Mountain and Southwest areas, where Easterners once flocked because of its then-pristine air, Denver, Salt Lake City, Phoenix and Houston are clouded with smog. The same is true of Boston in New England; New York, Philadelphia, Baltimore and Washington in the Mid-Atlantic; Charlotte, Atlanta and Birmingham in the South; Pittsburgh, St. Louis and Chicago in the Midwest; and a dozen or so areas of California, including Los Angeles and San Francisco. Only in the Pacific Northwest is the situation less grim.

Large and Small Cities Alike are afflicted. When it comes to ozone, size doesn't matter. Large cities–Los Angeles, New York, Chicago and Houston–all suffer from unhealthy levels of ozone. So, too, do medium sized urban areas such as Charlotte and smaller communities like Lancaster, Pennsylvania, Knoxville, Tennessee and Modesto, California.

Local and Distant Sources are All Important. Some cities are clearly stewing in their own air pollution. In Los Angeles and the rest of southern California, for example, only the Pacific Ocean lies upwind, so the only possible ozone sources are the region's own vehicles and industries. Much the same is true of Houston and Atlanta. In other cases, however, areas cannot control their own fate. Bennington, Vermont and Bridgeport, Connecticut are hardly major industrial or population centers, but they suffer from the urban scourge of ozone pollution because of upwind factories and traffic.

Some Regional Trends are Emerging. Historically the highest ozone concentrations have been found in Los Angeles. However, in 1997, for the first time since record keeping began, Houston's one-hour concentrations for ozone exceeded the levels in Los Angeles.[27] In 1998, this trend continued, not only in Texas but in other "sunbelt" states. California continues to place the largest number of counties among *State of the Air's* 25 worst with 14 (in descending order of their air pollution, San Bernadino, Riverside, Kern, Fresno, Los Angeles, Tulare, Ventura, Kings, Imperial, San Diego, Merced, El Dorado, Sacramento and Shasta). But there are five "25 worst" counties in Tennessee (Knox, Sevier, Blount, Jefferson, and Sumner), two in Texas (Harris and Denton), two in Georgia (Fulton and Rockdale), two in North Carolina (Mecklenburg and Wake) and two in Maryland (Anne Arundel and Prince Georges).

Statistical Methodology: The Air Quality Data

The data on air quality throughout the United States was obtained from EPA's Aerometric Information Retrieval System (AIRS) database. The American Lung Associations used A.S.L.& Associates to analyze data on ozone monitoring for the three-year period 1996 to 1998. The 1996, 1997, and 1998 AIRS hourly ozone data was used to calculate the daily eight-hour maximum concentration for each ozone-monitoring site. The highest daily eight-hour daily maximum concentration in each county for 1996, 1997, and 1998 based on the EPA-defined ozone season was then determined.

Using these results a table summarizing the ozone data for each county for each of the 3 years the numbers within the following ranges:

0.000–0.064 ppm	Good
0.065–0.084 ppm	Moderate
0.085–0.104 ppm	Unhealthy for Sensitive Groups
0.105–0.124 ppm	Unhealthy
0.125–0.374 ppm	Very Unhealthy

Using these results, A.S.L. & Associates prepared a table that summarized for each of the three years the number of days the ozone level was within the unhealthy ranges identified by EPA as Orange, Red and Purple Days. The number of days within each of these categories was summed to establish the number of days each monitored county experienced air quality designated as orange, red or purple. Grades were assigned to each county based on a weighted average methodology that is described in Appendix A.

Table 1: Estimated Populations at Risk by Grading Level

Population-At-Risk	Grade A (0.0)	Grade B (0.3-0.9)	Grade C (1.0-2.0)	Grade D (2.1-3.2)	Grade F (3.3 +)	National Population
Chronic Diseases						
Adult Asthma	408,061	333,661	506,534	388,748	5,221,056	7,258,157
Pediatric Asthma	170,597	138,447	199,105	152,339	2,162,512	2,989,460
Chronic Bronchitis	559,633	460,909	690,428	530,019	7,141,654	9,935,082
Emphysema	71,578	63,500	97,480	75,141	916,886	1,299,192
Age Groups						
Under 14	2,296,548	1,865,757	2,692,794	2,206,390	29,045,221	40,343,997
Over 65	1,251,960	1,179,695	1,824,144	1,453,631	15,944,372	22,992,964
Total Population	10,477,773	8,582,029	12,856,894	10,459,616	132,494,679	185,164,054
Number of Counties	62	48	59	54	333	678
Number of High Ozone Days						
Orange	0	68	256	414	9,519	10,257
Red	0	0	3	12	1,335	1,350
Purple	0	0	0	0	219	219

Table 2
People at Risk
In America's 25 Most Ozone-Polluted Cities

CMSA		Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema
1	Los Angeles-Riverside-Orange CO, CA, CMSA	15,369,703	3,746,530	1,598,240	272,450	583,679	816,307	93,045
2	Bakersfield, CA, MSA	618,162	178,145	58,930	12,741	21,941	33,009	3,488
3	Fresno, CA, MSA	853,406	244,682	90,608	17,584	30,209	45,706	5,080
4	Visalia-Tulare-Porterville, CA, MSA	346,602	106,599	35,420	7,683	11,783	18,650	2,020
5	Houston-Galveston-Brazoria, TX, CMSA	3,566,175	862,918	282,679	63,619	135,715	188,463	19,321
6	San Diego / Imperial, CA, MSA	2,814,551	657,353	320,943	47,600	108,764	149,397	17,817
7	Washington-Baltimore, DC, MD, VA, WY, CMSA	6,387,841	1,314,037	667,617	96,364	256,418	338,744	41,396
8	Charlotte-Gastonia-Rock Hill, NC, MSA	921,343	196,454	97,840	14,385	36,540	48,947	5,983
9	Atlanta, GA, MSA	2,133,183	459,279	172,096	33,961	84,842	112,105	11,798
10	Merced, CA, MSA	191,002	60,657	17,752	4,345	6,425	10,245	1,036
11	Sacramento-Yolo, CAa, CMSA	1,630,454	391,721	185,238	28,234	62,144	87,095	10,686
12	Knoxville, TN, MSA	632,542	118,609	85,218	8,896	25,674	33,920	4,850
13	Philadelphia-Wilmington-Atlantic City, PA, NJ, DE, MD, CMSA	4,986,820	1,055,039	704,437	77,754	195,976	267,918	37,775
14	Dallas-Fort Worth, TX, CMSA	4,105,321	960,148	329,997	70,384	158,802	216,485	22,417
15	Redding, CA, MSA	161,348	39,945	23,328	2,914	5,952	8,783	1,260
16	NY-Northern NJ-LI, NJ, NY, CMSA	17,940,207	3,703,964	2,392,415	272,557	711,829	962,189	133,583
17	Raleigh-Durham-Chapel Hill, NC, MSA	914,991	188,722	86,995	13,783	36,962	48,170	5,484
18	Nashville, TN, MSA	992,581	207,632	103,126	15,379	39,510	52,653	6,361
19	Phoenix-Mesa, AZ, MSA	2,613,901	601,004	329,225	44,038	100,420	139,919	18,114
20	Modesto, CA, MSA	413,567	118,118	44,521	8,466	14,654	22,199	2,527
21	Pittsburgh, PA, MSA	2,061,383	375,094	374,528	28,039	83,525	111,962	18,748
22	Lancaster, PA, MSA	450,385	101,266	62,576	7,467	17,324	24,229	3,342
23	Memphis, TN-AR-MS, MSA	1,001,427	231,458	102,477	17,180	38,459	53,237	6,190
24	Birmingham, AL, MSA	792,477	160,243	104,863	11,896	31,632	42,383	5,806
25	St. Louis, MO-IL, MSA	2,342,664	516,593	307,829	38,468	90,569	125,778	16,955

Consolidated by CMSA, MSA or PMSA as designated by the U.S. Census.
Note: At-Risk Population Estimates include all counties in the respective MSA that have ozone monitors.

Table 3
People at Risk
In America's 25 Most Ozone-Polluted Counties

	County	ST	Total Population	At-Risk						Number of High Ozone Days in the Unhealthy Ranges 1996–1998				
				Under14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Weighted Avg(1)	Grade
1	San Bernardino	CA	1588675	459715	140789	32915	56449	84515	8484	138	88	81	144.0	F
2	Riverside	CA	1407265	375628	178892	26873	51376	75579	9413	152	82	31	112.3	F
3	Kern	CA	618162	178145	58930	12741	21941	33009	3488	156	80	8	97.3	F
4	Fresno	CA	743612	215420	76763	15455	26237	39792	4338	165	52	5	84.3	F
5	Los Angeles	CA	9056076	2154631	944217	157128	347140	480156	54751	96	50	19	69.7	F
6	Tulare	CA	346602	106599	35420	7683	11783	18650	2020	176	13	0	65.2	F
7	Ventura	CA	711048	175621	73601	12830	26722	37929	4405	115	23	3	51.8	F
8	Harris	TX	3106629	752800	237790	55467	118354	163911	16453	65	34	19	51.3	F
9	Kings	CA	113342	32206	8710	2303	4094	5980	549	119	18	0	48.7	F
10	Imperial	CA	140931	40307	13520	2980	4940	7530	786	92	10	0	35.7	F
11	Anne Arundel	MD	465166	98277	45404	7266	18443	24720	2967	69	21	2	34.8	F
12	Mecklenburg	NC	596939	128350	56701	9328	23788	31520	3600	76	15	0	32.8	F
13	Fulton	GA	715832	146459	67018	10856	28854	37693	4268	66	14	5	32.3	F
14	Rockdale	GA	65401	15053	5944	1124	2504	3488	402	56	20	1	29.3	F
15	San Diego	CA	2673620	617046	307423	44620	103824	141867	17031	66	12	1	28.7	F
16	Merced	CA	191002	60657	17752	4345	6425	10245	1036	70	9	1	28.5	F
17	El Dorado	CA	151257	36187	18891	2610	5732	8145	1079	65	10	2	28.0	F
18	Knox	TN	363654	67783	46329	5047	14882	19390	2661	62	14	0	27.7	F
19	Sevier	TN	61356	11662	8156	888	2459	3309	481	66	8	0	26.0	F
20	Sacramento	CA	1116456	270383	126899	19468	42470	59598	7256	50	15	2	25.5	F
21	Camden	NJ	505087	121567	64043	8835	19079	27142	3541	63	7	1	25.2	F
22	Denton	TX	348384	82685	17787	6011	13624	18084	1480	58	9	0	23.8	F
23	Shasta	CA	161348	39945	23328	2914	5952	8783	1260	60	4	1	22.7	F

Table 3
Cont.

				At-Risk					Number of High Ozone Days in the Unhealthy Ranges 1996–1998					
	County	ST	Total Population	Under14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Weighted Avg(1)	Grade
24	Prince George's	MD	765520	162870	58323	11989	30632	40189	4181	53	8	1	22.3	F
24	Ocean	NJ	475390	97946	109992	7146	18491	26177	4879	54	6	2	22.3	F
24	Wake	NC	533306	110187	41780	7997	21697	27876	2887	58	6	0	22.3	F
25	Blount	TN	98781	18406	13683	1394	3993	5318	781	55	7	0	21.8	F
25	Jefferson	TN	40309	6949	5336	543	1649	2173	323	49	11	0	21.8	F
25	Sumner	TN	119403	26613	12446	2004	4592	6396	793	55	7	0	21.8	F

Table 4

Counties with the Worst Ozone Air Pollution In Each State

	County	ST	Metropolitan Statistical Area	Number of High Ozone Days in the Unhealthy Ranges 1996-1998 Orange	Red	Purple	Weighted Avg(1)	Grading Level
1	SAN BERNARDINO	CA	Riverside-San Bernardino, CA PMSA	138	88	81	144.0	F
2	HARRIS	TX	Houston, TX PMSA	65	34	19	51.3	F
3	ANNE ARUNDEL	MD	Baltimore, MD PMSA	69	21	2	34.8	F
4	MECKLENBURG	NC	Charlotte-Gastonia-RockHill, NC-SC PMSA	76	15	0	32.8	F
5	FULTON	GA	Atlanta, GA MSA	66	14	5	32.3	F
6	KNOX	TN	Knoxville, TN MSA	62	14	0	27.7	F
7	CAMDEN	NJ	Philadelphia, PA-NJ PMSA	63	7	1	25.2	F
8	MARICOPA	AZ	Phoenix-Mesa, AZ MSA	63	1	0	21.5	F
9	WASHINGTON	PA	Pittsburgh, PA MSA	47	8	0	19.7	F
10	FAIRFIELD	CT	Bridgeport, CT PMSA	38	11	1	18.8	F
11	FAIRFAX	VA	Washington, DC-MD-VA-WV PMSA	41	8	0	17.7	F
12	DIST. OF COLUMBIA	DC	Washington, DC-MD-VA-WV PMSA	44	4	1	17.3	F
13	IBERVILLE	LA	N/A	42	6	0	17.0	F
14	NEW CASTLE	DE	Wilmington-Newark, DE-MD PMSA	40	5	0	15.8	F
15	SAINT CHARLES	MO	St. Louis, MO-IL, MSA	39	4	1	15.7	F
16	BUTLER	OH	Hamilton-Middletown, OH PMSA	43	2	0	15.3	F
17	NEW YORK	NY	New York, NY PMSA	35	7	0	15.2	F

Table 4: Counties with the Worst Ozone Air Pollution In Each State, cont'd

	County	ST	Metropolitan Statistical Area	Number of High Ozone Days in the Unhealthy Ranges 1996-1998 Orange	Red	Purple	Weighte Avg(1)	Grading Level
18	WARRICK	IN	Evansville-Henderson, IN-KY MSA	40	3	0	14.8	F
19	JEFFERSON	AL	Birmingham, AL MSA	33	10	0	14.3	F
20	JEFFERSON	KY	Louisville, KY-IN MSA	36	4	0	14.0	F
21	BERRIEN	MI	Benton Harbor, MI MSA	35	4	0	13.7	F
22	MANITOWOC	WI	N/A	24	4	2	11.3	F
23	BRISTOL	MA	Providence-Fall River-Warwick, RI-MA MSA; Boston, MA-NH PMSA; New Bedford, MA PMSA; Brockton, MA PMSA	27	4	0	11.0	F
24	AIKEN	SC	Augusta-Aiken, GA-SC MSA	33	0	0	11.0	F
25	TULSA	OK	Tulsa, OK MSA	28	2	0	10.3	F
26	CABELL	WV	Huntington-Ashland, WV-KY-OH MSA	20	7	0	10.2	F
27	SALT LAKE	UT	Salt Lake City-Ogden, UT MSA	27	2	0	10.0	F
28	MADISON	IL	St. Louis, MO-IL, MSA	26	1	0	9.2	F
29	JACKSON	MS	Biloxi-Gulfport-Pascagoula, MS MSA	24	2	0	9.0	F
30	ESCAMBIA	FL	Pensacola, FL MSA	19	4	0	8.3	F
31	ROCKINGHAM	NH	Boston, MA-NH PMSA; Lawrence, MA-NH PMSA; Portsmouth-Rochester, NH-ME PMSA; Manchester, NH PMSA	16	3	0	6.8	F
32	YORK	ME	Portsmouth-Rochester, NH-ME PMSA; Portland, ME MSA	13	4	0	6.3	F
33	CRITTENDEN	AR	Memphis, TN-AR-MS MSA	17	1	0	6.2	F
34	KENT	RI	Providence-Fall River-Warwick, RI-MA MSA	16	0	0	5.3	F
35	CLARK	NV	Las Vegas, NV-AZ MSA	14	1	0	5.2	F

Table 4: Counties with the Worst Ozone Air Pollution In Each State, cont'd

	County	ST	Metropolitan Statistical Area	Number of High Ozone Days in the Unhealthy Ranges 1996-1998 Orange	Red	Purple	Weighte Avg(1)	Grading Level
36	WYANDOTTE	KS	Kansas City, MO-KS MSA	12	1	0	4.5	F
37	KING	WA	Seattle-Bellevue-Everett, WA PMSA	9	2	0	4.0	F
38	CLACKAMAS	OR	Portland-Vancouver, OR-WA PMSA	5	4	0	3.7	F
39	MARION	OR	Salem, OR PMSA	11	0	0	3.7	F
40	JEFFERSON	CO	Denver, CO PMSA	9	0	0	3.0	D
41	DONA ANA	NM	Las Cruces, NM MSA	6	0	0	2.0	C
42	BENNINGTON	VT	N/A	5	0	0	1.7	C
43	SCOTT	IO	Davenport-Moline-Rock Island, IA-IL MSA	3	0	0	1.0	C
44	WASHINGTON	MN	Minneapolis-St. Paul, MN-WI MSA	2	0	0	0.7	B

Beyond the Numbers

As important as they are in assigning a quantitative value to the scope of a threat, numbers alone cannot describe the seriousness of the air pollution's insult to human bodies. Because seemingly every suggestion for reducing air pollution elicits howls of protest from one vested interest or another, it is essential to constantly bear in mind the human costs associated with air pollution. Consider, for example, the driver stuck behind a diesel truck, breathing the catchall bag of poisons that are lumped together as diesel "exhaust." It contains hundreds of different chemical compounds, over 40 of which are listed by the U.S. Environmental Protection Agency and California as toxic air contaminants. They include known human carcinogens, probable human carcinogens, reproductive toxins, endocrine disrupters and rogues gallery of other poisons. In 1998, California declared particulate emissions from diesel-fueled engines a toxic air contaminant, based on data that supported links between diesel exposure and cancer.

But the equally insidious component of that smoky, noxious cloud is a part that can't be seen: the invisible collection of gases known as oxides of nitrogen, or NO_X. Formed when the nitrogen gas that is 80 percent of the air we breathe is superheated and compressed in the fiery interior of a diesel engine—or, for that matter, the furnace of a power plant or factory—oxides of nitrogen, like ozone, destroy organic matter such as human tissue.

Animals exposed to NO_X are less able to ward off bacterial infections and die more often.[28,29] Their susceptibility to viral infection increases,[30] exposure to high levels of NO_2 for weeks causes emphysema-like changes in the lungs of animals.[31] Humans exposed to high levels of NO_X outdoors had more colds that settled in their chests, chronic wheezing and cough, bronchitis, chest cough with phlegm, and episodes of respiratory illness.[32]

Oxides of nitrogen react in the air with hydrocarbons such as unburned gasoline and diesel fuel to form ozone as well as acidic fine particles. These particles, together with other particulate pollutants, account for upwards of 50,000 deaths per year in the United States. In some areas such as Los Angeles, oxides of nitrogen account for roughly one-third of the fine particles. Those unburnt fumes and other hydrocarbons are also dangerous in and of themselves. A major constituent of gasoline, for example, is benzene, which is known conclusively to cause cancer in humans.

Toxic Air Pollutants Emitted By Gasoline Engines

Source: USEPA, *National Air Quality and Emissions Trends Report*, 1997

Acetaldehyde
Acrolein
Arsenic & compounds
1,3-Butadiene
Chromium & compounds
Dioxins & Furans
Ethylbenzene
Formaldehyde
n-Hexane
Lead & compounds
Manganese & compounds
Methyl tert-butyl ether
Nickel & compounds
Polycyclic organic matter
Propionaldehyde
Styrene
Toluene
Xylenes

Thus, eliminating ozone brings with it a wide variety of other health-improving benefits. By definition, reducing ozone will also decrease oxides of nitrogen, hydrocarbons, fine particulate matter and acid rain. Unfortunately, although the means for curbing the air pollutants that form ozone are readily available, the progress has been uneven. In Los Angeles, for example, levels have been steadily reduced, due in large measure to the willingness of that state

to adopt the world's most stringent air pollution requirements for vehicles and their fuels. But even with firm and steady direction from the state level, ozone concentrations in Los Angeles and many other areas in California remains the nation's worst, and could be lowered even more rapidly through reasonable, cost effective measures. Yet, as *State of the Air: 2000* demonstrates, too few areas are doing the jobs they should.

THE CONTINUING, AVOIDABLE INJURIES TO HUMAN HEALTH

Critics of the Clean Air Act are fond of arguing that it requires billions of dollars to be spent just to protect a few sensitive individuals against trivial complaints–watery eyes, for instance. This isn't true. The law requires *groups* to be protected, not individuals. And it requires the protection to be against scientifically genuine *adverse health effects*, not mere irritation.

One example of a group is children. They are more vulnerable to air pollution than adults for a variety of reasons. They breathe more per pound of body weight (twice as much at six months of age) and spend more time outdoors. The breathing zones of children are lower in height, and their bodies are growing and developing, a process that pollution may inhibit or alter. Other "sensitive" groups including joggers, bikers, construction workers, mail carriers and others who engage in fairly vigorous physical activity, whether for work or play. Asthmatics—which account for more than five percent of the nation's population—as well as those with bronchitis or other chronic obstructive pulmonary disease also constitute "sensitive" groups protected by the Clean Air Act.

The documented effects of ambient air pollution include reduced lung function in children and adults; lung airway inflammation; asthma exacerbations; increased hospital emergency room visits and admissions; and increased incidence of death—hardly mere "irritation." These severe effects, however, are merely the most visible "tip of the iceberg" of air pollution effects.

For every 75 deaths per year due to air pollution, there are 265 hospital admissions for asthma and 240 non-asthma respiratory admissions; 3,500 respiratory emergency doctor visits; 180,000 asthma attacks; 930,000 restricted activity days; and, 2,000,000 acute respiratory symptom days.[33] Scientists have estimated that the number of deaths in the United States associated with air pollution range from 50,000 to 100,000 per year.[34]

CURING THE ILLNESS

Air pollution is not unlike a disease. It injures humans, destroying their health and well being. But it is not an incurable disease. There are solutions, so those who suffer today are suffering needlessly.

Clearly, air pollution cannot be eliminated on a moment's notice or with a single action. But there are policies that can be effective, and these include the following:

The 1997 ozone and particulate matter standards: The oil, coal, electric utility, auto industries and their protectors have joined forces to prevent the U.S. government from establishing new ambient standards for both ozone and fine particulate matter that take account of new scientific evidence. Usually unrelenting in their insistence on "sound science" as the

basis for regulation, these interests have chosen to thwart exactly that in the context of the proposed standards by filing a lawsuit seeking to overturn them. For the moment, they have succeeded.

However, it is clear beyond any credible dispute that the proposed standards are based on sound science and that they ultimately will be upheld. The 1970 Clean Air Act and subsequent amendments have preserved the authority of States to establish their own ambient standards. To avoid unnecessary illness and injury from the industry's action, states should act on their own, either to adopt ambient standards based on the same science reviewed by EPA or to begin taking the action required to implement the EPA proposals.

Diesel engines: Soon, EPA will propose regulations to address onroad heavy-duty diesels including more stringent emission standards for NO_X and PM to take effect in 2007, as well as a nationwide cap on sulfur in diesel fuel to take effect in 2006. Cutting-edge pollution control technologies need very low sulfur diesel fuel to operate. The American Lung Association supports regulations that will—

- Set 2007 emission standards no less stringent than 0.2 g/bhp-hr NO_X and 0.01 g/bhp-hr PM, based on the most advanced technologies possible, with commensurately low diesel sulfur standards, a sulfur cap of 10 or 15 ppm; and

- Move forward to propose this program immediately, so that it will take full effect on the schedule contemplated, with both the NO_X and PM standards applying to 100 percent of the fleet in the 2007 model year.

Nonroad Diesel: Addressing onroad heavy-duty diesels and fuel alone, however, is not sufficient. EPA must also take swift action to control nonroad heavy-duty diesel engines and fuel. Nonroad heavy-duty diesel engines are a more significant source of emissions than onroad heavy-duty diesels. Further, the technological advances that will occur in order to meet the 2007 onroad standards will carry over to nonroad equipment, but only if low-sulfur diesel fuel, which is necessary for these technologies to operate, is available for the nonroad sector, as well. To this end, EPA should adopt emission standards and a sulfur cap for nonroad heavy-duty diesels and fuel that are equivalent to those for onroad heavy-duty diesels, and in the same time frame.

The "NOX SIP Call": To address the problem of long-range transport of ozone and its precursors in the Eastern U.S., the Environmental Protection Agency in October 1998 published a rule requiring major reductions in summertime emissions of oxides of nitrogen (NOx). Referred to as the "NOX SIP Call," the rule required 22 Midwestern and Eastern states and the District of Columbia to significantly reduce their NOx emissions by 2003. As the most significant sources of NOx emissions for the vast majority of these states are electric utility power plants and heavy industry, it is expected that states will require major NOx emission reductions from these sources.

The NOx SIP Call rule was challenged in court by many of the same industries and state governments that filed suit against the 1997 national ozone and particulate matter standards. However, their challenge to the SIP Call was rejected by the D.C. Court of Appeals in March 2000. Governors and state Attorneys General should accept this decision, and begin taking the actions required to reduce emissions of oxides of nitrogen.

Areas Where the Air is Cleaner

Some cities and counties in the United States are blessed with cleaner air by virtue of their geography. Pollution that they generate may, for example, blow out to sea or, to the misfortune of their neighbors, into other states and cities. A few areas, however, have cleaner air because they've worked for it. The residents of Portland, Oregon, for example, have committed themselves to a pattern of growth designed to minimize air pollution, urban sprawl and the many other health, environmental and social ills often associated with one another. While other rapidly growing regions have witnessed increases in vehicle use that may be double their population growth, Portland seems to have effectively de-coupled the two and the ozone levels prove it.

Whatever the reasons, there are areas in the United States where the federal ozone standards were met during the 1996–98 time frame. These are listed in the following tables.

Table 5: Metropolitan Areas with the Best Record of Ozone Air Pollution in the Unhealthy Ranges

METROPOLITAN AREA	POPULATION
BELLINGHAM, WA, MSA	152,282
CEDAR RAPIDS, IA, MSA	179,826
COLORADO SPRINGS, CO, MSA	472,254
DES MOINES, IA, MSA	353,915
DULUTH SUPERIOR, MN-WI, MSA	194,599
FARGO-MOORHEAD, ND-MN, MSA	113,238
FLAGSTAFF, AZ-UT, MSA	112,031
HONOLULU, HI, MSA	873,131
LAREDO, TX, MSA	175,015
LINCOLN, NE, MSA	231,190
MCALLEN-EDINBURG-MISSION, TX, MSA	490,124
MONROE, LA, MSA	146,713
OMAHA, NE-IA, MSA	437,822
RENO, NV, MSA	298,680
SALINAS, CA, MSA	346,777
SAVANNAH, GA, MSA	225,412
SPOKANE, WA, MSA	403,939
TALLAHASSEE, FL, MSA	213,999

Note: MSA's were included only if all their respective counties with monitoring sites received a grade of A.

Table 6: Counties with the Best Ozone Air Pollution in Each State

County	ST	Metropolitan Statistical Area	Number of High Ozone Days in the Unhealthy Ranges 1996-1998 Orange	Red	Purple	Grade
GENEVA	AL	N/A	0	0	0	A
SUMTER	AL	N/A	0	0	0	A
YUKON-KOYUKUK	AK	N/A	0	0	0	A
COCHISE	AZ	N/A	0	0	0	A
COCONINO	AZ	Flagstaff, AZ-UT, MSA	0	0	0	A
LAKE	CA	N/A	0	0	0	A
MARIN	CA	San Francisco, CA, PMSA	0	0	0	A
MENDOCINO	CA	N/A	0	0	0	A
MONO	CA	N/A	0	0	0	A
MONTEREY	CA	Salinas, CA, MSA	0	0	0	A
PLUMAS	CA	N/A	0	0	0	A
SAN FRANCISCO	CA	San Francisco, CA, PMSA	0	0	0	A
SAN MATEO	CA	San Francisco, CA, PMSA	0	0	0	A
SISKIYOU	CA	N/A	0	0	0	A
EL PASO	CO	Colorado Springs, CO, MSA	0	0	0	A
MONTEZUMA	CO	N/A	0	0	0	A
WELD	CO	Greeley, CO, PMSA	0	0	0	A
LEON	FL	Tallahassee, FL, MSA	0	0	0	A
CHATHAM	GA	Savannah, GA, MSA	0	0	0	A
HONOLULU	HI	Honolulu, HI, MSA	0	0	0	A
BUTTE CO, ID	ID	N/A	0	0	0	A
KANE CO, IL	IL	Chicago, IL, PMSA	0	0	0	A
ROCK ISLAND CO, IL	IL	Davenport-Moline-Rock Island, IA-IL, MSA	0	0	0	A
LINN CO, IA	IA	Cedar Rapids, IA, MSA	0	0	0	A
POLK CO, IA	IA	Des Moines, IA, MSA	0	0	0	A
VAN BUREN CO, IA	IA	N/A	0	0	0	A
PERRY CO, KY	KY	N/A	0	0	0	A
OUACHITA PARISH, LA	LA	Monroe, LA, MSA	0	0	0	A
OXFORD CO, ME	ME	N/A	0	0	0	A
DAKOTA CO, MN	MN	Minneapolis-St. Paul, MN-WI, MSA	0	0	0	A
LAKE CO, MN	MN	N/A	0	0	0	A

Table 6: Counties with the Best Ozone Air Pollution in Each State (cont.)

County	ST	Metropolitan Statistical Area	Number of High Ozone Days in the Unhealthy Ranges 1996-1998 Orange	Red	Purple	Grade
ST LOUIS CO, MN	MN	Duluth Superior, MN-WI, MSA	0	0	0	A
JACKSON CO, MO	MO	Kansas City, MO-KS, MSA	0	0	0	A
FLATHEAD CO, MT	MT	N/A	0	0	0	A
DOUGLAS CO, NE	NE	Omaha, NE-IA, MSA	0	0	0	A
LANCASTER CO, NE	NE	Lincoln, NE, MSA	0	0	0	A
DOUGLAS CO, NV	NV	N/A	0	0	0	A
WASHOE CO, NV	NV	Reno, NV, MSA	0	0	0	A
WHITE PINE CO, NV	NV	N/A	0	0	0	A
CARROLL CO, NH	NH	N/A	0	0	0	A
BERNALILLO CO, NM	NM	Albuquerque, NM, MSA	0	0	0	A
VALENCIA CO, NM	NM	Albuquerque, NM, MSA	0	0	0	A
HERKIMER CO, NY	NY	Utica-Rome, NY, MSA	0	0	0	A
YANCEY CO, NC	NC	N/A	0	0	0	A
CASS CO, ND	ND	Fargo-Moorhead, ND-MN, MSA	0	0	0	A
MC KENZIE CO, ND	ND	N/A	0	0	0	A
MERCER CO, ND	ND	N/A	0	0	0	A
OLIVER CO, ND	ND	N/A	0	0	0	A
STEELE CO, ND	ND	N/A	0	0	0	A
COLUMBIA CO, OR	OR	Portland-Vancouver, OR-WA, PMSA	0	0	0	A
WILLIAMSBURG CO, SC	SC	N/A	0	0	0	A
BREWSTER CO, TX	TX	N/A	0	0	0	A
HIDALGO CO, TX	TX	McAllen-Edinburg-Mission, TX, MSA	0	0	0	A
WEBB CO, TX	TX	Laredo, TX, MSA	0	0	0	A
CACHE CO, UT	UT	N/A	0	0	0	A
SAN JUAN CO, UT	UT	N/A	0	0	0	A
CLALLAM CO, WA	WA	N/A	0	0	0	A
SKAGIT CO, WA	WA	N/A	0	0	0	A
SPOKANE CO, WA	WA	Spokane, WA, MSA	0	0	0	A
WHATCOM CO, WA	WA	Bellingham, WA, MSA	0	0	0	A
ST CROIX CO, WI	WI	Minneapolis-St. Paul, MN-WI, MSA	0	0	0	A
TETON CO, WY	WY	N/A	0	0	0	A

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APPENDIX A
DESCRIPTION OF METHODOLOGY

STATISTICAL METHODOLOGY

The Air Quality Data

The data on air quality throughout the Untied States was obtained from EPA's Aerometric Information Retrieval System (AIRS) database. The American Lung Associations used A.S.L.& Associates to analyze data on ozone monitoring for the three year period 1996-1998.The 1996, 1997, and 1998 AIRS hourly ozone data was used to calculate the daily 8-hour maximum concentration for each ozone-monitoring site. The highest daily 8-hour daily maximum concentration in each county for 1996, 1997, and 1998 based on the EPA-defined ozone season was then determined.

Using these results a table summarizing the ozone data for each county for each of the 3 years the numbers within the following ranges:

0.000-0.064 ppm	Good
0.065-0.084 ppm	Moderate
0.085-0.104 ppm	Unhealthy for Sensitive Groups
0.105-0.124 ppm	Unhealthy
0.125-0.374 ppm	Very Unhealthy

Using these results, A.S.L. & Associates prepared a table that summarized for each of the three years the number of days the ozone level was within the unhealthy ranges identified by EPA as Orange, Red and Purple Days. The numbers of days within each of these categories were summed to establish the number of days each monitored country experienced air quality designated as orange, red or purple.

No data capture criteria were used to eliminate monitoring sites. All data were used in the analysis because it was the goal to identify the number of days that 8-hour daily maximum concentrations occurred within the defined ranges.

Description of County Grading System

A weighted average was used to determine the grades of each county. The calculation for the weighted average was as follows: The number of orange days experienced by each county was assigned a factor of (1); red days were assigned a factor of (1.5) and purple days were assigned a factor of (2). After multiplying the total number of days within each category by their assigned factor, a total was determined. Because the monitoring data was collected over a three-year period, this total was divided by three. Each county's grade was determined using the weighted average.

The weighted averages of all counties were ranked and a frequency distribution was determined. Using this frequency distribution, each county was assigned a grade following the system used in a standard grade school setting. The top 10% (in this case 11.2%) of counties, with a weighted average of zero (no violations over the three year period) were given a grade of A. The next 10% of counties, with weighted averages between 0.3 and 0.9 were given a grade of B. The next 10% of counties, with a weighted average between 1.0 and 2.0 received a C. A grade of D was assigned to those counties with scores between 2.1 and 3.2 (the next 10%) of counties. Scores of 3.3 and above (the bottom 60%) were given a grade of F.

Calculations of Populations-at-Risk

Presently, state and county-specific measurements of the number of persons with chronic and acute lung disease are not available. In order to assess the magnitude of lung disease at the state and county levels, we have utilized a synthetic estimation technique originally developed by the U.S. Bureau of the Census. This method uses age-specific national estimates of self-reported lung disease to project the prevalence and incidence of lung disease within the counties served by Lung Association constituents and affiliates.

Population Estimates

The U.S. Census Bureau estimated data on the total population of each county in the United States for 1996. The Census Bureau also estimated the age specific breakdown of the population by county.

Prevalence Estimates: Chronic Bronchitis, Emphysema and Asthma

In 1996, the National Health Interview Survey (NHIS) estimated the nationwide prevalence of COPD (chronic bronchitis and emphysema) at 16.0 million, which is comprised of an estimated 14.2 million chronic bronchitis and 1.8 million emphysema sufferers. The NHIS estimates the prevalence of asthma to be 14.6 million people, of which 4.4 million of these are under age 18 [34]. 1996 represents the most recent year of publication of prevalence data for the Health Interview Survey, and so was utilized to calculate county-specific prevalence.

Local area prevalence of chronic bronchitis, emphysema and asthma are estimated by applying age-specific national prevalence rates from the 1996 NHIS to age-specific county-level resident populations. Prevalence estimates for chronic bronchitis and emphysema are calculated for those under 18, 18-44, 45 to 64 and 65+. The prevalence estimate for pediatric asthma is calculated for those under age 18. The prevalence estimate for adult asthma is calculated for those 18-44, 45 to 64 and 65+.

The procedure for determining local prevalence estimate is as follows. First, the age-specific county-level resident population for July 1st, 1996 is obtained from the U.S. Bureau of the Census web-site. The age-specific national prevalence rate for each chronic lung disease is applied to the age-specific county-level population of each county. Thereafter, the age-specific prevalence estimates for each county within a Lung Association area are summed to determine

its overall prevalence.

Limitations of Estimates

The NHIS is a scientifically designed population sample survey conducted annually by the National Center for Health Statistics. This survey serves as a source of magnitude data on chronic and acute lung disease.

Since the statistics presented by the NHIS are based on a sample, they will differ (due to random sampling variability) from figures that would be derived from a complete census, or case registry of people in the U.S. with these diseases. The results are also subject to reporting, non-response and processing errors. These types of errors are kept to a minimum by methods built into the survey. Additionally, a major limitation of the survey is that the information represents self-reported data and no attempt is made to obtain confirmation from medical sources. However, the NHIS is the best available source that depicts the magnitude of acute and chronic lung disease on the national level. The conditions covered in the survey may vary considerably in the accuracy and completeness with which they are reported.

Local estimates of chronic and acute lung diseases are scaled in direct proportion to the base population of the county and its age distribution. No adjustments are made for other factors that may affect local prevalence (e.g. local prevalence of cigarette smokers or occupational exposures) since the health surveys that obtain such data are rarely conducted on the county level. Because the estimates do not account for geographic differences in the prevalence of chronic and acute diseases, the sum of the estimates for each of the counties in the United States may not exactly reflect the national estimate derived by the NHIS.

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Appendix A Endnote

34. These 1996 county-level prevalence estimates should not be confused with the state-specific asthma projections calculated for 1998 and previously reported in the December 4, 1998 issue of MMWR.

Appendix B
State Data Tables

Table 7: Breakdown of High Ozone Days Among Counties with Monitoring Sites

Category	Number of Counties
Monitoring Sites	678
Monitoring Sites with Incomplete Data (that were excluded in the analysis)	122
Monitoring Sites with Complete Data	556
Monitoring Sites that had at least 1 day of high ozone in the Unhealthy, Moderate, and Good Ranges	494
Monitoring Sites that had zero days of high ozone in the Unhealthy Ranges but had at least 1 day of high ozone in the Good and Moderate Ranges	62
Monitoring Sites that had zero days of high ozone in the Unhealthy Ranges plus zero days of high ozone in the Moderate Range but had at least 1 day of high ozone in Good Range	7

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ALABAMA

At-Risk Groups								Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
County	Total Population	Under14	Over65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
CLAY	13,631	2,609	2,352	202	537	743	121	15	0	0	F
DE KALB	57,389	11,407	8,304	873	2,260	3,104	461	*	*	*	*
ELMORE	58,578	12,056	6,460	918	2,313	3,124	394	6	1	0	D
GENEVA	24,750	4,845	4,056	371	973	1,348	215	0	0	0	A
JEFFERSON	**662,344**	**130,961**	**94,880**	**9,757**	**26,515**	**35,537**	**5,100**	**33**	**10**	**0**	**F**
LAWRENCE	33,083	6,892	4,014	531	1,289	1,777	237	8	0	0	D
MADISON	270,468	53,110	27,891	3,932	10,973	14,348	1,779	19	1	0	F
MOBILE	396,467	90,019	47,554	6,725	15,184	21,242	2,721	13	1	0	F
MONTGOMERY	217,640	47,101	25,270	3,532	8,507	11,589	1,446	11	1	0	F
MORGAN	107,418	22,133	13,199	1,660	4,239	5,763	779	*	*	*	*
SHELBY	130,133	29,282	9,983	2,139	5,117	6,846	706	24	4	0	F
SUMTER	16,166	3,927	2,194	300	597	868	112	0	0	0	A

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

Orange: Unhealthy For Sensitive Groups — 0.085-0.014 ppm ozone
Red: Unhealthy — 0.105-0.124 ppm ozone
Purple: Very Unhealthy — 0.125-0.374 ppm ozone

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ALASKA

At-Risk Groups								Number of High Ozone Days in the 1996-1998			
County	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
YUKON-KOYUKUK	6,016	1,975	626	143	195	326	36	0	0	0	A

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

Orange: Unhealthy For Sensitive Groups	0.085-0.014 ppm ozone
Red: Unhealthy	0.105-0.124 ppm ozone
Purple: Very Unhealthy	0.125-0.374 ppm ozone

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ARIZONA

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
COCHISE	110,137	25,945	14,966	1,953	4,114	5,960	820	0	0	0	A
COCONINO	112,031	30,070	6,691	2,221	4,112	5,879	495	0	0	0	A
GILA	47,219	10,433	9,232	785	1,767	2,616	459	*	*	*	*
MARICOPA	**2,613,901**	**601,004**	**329,225**	**44,038**	**100,420**	**139,919**	**18,114**	**63**	**1**	**0**	**F**
PIMA	766,956	166,297	109,986	12,229	29,946	41,167	5,750	1	0	0	B
YAVAPAI	140,055	25,744	32,514	1,915	5,554	7,789	1,544	*	*	*	*
YUMA	124,966	31,841	18,493	2,350	4,562	6,758	925	6	0	0	C

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

Orange: Unhealthy For Sensitive Groups	0.085-0.014 ppm ozone
Red: Unhealthy	0.105-0.124 ppm ozone
Purple: Very Unhealthy	0.125-0.374 ppm ozone

AMERICAN LUNG ASSOCIATION®

ARKANSAS

At-Risk Groups								Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
County	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
CLARK	22,051	4,045	3,472	307	898	1,182	177	*	*	*	*
CRITTENDEN	**49,460**	**12,994**	**5,146**	**968**	**1,790**	**2,652**	**306**	**17**	**1**	**0**	**F**
MONTGOMERY	8,431	1,562	1,672	120	333	466	85	1	0	0	B
NEWTON	8,043	1,849	1,164	139	301	439	65	1	0	0	B
PULASKI	351,509	76,141	41,239	5,699	13,739	18,725	2,349	4	0	0	C

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

Orange: Unhealthy For Sensitive Groups 0.085-0.014 ppm ozone
Red: Unhealthy 0.105-0.124 ppm ozone
Purple: Very Unhealthy 0.125-0.374 ppm ozone

CALIFORNIA

AMERICAN LUNG ASSOCIATION®

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
ALAMEDA	1,355,888	294,151	148,948	21,375	53,704	71,875	8,701	18	2	0	F
AMADOR	33,207	5,728	6,035	420	1,372	1,801	306	39	6	0	F
BUTTE	192,121	42,915	32,157	3,094	7,430	10,386	1,571	1	0	0	B
CALAVERAS	38,487	8,526	6,694	623	1,462	2,120	354	43	7	0	F
COLUSA	18,031	5,090	2,136	370	634	974	119	5	0	0	C
CONTRA COSTA	881,339	198,355	102,812	14,425	34,179	47,215	6,096	12	1	0	F
EL DORADO	151,257	36,187	18,891	2,610	5,732	8,145	1,079	65	10	2	F
FRESNO	743,612	215,420	76,763	15,455	26,237	39,792	4,338	165	52	5	F
GLENN	26,132	7,313	3,589	531	918	1,420	188	1	0	0	B
IMPERIAL	140,931	40,307	13,520	2,980	4,940	7,530	786	92	10	0	F
INYO	18,346	3,972	3,418	288	705	1,009	172	1	0	0	B
KERN	618,162	178,145	58,930	12,741	21,941	33,009	3,488	156	80	8	F
KINGS	113,342	32,206	8,710	2,303	4,094	5,980	549	119	18	0	F
LAKE	55,088	12,401	11,289	890	2,086	3,045	543	0	0	0	A
LOS ANGELES	9,056,076	2,154,631	944,217	157,128	347,140	480,156	54,751	96	50	19	F
MADERA	109,794	29,262	13,845	2,129	3,972	5,914	742	36	5	0	F
MARIN	232,484	39,010	31,872	2,863	9,761	12,467	1,868	0	0	0	A
MARIPOSA	15,865	3,273	2,741	237	621	870	146	48	3	0	F
MENDOCINO	82,961	20,333	11,655	1,480	3,088	4,495	627	0	0	0	A
MERCED	191,002	60,657	17,752	4,345	6,425	10,245	1,036	70	9	1	F
MONO	10,399	2,379	724	169	412	545	54	0	0	0	A
MONTEREY	346,777	90,386	39,342	6,491	12,855	18,479	2,141	0	0	0	A
NAPA	116,300	24,476	19,955	1,785	4,552	6,314	1,000	1	0	0	B
NEVADA	88,589	19,220	16,540	1,395	3,408	4,860	821	60	0	0	F
ORANGE	2,606,639	580,935	260,741	42,704	101,992	138,128	15,992	17	1	0	F
PLACER	213,363	50,966	24,490	3,697	8,081	11,478	1,474	43	10	0	F
PLUMAS	20,416	4,638	3,629	336	771	1,125	188	0	0	0	A
RIVERSIDE	1,407,265	375,628	178,892	26,873	51,376	75,579	9,413	152	82	31	F

AMERICAN LUNG ASSOCIATION®

CALIFORNIA

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
SACRAMENTO	1,116,456	270,383	126,899	19,468	42,470	59,598	7,256	50	15	2	F
SAN BENITO	44,101	12,588	4,149	909	1,564	2,356	249	14	0	0	F
SAN BERNARDINO	**1,588,675**	**459,715**	**140,789**	**32,915**	**56,449**	**84,515**	**8,484**	**138**	**88**	**81**	**F**
SAN DIEGO	2,673,620	617,046	307,423	44,620	103,824	141,867	17,031	66	12	1	F
SAN FRANCISCO	735,318	106,860	112,012	7,954	31,985	39,047	5,934	0	0	0	A
SAN JOAQUIN	531,601	145,478	58,751	10,521	19,147	28,499	3,306	24	0	0	F
SAN LUIS OBISPO	228,688	46,492	34,351	3,370	9,189	12,210	1,731	30	1	0	F
SAN MATEO	685,215	135,700	90,957	9,888	27,661	36,660	5,112	0	0	0	A
SANTA BARBARA	382,254	82,944	50,334	6,003	15,099	20,357	2,669	25	4	0	F
SANTA CLARA	1,594,251	345,811	158,954	25,222	63,170	84,362	9,833	14	2	0	F
SANTA CRUZ	235,654	52,496	25,770	3,815	9,272	12,461	1,464	2	0	0	B
SHASTA	161,348	39,945	23,328	2,914	5,952	8,783	1,260	60	4	1	F
SISKIYOU	44,068	10,460	7,534	765	1,639	2,417	384	0	0	0	A
SOLANO	366,540	96,138	33,008	6,918	13,592	19,456	2,052	12	0	0	F
SONOMA	419,391	95,251	56,589	6,874	16,242	22,487	3,033	5	1	0	D
STANISLAUS	413,567	118,118	44,521	8,466	14,654	22,199	2,527	51	5	1	F
SUTTER	75,398	19,617	8,866	1,426	2,749	4,074	519	15	0	0	F
TEHAMA	53,880	13,478	8,705	980	1,968	2,956	454	8	3	0	F
TULARE	346,602	106,599	35,420	7,683	11,783	18,650	2,020	176	13	0	F
TUOLUMNE	52,172	10,419	9,235	757	2,075	2,835	463	51	3	0	F
VENTURA	711,048	175,621	73,601	12,830	26,722	37,929	4,405	115	23	3	F
YOLO	149,378	34,185	14,958	2,459	5,861	7,874	877	8	0	0	D

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

Orange: Unhealthy For Sensitive Groups — 0.085-0.014 ppm ozone
Red: Unhealthy — 0.105-0.124 ppm ozone
Purple: Very Unhealthy — 0.125-0.374 ppm ozone

AMERICAN LUNG ASSOCIATION®

COLORADO

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
ADAMS	309,275	75,637	24,207	5,585	11,644	16,463	1,765	2	0	0	B
ARAPAHOE	454,345	99,705	40,763	7,460	17,712	24,166	2,794	2	0	0	B
BOULDER	257,249	49,634	21,008	3,680	10,581	13,490	1,478	5	0	0	C
DENVER	496,229	95,783	62,457	7,019	20,216	26,436	3,574	4	0	0	C
DOUGLAS	111,962	28,916	4,014	2,123	4,174	5,898	492	4	0	0	C
EL PASO	472,254	107,824	40,202	8,004	18,272	25,017	2,733	0	0	0	A
GUNNISON	12,074	2,176	746	160	513	623	59	*	*	*	*
JEFFERSON	**490,295**	**103,425**	**49,297**	**7,775**	**19,244**	**26,223**	**3,279**	**9**	**0**	**0**	**D**
LARIMER	221,425	46,944	21,598	3,488	8,787	11,715	1,360	1	0	0	B
MONTEZUMA	21,979	5,554	2,880	413	796	1,199	167	0	0	0	A
WELD	151,279	36,086	14,794	2,685	5,719	8,075	938	0	0	0	A

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AMERICAN LUNG ASSOCIATION®

CONNECTICUT

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
FAIRFIELD	**830,840**	**166,167**	**116,657**	**12,262**	**33,111**	**44,795**	**6,555**	**38**	**11**	**1**	**F**
HARTFORD	829,513	167,553	125,351	12,313	33,036	44,660	6,609	7	1	1	F
LITCHFIELD	179,853	37,854	25,855	2,766	7,080	9,693	1,404	23	0	0	F
MIDDLESEX	147,661	28,973	20,093	2,138	5,953	7,903	1,110	17	3	1	F
NEW HAVEN	792,534	162,305	120,649	11,863	31,526	42,598	6,245	28	6	1	F
NEW LONDON	249,267	53,850	33,177	3,894	9,825	13,335	1,804	21	5	1	F
TOLLAND	129,606	26,610	13,622	1,944	5,225	6,850	823	15	2	2	F
WINDHAM	104,636	24,618	13,429	1,791	3,991	5,612	734	*	*	*	*

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Orange: Unhealthy For Sensitive Groups — 0.085-0.014 ppm ozone
Red: Unhealthy — 0.105-0.124 ppm ozone
Purple: Very Unhealthy — 0.125-0.374 ppm ozone

AMERICAN LUNG ASSOCIATION®

DELAWARE

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
KENT	121,652	27,612	13,315	2,043	4,695	6,487	791	34	4	0	F
NEW CASTLE	**474,383**	**95,038**	**56,363**	**7,023**	**19,118**	**25,203**	**3,244**	**40**	**5**	**0**	**F**
SUSSEX	131,078	25,752	23,739	1,910	5,199	7,137	1,183	34	5	0	F

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

Orange: Unhealthy For Sensitive Groups	0.085-0.014 ppm ozone
Red: Unhealthy	0.105-0.124 ppm ozone
Purple: Very Unhealthy	0.125-0.374 ppm ozone

AMERICAN LUNG ASSOCIATION®

DISTRICT OF COLUMBIA

At-Risk Groups							
County	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema
DIST. OF COLUMBIA	539,646	94,314	74,800	6,781	22,700	28,689	4,096

Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
Orange	Red	Purple	Grade
44	4	1	F

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

Orange: Unhealthy For Sensitive Groups	0.085-0.014 ppm ozone
Red: Unhealthy	0.105-0.124 ppm ozone
Purple: Very Unhealthy	0.125-0.374 ppm ozone

FLORIDA

AMERICAN LUNG ASSOCIATION®

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
ALACHUA	196,473	39,695	19,222	2,893	8,048	10,247	1,111	*	*	*	*
BAKER	20,569	5,542	1,699	413	741	1,096	112	*	*	*	*
BREVARD	453,521	88,203	86,881	6,442	18,074	24,766	4,263	4	1	0	C
BROWARD	1,440,377	275,356	266,580	20,155	58,036	78,025	12,881	3	0	0	C
CALHOUN	12,468	2,865	1,635	213	474	672	91	*	*	*	*
DADE	2,105,604	442,032	299,935	32,718	82,711	113,330	16,195	12	0	0	F
DUVAL	720,936	171,789	77,079	12,485	27,562	38,376	4,530	13	2	0	F
ESCAMBIA	**276,361**	**62,063**	**36,750**	**4,573**	**10,638**	**14,869**	**2,028**	**19**	**4**	**0**	**F**
HILLSBOROUGH	893,062	195,482	115,377	14,349	34,869	47,801	6,360	17	3	0	F
HOLMES	17,990	3,862	2,653	295	689	977	145	*	*	*	*
LEE	379,566	67,445	98,757	4,924	15,267	21,097	4,386	4	0	0	C
LEON	213,999	44,092	18,264	3,241	8,701	11,151	1,143	0	0	0	A
MANATEE	231,900	41,813	62,392	3,045	9,295	12,894	2,708	5	1	0	D
MARION	230,205	44,668	57,205	3,287	9,017	12,799	2,567	*	*	*	*
ORANGE	763,033	166,761	84,603	12,175	30,109	40,439	4,873	14	1	0	F
OSCEOLA	135,838	31,384	18,731	2,292	5,185	7,320	1,010	10	0	0	F
PALM BEACH	991,717	177,686	247,818	12,919	40,145	54,633	10,851	2	0	0	B
PASCO	311,732	53,703	89,512	3,949	12,523	17,471	3,878	5	0	0	C
PINELLAS	868,976	142,764	212,183	10,566	35,775	47,885	9,585	6	1	0	D
POLK	439,868	94,361	86,738	6,981	16,874	24,132	4,136	11	1	0	F
SAINT JOHNS	106,762	21,163	18,724	1,564	4,231	5,809	949	1	0	0	B
SAINT LUCIE	174,108	35,967	40,041	2,616	6,758	9,612	1,806	1	0	0	B
SARASOTA	296,968	41,791	97,433	3,100	12,395	16,743	4,093	8	1	0	D
SEMINOLE	335,477	75,343	37,709	5,585	12,970	17,915	2,229	5	0	0	C
VOLUSIA	412,394	73,395	94,457	5,413	16,705	22,652	4,314	3	0	0	C

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

Orange: Unhealthy For Sensitive Groups — **0.085-0.014 ppm ozone**
Red: Unhealthy — **0.105-0.124 ppm ozone**
Purple: Very Unhealthy — **0.125-0.374 ppm ozone**

AMERICAN LUNG ASSOCIATION®

GEORGIA

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
BIBB	155,082	33,902	20,014	2,544	6,002	8,319	1,111	*	*	*	*
CHATHAM	225,412	50,335	29,116	3,693	8,734	12,082	1,607	0	0	0	A
DAWSON	13,049	2,981	1,090	222	501	695	79	*	*	*	*
DEKALB	587,724	116,898	49,129	8,723	23,921	30,824	3,338	47	9	0	F
DOUGLAS	84,314	19,719	6,308	1,465	3,238	4,459	461	*	*	*	*
FANNIN	17,751	3,256	3,336	247	707	977	173	4	0	0	C
FAYETTE	81,752	19,014	6,947	1,428	3,108	4,365	496	*	*	*	*
FULTON	**715,832**	**146,459**	**67,018**	**10,856**	**28,854**	**37,693**	**4,268**	**66**	**14**	**5**	**F**
GLYNN	65,862	14,058	9,716	1,046	2,558	3,564	524	3	0	0	C
GWINNETT	476,794	112,780	26,393	8,193	18,623	24,831	2,137	35	7	0	F
MUSCOGEE	182,436	40,951	21,146	3,038	7,060	9,729	1,210	12	0	0	F
PAULDING	63,972	16,057	3,772	1,171	2,422	3,364	306	37	3	0	F
RICHMOND	192,440	42,735	20,262	3,176	7,508	10,202	1,196	19	2	0	F
ROCKDALE	65,401	15,053	5,944	1,124	2,504	3,488	402	56	20	1	F
SPALDING	57,394	13,299	6,585	1,001	2,172	3,081	390	*	*	*	*
SUMTER	31,479	7,659	3,978	575	1,170	1,691	215	*	*	*	*

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

Orange: Unhealthy For Sensitive Groups — 0.085-0.014 ppm ozone
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Purple: Very Unhealthy — 0.125-0.374 ppm ozone

AMERICAN LUNG ASSOCIATION®

HAWAII

At-Risk Groups								Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
County	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
HONOLULU	873,131	181,981	113,934	13,379	34,618	46,724	6,347	0	0	0	A

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

Orange:	Unhealthy For Sensitive Groups	0.085-0.014 ppm ozone
Red:	Unhealthy	0.105-0.124 ppm ozone
Purple:	Very Unhealthy	0.125-0.374 ppm ozone

AMERICAN LUNG ASSOCIATION®

IDAHO

At-Risk Groups								Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
County	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
BUTTE	3,103	812	385	65	107	170	22	0	0	0	A

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

Orange:	Unhealthy For Sensitive Groups	0.085-0.014 ppm ozone
Red:	Unhealthy	0.105-0.124 ppm ozone
Purple:	Very Unhealthy	0.125-0.374 ppm ozone

AMERICAN LUNG ASSOCIATION®

ILLINOIS

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
ADAMS	67,443	14,675	11,708	1,092	2,585	3,677	585	5	0	0	C
CHAMPAIGN	168,080	31,218	16,459	2,282	7,071	8,716	941	8	0	0	D
COOK	5,189,763	1,130,935	647,172	83,632	202,559	277,590	36,384	16	5	0	F
DU PAGE	859,561	192,957	80,958	14,155	33,552	45,589	5,220	1	0	0	B
EFFINGHAM	33,219	8,548	4,714	624	1,211	1,800	246	5	0	0	C
HAMILTON	8,570	1,730	1,766	130	332	472	85	*	*	*	*
JERSEY	21,184	4,712	2,985	356	807	1,146	162	11	0	0	F
JO DAVIESS	21,759	4,613	3,923	351	831	1,193	197	*	*	*	*
KANE	371,244	96,567	32,079	7,081	13,693	19,729	2,065	0	0	0	A
LAKE	583,359	139,515	51,652	10,185	22,297	30,959	3,402	9	4	0	F
MCHENRY	230,556	57,786	19,905	4,225	8,638	12,259	1,321	7	0	0	D
MACON	115,238	24,873	17,516	1,862	4,441	6,248	931	5	0	0	C
MACOUPIN	48,955	10,561	8,622	797	1,869	2,674	431	8	0	0	D
MADISON	**257,573**	**55,517**	**36,757**	**4,140**	**9,982**	**13,906**	**1,995**	**26**	**1**	**0**	**F**
PEORIA	182,906	40,163	26,286	3,001	7,043	9,868	1,402	1	0	0	B
RANDOLPH	34,214	7,020	5,298	526	1,347	1,843	272	2	0	0	B
ROCK ISLAND	148,206	31,903	22,748	2,368	5,736	8,030	1,201	0	0	0	A
SAINT CLAIR	264,479	64,015	34,209	4,762	9,867	14,237	1,861	3	0	0	C
SANGAMON	191,534	41,904	26,061	3,083	7,446	10,297	1,424	2	0	0	B
WILL	429,812	108,856	37,732	8,062	15,951	22,860	2,443	4	0	0	C
WINNEBAGO	265,952	58,953	35,138	4,385	10,250	14,307	1,950	1	0	0	B

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Therefore, those counties are excluded in the Grade analysis.

Orange: Unhealthy For Sensitive Groups **0.085-0.014 ppm ozone**
Red: Unhealthy **0.105-0.124 ppm ozone**
Purple: Very Unhealthy **0.125-0.374 ppm ozone**

INDIANA

AMERICAN LUNG ASSOCIATION®

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
ALLEN	309,965	69,666	36,748	5,192	11,955	16,558	2,088	25	0	0	F
CLARK	92,374	18,593	11,896	1,422	3,649	4,956	680	29	3	1	F
DEKALB	38,234	8,921	4,593	671	1,445	2,052	261	*	*	*	*
ELKHART	168,617	39,181	19,025	2,903	6,433	9,020	1,118	15	0	0	F
FLOYD	70,618	14,943	8,771	1,131	2,755	3,790	507	27	6	0	F
HAMILTON	147,826	34,645	11,953	2,572	5,653	7,853	854	31	3	0	F
HANCOCK	51,992	11,084	5,639	852	2,011	2,792	359	28	2	0	F
JOHNSON	104,174	22,122	11,228	1,700	4,058	5,558	687	*	*	*	*
KNOX	39,662	7,474	6,185	562	1,601	2,135	323	*	*	*	*
LAKE	478,657	106,338	62,140	8,048	18,311	25,771	3,483	29	2	0	F
LA PORTE	109,232	21,871	14,863	1,656	4,333	5,865	825	26	6	1	F
LAWRENCE	45,265	9,032	6,574	697	1,774	2,451	365	*	*	*	*
MADISON	132,539	25,608	19,182	1,967	5,271	7,150	1,056	27	3	0	F
MARION	814,957	171,537	94,061	12,648	32,386	43,283	5,411	32	3	0	F
MORGAN	63,201	13,790	6,703	1,056	2,432	3,389	426	*	*	*	*
PERRY	19,143	3,907	2,801	298	751	1,031	149	*	*	*	*
PORTER	142,141	31,069	15,055	2,350	5,510	7,587	931	25	3	0	F
POSEY	26,413	5,955	3,279	444	1,012	1,420	188	14	1	0	F
SAINT JOSEPH	257,405	53,174	36,225	3,949	10,195	13,783	1,918	25	1	0	F
VANDERBURGH	167,441	32,345	26,570	2,391	6,742	9,017	1,373	32	2	0	F
VIGO	106,283	19,923	15,353	1,494	4,327	5,677	811	25	1	0	F
WABASH	34,645	7,171	5,168	543	1,352	1,872	276	*	*	*	*
WARRICK	**49,968**	**11,105**	**5,113**	**850**	**1,916**	**2,671**	**324**	**40**	**3**	**0**	**F**

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

Orange: Unhealthy For Sensitive Groups — 0.085-0.014 ppm ozone
Red: Unhealthy — 0.105-0.124 ppm ozone
Purple: Very Unhealthy — 0.125-0.374 ppm ozone

AMERICAN LUNG ASSOCIATION®

IOWA

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
HARRISON	15,226	3,265	2,786	252	575	836	139	*	*	*	*
LINN	179,826	35,915	22,361	2,745	7,142	9,617	1,287	0	0	0	A
PALO ALTO	10,110	2,105	2,175	163	382	560	103	*	*	*	*
POLK	353,915	72,181	40,306	5,423	14,107	18,819	2,375	0	0	0	A
SCOTT	**157,220**	**35,304**	**18,359**	**2,671**	**6,021**	**8,420**	**1,067**	**3**	**0**	**0**	**C**
STORY	74,452	12,257	7,601	916	3,214	3,851	430	*	*	*	*
VAN BUREN	7,747	1,629	1,541	123	296	427	75	0	0	0	A
WARREN	39,413	8,647	4,399	669	1,508	2,113	267	*	*	*	*

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Therefore, those counties are excluded in the Grade analysis.

Orange: Unhealthy For Sensitive Groups **0.085-0.014 ppm ozone**
Red: Unhealthy **0.105-0.124 ppm ozone**
Purple: Very Unhealthy **0.125-0.374 ppm ozone**

AMERICAN LUNG ASSOCIATION®

KANSAS

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
LINN	8,933	1,880	1,778	145	338	494	87	*	*	*	*
MIAMI	25,846	5,811	3,311	445	976	1,398	192	*	*	*	*
PAWNEE	7,396	1,477	1,350	116	285	405	68	*	*	*	*
SEDGWICK	432,779	99,271	51,032	7,382	16,581	23,124	2,891	8	0	0	D
SHERMAN	6,691	1,432	1,179	108	255	367	60	*	*	*	*
WYANDOTTE	**153,313**	**35,629**	**19,928**	**2,685**	**5,785**	**8,244**	**1,086**	**12**	**1**	**0**	**F**

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Therefore, those counties are excluded in the Grade analysis.

Orange: Unhealthy For Sensitive Groups 0.085-0.014 ppm ozone
Red: Unhealthy 0.105-0.124 ppm ozone
Purple: Very Unhealthy 0.125-0.374 ppm ozone

KENTUCKY

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
BELL	30,053	6,207	4,052	486	1,165	1,619	225	5	0	0	C
BOONE	72,844	17,250	6,191	1,273	2,783	3,866	421	7	0	0	D
BOYD	50,114	8,957	7,719	688	2,029	2,716	428	7	1	0	D
BULLITT	57,092	12,795	4,107	992	2,189	3,026	316	20	1	0	F
CAMPBELL	87,083	18,940	11,133	1,397	3,396	4,670	627	15	1	0	F
CARTER	26,256	5,337	3,255	419	1,023	1,413	193	*	*	*	*
CHRISTIAN	73,160	16,015	7,852	1,171	2,900	3,852	440	7	0	0	D
DAVIESS	90,689	19,316	12,251	1,456	3,520	4,890	686	14	1	0	F
EDMONSON	10,999	2,151	1,484	172	428	597	88	18	0	0	F
FAYETTE	238,888	43,110	24,931	3,202	9,993	12,534	1,501	10	1	0	F
GRAVES	35,547	6,803	5,990	518	1,411	1,934	313	8	0	0	D
GREENUP	37,104	7,058	5,168	553	1,469	2,010	300	14	3	0	F
HANCOCK	8,704	1,962	846	153	330	466	55	20	1	0	F
HARDIN	90,136	22,066	8,253	1,641	3,389	4,788	521	3	0	0	C
HENDERSON	44,358	9,340	5,764	699	1,737	2,384	328	14	0	0	F
JEFFERSON	**671,140**	**128,920**	**94,178**	**9,711**	**26,998**	**36,025**	**5,186**	**36**	**4**	**0**	**F**
JESSAMINE	35,267	7,665	3,319	575	1,384	1,866	211	8	0	0	D
KENTON	145,171	32,504	16,726	2,398	5,630	7,747	969	16	2	0	F
LAWRENCE	15,387	3,367	1,894	261	585	830	111	2	0	0	B
LIVINGSTON	9,189	1,617	1,392	124	374	498	78	27	2	0	F
MCCRACKEN	64,734	12,396	10,412	939	2,581	3,510	552	9	0	0	D
MCLEAN	9,718	1,893	1,432	145	384	527	80	8	0	0	D
MORGAN	13,383	2,644	1,557	204	533	714	92	*	*	*	*
OLDHAM	42,110	9,514	2,825	716	1,631	2,225	227	16	4	0	F
PERRY	31,042	6,836	3,288	530	1,190	1,657	201	0	0	0	A
PIKE	73,072	15,490	8,182	1,205	2,829	3,910	495	4	0	0	C
PULASKI	55,075	10,445	8,057	804	2,195	2,981	451	3	0	0	C
SCOTT	28,439	6,184	2,742	463	1,112	1,511	177	7	0	0	D
SIMPSON	16,091	3,394	2,165	258	625	867	121	15	2	0	F
TRIGG	11,857	2,070	2,101	162	476	651	113	8	0	0	D
WASHINGTON	10,731	2,277	1,632	173	414	581	86	*	*	*	*

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Red: Unhealthy — **0.105-0.124 ppm ozone**
Purple: Very Unhealthy — **0.125-0.374 ppm ozone**

AMERICAN LUNG ASSOCIATION®

LOUISIANA

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
ASCENSION	67,648	17,415	5,254	1,310	2,480	3,595	363	16	0	1	F
BEAUREGARD	31,628	7,199	3,599	552	1,196	1,699	215	4	0	0	C
BOSSIER	91,958	21,145	9,472	1,594	3,502	4,916	591	10	0	0	F
CADDO	244,572	55,134	33,555	4,177	9,279	13,209	1,832	11	0	0	F
CALCASIEU	178,175	41,220	20,276	3,101	6,747	9,570	1,213	17	1	0	F
EAST BATON ROUGE	395,189	86,230	38,968	6,507	15,456	20,909	2,381	31	7	1	F
GRANT	18,584	4,435	2,307	336	690	1,005	133	1	0	0	B
IBERVILLE	**31,052**	**7,316**	**3,383**	**548**	**1,176**	**1,658**	**199**	**42**	**6**	**0**	**F**
JEFFERSON	453,646	94,841	52,789	7,226	17,782	24,254	3,129	12	0	0	F
LAFAYETTE	181,414	42,531	16,490	3,155	6,958	9,604	1,045	8	0	0	D
LAFOURCHE	87,464	20,748	9,021	1,558	3,300	4,672	551	7	1	0	D
LIVINGSTON	82,665	20,522	7,056	1,556	3,058	4,406	475	16	0	0	F
ORLEANS	474,051	103,691	59,741	7,901	18,292	25,356	3,284	1	0	0	B
OUACHITA	146,713	34,102	16,724	2,608	5,523	7,861	971	0	0	0	A
POINTE COUPEE	23,113	5,565	3,021	419	857	1,250	167	9	0	0	D
SAINT BERNARD	66,510	13,975	8,971	1,061	2,589	3,583	502	9	0	0	D
SAINT CHARLES	46,930	12,002	3,747	882	1,741	2,495	260	8	0	0	D
SAINT JAMES	20,905	5,330	2,157	394	770	1,120	130	7	0	0	D
SAINT MARY	57,068	14,638	5,828	849	1,510	2,232	223	8	1	0	D
ST. JOHN THE BAPTIST	41,991	11,625	3,526	1,097	2,079	3,063	357	10	0	0	F
WEST BATON ROUGE	20,480	4,886	1,980	365	774	1,093	126	9	2	0	F

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Purple: Very Unhealthy — 0.125-0.374 ppm ozone

AMERICAN LUNG ASSOCIATION®

MAINE

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
AROOSTOOK	77,594	15,177	11,997	1,157	3,082	4,184	627	*	*	*	*
CUMBERLAND	249,561	46,548	33,705	3,492	10,181	13,320	1,862	10	4	0	F
HANCOCK	49,182	9,382	7,443	705	1,975	2,654	402	13	3	0	F
KENNEBEC	115,947	23,047	16,122	1,745	4,604	6,235	891	6	0	0	C
KNOX	37,572	7,231	6,394	545	1,496	2,040	328	10	1	0	F
OXFORD	53,636	11,115	8,368	841	2,085	2,913	446	0	0	0	A
PENOBSCOT	143,897	27,620	18,181	2,103	5,794	7,689	1,046	2	0	0	B
PISCATAQUIS	18,346	3,698	3,161	286	710	1,003	163	*	*	*	*
SAGADAHOC	34,900	7,293	4,016	543	1,383	1,858	236	11	4	0	F
SOMERSET	52,294	11,235	6,701	863	2,010	2,821	387	*	*	*	*
YORK	**171,256**	**35,365**	**23,050**	**2,657**	**6,748**	**9,191**	**1,273**	**13**	**4**	**0**	**F**

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Red: Unhealthy **0.105-0.124 ppm ozone**
Purple: Very Unhealthy **0.125-0.374 ppm ozone**

AMERICAN LUNG ASSOCIATION®

MARYLAND

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
ANNE ARUNDEL	**465,166**	**98,277**	**45,404**	**7,266**	**18,443**	**24,720**	**2,967**	**69**	**21**	**2**	**F**
BALTIMORE	717,099	135,153	111,178	9,901	29,160	38,597	5,885	32	2	1	F
CALVERT	66,759	16,330	6,179	1,201	2,513	3,559	401	17	0	0	F
CARROLL	143,449	33,112	14,896	2,423	5,517	7,662	929	35	1	0	F
CECIL	79,231	18,651	8,297	1,391	3,000	4,242	513	42	5	3	F
CHARLES	113,037	28,740	8,253	2,115	4,215	5,988	596	46	6	0	F
DORCHESTER	29,933	6,034	5,205	443	1,181	1,632	268	*	*	*	*
FREDERICK	179,256	41,383	16,800	3,022	6,942	9,506	1,073	*	*	*	*
HARFORD	208,746	49,149	19,650	3,586	7,995	11,127	1,290	40	13	1	F
KENT	18,848	3,388	3,474	253	765	1,027	175	36	4	0	F
MONTGOMERY	818,241	166,570	93,943	12,182	32,871	43,556	5,611	37	3	0	F
PRINCE GEORGE'S	765,520	162,870	58,323	11,989	30,632	40,189	4,181	53	8	1	F
BALTIMORE CITY	671,909	145,874	89,545	10,616	26,400	35,926	4,826	21	4	0	F

Notes: * indicates incomplete monitoring data for all three years.
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Orange: Unhealthy For Sensitive Groups 0.085-0.014 ppm ozone
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Purple: Very Unhealthy 0.125-0.374 ppm ozone

AMERICAN LUNG ASSOCIATION®

MASSACHUSETTS

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
BARNSTABLE	202,215	37,163	46,611	2,692	8,152	11,122	2,126	22	5	0	F
BERKSHIRE	134,350	26,195	24,190	1,954	5,338	7,303	1,200	3	0	0	C
BRISTOL	**513,322**	**109,607**	**76,328**	**8,104**	**20,030**	**27,678**	**4,018**	**27**	**4**	**0**	**F**
ESSEX	686,528	144,902	99,545	10,579	27,041	36,946	5,319	15	4	0	F
HAMPDEN	441,205	98,758	68,076	7,202	17,003	23,826	3,480	17	0	0	F
HAMPSHIRE	149,119	25,721	18,173	1,899	6,321	7,816	988	13	4	0	F
MIDDLESEX	765,383	116,070	93,554	18,970	58,209	75,080	10,495	13	3	0	F
PLYMOUTH	456,191	104,552	54,121	7,712	17,484	24,456	3,139	*	*	*	*
SUFFOLK	642,841	120,957	76,593	8,765	26,738	33,777	4,201	6	0	0	C
WORCESTER	719,326	156,358	100,073	11,387	28,190	38,550	5,307	9	2	0	F

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Orange: Unhealthy For Sensitive Groups	0.085-0.014 ppm ozone
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Purple: Very Unhealthy	0.125-0.374 ppm ozone

MICHIGAN

AMERICAN LUNG ASSOCIATION.

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
ALLEGAN	98,934	24,521	11,012	1,824	3,669	5,306	644	28	5	0	F
BENZIE	13,976	2,755	2,422	206	551	764	127	11	1	0	F
BERRIEN	**161,130**	**35,414**	**23,162**	**2,659**	**6,180**	**8,714**	**1,251**	**35**	**4**	**0**	**F**
CASS	49,819	10,830	6,948	816	1,914	2,697	387	25	1	0	F
CLINTON	62,228	14,392	6,142	1,088	2,360	3,331	398	2	0	0	B
GENESEE	435,336	98,951	48,564	7,428	16,633	23,335	2,933	12	2	0	F
HURON	35,234	7,688	6,639	579	1,337	1,931	321	7	0	0	D
INGHAM	286,988	58,764	27,315	4,335	11,646	15,007	1,626	9	0	0	D
KALAMAZOO	229,123	46,332	26,118	3,437	9,220	12,136	1,509	14	0	0	F
KENT	536,537	128,354	58,784	9,362	20,460	28,552	3,372	10	2	0	F
LENAWEE	97,035	21,631	11,903	1,659	3,700	5,208	676	10	0	0	F
MACOMB	778,699	147,932	111,137	11,191	31,345	41,865	6,120	26	3	0	F
MANISTEE	22,989	4,344	4,062	332	912	1,255	209	*	*	*	*
MASON	27,657	5,926	4,671	446	1,061	1,509	239	17	1	1	F
MECOSTA	38,532	7,509	4,729	565	1,559	2,043	263	*	*	*	*
MISSAUKEE	13,602	3,373	1,982	249	498	741	107	*	*	*	*
MUSKEGON	164,806	38,330	21,904	2,832	6,257	8,871	1,194	22	0	1	F
OAKLAND	1,161,484	232,768	132,710	17,468	46,437	61,964	8,046	7	0	0	D
OTTAWA	215,379	52,513	22,222	3,871	8,118	11,470	1,320	11	2	0	F
ROSCOMMON	22,822	3,972	5,564	298	912	1,276	265	*	*	*	*
SAINT CLAIR	155,628	35,059	19,367	2,649	5,933	8,370	1,106	23	1	0	F
TUSCOLA	57,723	13,142	7,341	1,007	2,175	3,114	416	*	*	*	*
WASHTENAW	295,448	53,497	24,353	3,941	12,491	15,312	1,590	11	0	0	F
WAYNE	2,137,302	474,276	274,939	35,362	82,496	114,623	15,215	19	0	0	F

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Purple: Very Unhealthy — 0.125-0.374 ppm ozone

AMERICAN LUNG ASSOCIATION®

MINNESOTA

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
ANOKA	281,445	68,441	21,893	5,158	10,580	14,909	1,525	1	0	0	B
DAKOTA	327,431	80,667	22,655	5,975	12,386	17,252	1,652	0	0	0	A
KOOCHICHING	15,735	3,059	2,550	241	615	856	135	*	*	*	*
LAKE	10,661	1,975	2,032	155	418	589	106	0	0	0	A
SAINT LOUIS	194,599	38,352	32,608	2,951	7,649	10,559	1,662	0	0	0	A
WASHINGTON	**186,943**	**45,880**	**12,235**	**3,475**	**6,986**	**9,909**	**974**	**2**	**0**	**0**	**B**

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

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Red: Unhealthy	0.105-0.124 ppm ozone
Purple: Very Unhealthy	0.125-0.374 ppm ozone

AMERICAN LUNG ASSOCIATION®

MISSISSIPPI

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
ADAMS	34,501	7,723	5,261	584	1,306	1,874	277	6	0	0	C
CHOCTAW	9,292	2,190	1,327	168	343	505	72	*	*	*	*
DESOTO	87,752	19,940	7,999	1,504	3,361	4,682	543	16	2	0	F
HANCOCK	38,346	8,299	5,614	627	1,469	2,085	310	8	0	0	D
HINDS	249,294	54,824	28,244	4,116	9,705	13,247	1,607	2	0	0	B
JACKSON	**127,887**	**29,392**	**12,631**	**2,253**	**4,835**	**6,848**	**817**	**24**	**2**	**0**	**F**
LAUDERDALE	76,871	16,900	10,449	1,279	2,956	4,131	562	2	0	0	B
LEE	73,059	16,498	8,335	1,238	2,802	3,909	490	8	0	0	D
MADISON	68,344	16,417	6,292	1,217	2,604	3,609	382	4	0	0	C
PANOLA	32,572	8,217	3,982	627	1,182	1,755	220	*	*	*	*
SHARKEY	6,783	1,944	752	149	232	365	41	*	*	*	*
WARREN	48,964	11,554	5,977	877	1,832	2,633	337	4	0	0	C
YALOBUSHA	12,245	2,619	2,080	204	465	667	104	*	*	*	*

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

Orange: Unhealthy For Sensitive Groups — 0.085-0.014 ppm ozone
Red: Unhealthy — 0.105-0.124 ppm ozone
Purple: Very Unhealthy — 0.125-0.374 ppm ozone

AMERICAN LUNG ASSOCIATION®

MISSOURI

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
CEDAR	12,982	2,501	2,879	192	503	722	138	*	*	*	*
CLAY	170,440	36,105	18,848	2,706	6,703	9,088	1,140	26	3	0	F
GREENE	224,272	42,473	30,744	3,210	9,101	11,955	1,653	2	0	0	B
JACKSON	650,461	140,171	86,075	10,420	25,396	34,858	4,707	0	0	0	A
JEFFERSON	189,155	46,711	16,665	3,479	7,075	10,061	1,089	16	2	0	F
MONROE	8,949	2,073	1,655	154	333	492	81	7	0	0	D
PLATTE	67,313	14,417	6,155	1,087	2,644	3,571	411	12	0	0	F
SAINT CHARLES	**255,653**	**64,047**	**20,731**	**4,711**	**9,597**	**13,530**	**1,381**	**39**	**4**	**1**	**F**
SAINT GENEVIEVE	16,866	3,847	2,526	290	635	916	134	15	1	0	F
SAINT LOUIS	1,003,555	203,087	143,017	15,217	39,717	54,025	7,800	25	2	0	F
SAINT LOUIS CITY	351,065	78,504	53,465	5,803	13,524	18,873	2,667	12	0	0	F

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

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Red: Unhealthy	0.105-0.124 ppm ozone
Purple: Very Unhealthy	0.125-0.374 ppm ozone

AMERICAN LUNG ASSOCIATION®

MONTANA

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
FLATHEAD	70,982	15,405	8,971	1,178	2,716	3,840	533	0	0	0	A

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

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Red: Unhealthy — 0.105-0.124 ppm ozone
Purple: Very Unhealthy — 0.125-0.374 ppm ozone

AMERICAN LUNG ASSOCIATION®

NEBRASKA

At-Risk Groups								Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
County	Total Population	Under 14	Over 65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
DOUGLAS	437,822	95,819	49,720	7,195	17,031	23,332	2,891	0	0	0	A
LANCASTER	231,190	45,510	25,212	3,396	9,405	12,175	1,454	0	0	0	A

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

Orange:	Unhealthy For Sensitive Groups	0.085-0.014 ppm ozone
Red:	Unhealthy	0.105-0.124 ppm ozone
Purple:	Very Unhealthy	0.125-0.374 ppm ozone

AMERICAN LUNG ASSOCIATION®

NEVADA

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under14	Over65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
CLARK	**1,046,316**	**232,002**	**119,809**	**16,898**	**40,780**	**56,020**	**7,215**	**14**	**1**	**0**	**F**
DOUGLAS	35,558	7,993	5,088	577	1,371	1,924	279	0	0	0	A
WASHOE	298,680	63,046	32,094	4,602	11,880	15,892	1,979	0	0	0	A
WHITE PINE	10,266	2,425	1,170	178	389	552	71	0	0	0	A
CARSON CITY	47,836	9,344	7,537	690	1,914	2,587	400	*	*	*	*

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

Orange: Unhealthy For Sensitive Groups	0.085-0.014 ppm ozone
Red: Unhealthy	0.105-0.124 ppm ozone
Purple: Very Unhealthy	0.125-0.374 ppm ozone

AMERICAN LUNG ASSOCIATION®

NEW HAMPSHIRE

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under14	Over65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
BELKNAP	51,279	10,820	7,854	816	1,992	2,772	410	1	0	0	B
CARROLL	38,202	7,631	6,722	564	1,511	2,077	338	0	0	0	A
CHESHIRE	71,459	14,734	9,711	1,096	2,828	3,829	530	3	0	0	C
COOS	33,313	6,648	6,078	509	1,299	1,820	303	*	*	*	*
GRAFTON	77,891	15,104	10,396	1,122	3,160	4,144	562	1	0	0	B
HILLSBOROUGH	353,101	76,435	38,486	5,666	13,883	18,757	2,278	9	1	0	F
MERRIMACK	124,898	26,779	15,371	1,986	4,905	6,667	865	3	0	0	C
ROCKINGHAM	**262,634**	**57,452**	**26,594**	**4,242**	**10,320**	**13,926**	**1,635**	**16**	**3**	**0**	**F**
STRAFFORD	107,134	21,841	12,231	1,605	4,316	5,670	701	2	1	0	C
SULLIVAN	39,635	8,374	6,230	629	1,537	2,147	324	2	0	0	B

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Purple: Very Unhealthy — **0.125-0.374 ppm ozone**

AMERICAN LUNG ASSOCIATION®

NEW JERSEY

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under14	Over65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
ATLANTIC	234,839	49,137	33,883	3,593	9,288	12,609	1,795	49	4	0	F
BERGEN	847,377	152,662	134,290	11,317	34,599	45,880	7,315	6	2	0	D
CAMDEN	**505,087**	**121,567**	**64,043**	**8,835**	**19,079**	**27,142**	**3,541**	**63**	**7**	**1**	**F**
CUMBERLAND	141,230	32,941	19,452	2,428	5,353	7,615	1,045	34	3	0	F
ESSEX	754,171	161,978	94,621	12,010	29,530	40,373	5,354	13	1	0	F
GLOUCESTER	243,925	58,989	27,736	4,281	9,237	13,054	1,611	45	6	0	F
HUDSON	551,666	109,454	69,077	8,106	22,225	29,400	3,921	15	5	0	F
HUNTERDON	118,721	25,337	11,814	1,855	4,689	6,337	785	44	3	0	F
MERCER	329,528	66,738	44,245	4,895	13,188	17,634	2,443	39	5	0	F
MIDDLESEX	702,033	135,658	90,174	9,968	28,572	37,395	5,073	35	5	0	F
MONMOUTH	589,795	128,784	74,770	9,461	22,953	31,715	4,314	38	5	0	F
MORRIS	448,663	89,382	52,373	6,643	17,942	24,066	3,262	44	1	0	F
OCEAN	475,390	97,946	109,992	7,146	18,491	26,177	4,879	54	6	2	F
PASSAIC	480,625	106,171	60,133	7,823	18,683	25,729	3,378	*	*	*	*
UNION	497,170	97,472	75,230	7,163	19,943	26,817	4,049	*	*	*	*

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Orange: Unhealthy For Sensitive Groups — 0.085-0.014 ppm ozone
Red: Unhealthy — 0.105-0.124 ppm ozone
Purple: Very Unhealthy — 0.125-0.374 ppm ozone

AMERICAN LUNG ASSOCIATION®

NEW MEXICO

At-Risk Groups								Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
County	Total Population	Under14	Over65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
BERNALILLO	524,911	112,493	58,290	8,375	20,622	27,971	3,491	0	0	0	A
DONA ANA	**162,713**	**40,568**	**15,495**	**3,048**	**6,035**	**8,664**	**953**	**6**	**0**	**0**	**C**
EDDY	53,085	13,149	7,649	992	1,930	2,892	410	*	*	*	*
SANDOVAL	83,152	22,616	8,433	1,643	3,006	4,444	493	1	0	0	B
SAN JUAN	102,148	30,832	8,930	2,271	3,475	5,485	561	*	*	*	*
VALENCIA	60,096	15,316	5,941	1,146	2,197	3,227	376	0	0	0	A

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Orange:	Unhealthy For Sensitive Groups	0.085-0.014 ppm ozone
Red:	Unhealthy	0.105-0.124 ppm ozone
Purple:	Very Unhealthy	0.125-0.374 ppm ozone

NEW YORK

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under14	Over65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
ALBANY	295,990	56,933	44,011	4,165	12,035	15,831	2,295	6	0	0	C
BRONX	1,191,187	302,477	131,492	22,044	44,199	63,744	7,587	10	1	0	F
CHAUTAUQUA	140,782	31,612	22,219	2,321	5,389	7,633	1,141	14	2	0	F
CHEMUNG	93,175	20,901	14,277	1,528	3,578	5,043	742	3	0	0	C
DUTCHESS	262,572	55,560	31,610	4,060	10,400	14,021	1,834	21	0	0	F
ERIE	952,513	196,646	151,336	14,392	37,597	51,498	7,850	14	0	0	F
ESSEX	37,686	7,954	5,878	583	1,476	2,039	308	8	0	0	D
HAMILTON	5,279	942	1,051	71	212	292	54	2	0	0	B
HERKIMER	65,759	14,849	10,941	1,097	2,497	3,582	554	0	0	0	A
JEFFERSON	113,545	27,753	12,303	1,994	4,338	6,011	681	12	0	0	F
KINGS	2,265,674	534,734	279,024	39,242	86,097	121,426	15,538	*	*	*	*
MADISON	71,504	16,113	8,486	1,175	2,777	3,817	483	2	0	0	B
MONROE	720,229	159,530	93,140	11,546	28,144	38,547	5,132	4	0	0	C
NEW YORK	**1,533,305**	**237,993**	**195,364**	**17,476**	**66,125**	**81,215**	**11,440**	**35**	**7**	**0**	**F**
NIAGARA	220,704	48,675	34,718	3,558	8,514	11,964	1,801	10	0	0	F
ONEIDA	235,486	50,055	38,790	3,666	9,208	12,732	1,942	1	0	0	B
ONONDAGA	465,142	102,105	64,069	7,397	18,194	24,942	3,428	5	0	0	C
ORANGE	323,778	81,017	33,482	5,865	12,147	17,276	2,006	19	1	0	F
PUTNAM	90,846	20,395	8,732	1,499	3,527	4,845	578	19	0	0	F
QUEENS	1,972,633	373,631	286,854	27,588	80,105	105,903	15,589	18	2	0	F
RICHMOND	398,422	87,758	46,787	6,459	15,511	21,326	2,756	30	5	1	F
SARATOGA	194,704	43,977	21,527	3,222	7,546	10,393	1,288	6	0	0	C
SCHENECTADY	147,322	30,109	24,924	2,199	5,829	7,978	1,254	2	0	0	B
SUFFOLK	1,354,668	291,247	156,538	21,717	52,858	72,643	9,497	25	6	0	F
TOMPKINS	95,956	17,101	9,051	1,244	4,091	4,964	532	*	*	*	*
ULSTER	166,538	34,442	22,698	2,510	6,625	8,930	1,250	7	0	0	D
WAYNE	94,279	23,520	10,976	1,702	3,518	5,069	639	8	0	0	D
WESTCHESTER	891,941	172,666	131,291	12,690	35,902	48,123	7,249	24	0	0	F

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Orange: Unhealthy For Sensitive Groups 0.085-0.014 ppm ozone
Red: Unhealthy 0.105-0.124 ppm ozone
Purple: Very Unhealthy 0.125-0.374 ppm ozone

NORTH CAROLINA

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under14	Over65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
ALEXANDER	30,129	6,348	3,541	477	1,178	1,619	217	16	2	0	F
AVERY	15,507	3,000	2,530	227	616	842	133	*	*	*	*
BUNCOMBE	191,293	36,778	31,489	2,745	7,650	10,370	1,645	5	0	0	C
CALDWELL	74,595	14,949	9,739	1,125	2,955	4,019	571	*	*	*	*
CAMDEN	6,514	1,343	892	100	255	353	52	*	*	*	*
CARTERET	58,588	11,306	9,517	832	2,350	3,177	505	*	*	*	*
CASWELL	21,441	4,170	3,188	318	852	1,159	174	40	0	0	F
CHATHAM	43,733	8,479	6,985	623	1,759	2,361	365	20	0	0	F
CUMBERLAND	283,812	73,228	21,472	5,266	10,683	14,925	1,417	41	0	0	F
DAVIE	30,234	5,962	4,593	453	1,194	1,639	251	30	1	0	F
DUPLIN	42,552	9,536	5,832	718	1,619	2,303	324	12	0	0	F
DURHAM	196,840	39,735	21,706	2,902	7,999	10,365	1,239	23	0	0	F
EDGECOMBE	55,939	13,512	6,566	1,003	2,094	3,005	379	14	0	0	F
FORSYTH	283,737	55,548	37,117	4,094	11,457	15,177	2,105	39	1	0	F
FRANKLIN	42,740	9,078	5,257	676	1,676	2,291	305	30	0	0	F
GRANVILLE	41,446	8,565	5,107	643	1,633	2,225	301	43	1	0	F
GUILFORD	378,551	73,596	46,875	5,437	15,346	20,183	2,714	23	0	0	F
HAYWOOD	50,280	8,743	9,852	663	2,033	2,765	503	36	2	0	F
JOHNSTON	98,372	21,243	11,267	1,585	3,831	5,277	688	31	1	0	F
LENOIR	59,021	12,772	8,339	973	2,261	3,198	461	*	*	*	*
LINCOLN	56,267	12,013	7,246	894	2,194	3,030	418	23	0	0	F
MACON	26,978	4,596	6,085	345	1,091	1,497	296	*	*	*	*
MARTIN	26,280	5,860	3,800	443	997	1,426	207	*	*	*	*
MECKLENBURG	**596,939**	**128,350**	**56,701**	**9,328**	**23,788**	**31,520**	**3,600**	**76**	**15**	**0**	**F**
MONTGOMERY	23,930	5,234	3,551	394	920	1,293	186	*	*	*	*
NEW HANOVER	143,695	28,148	18,985	2,099	5,780	7,688	1,066	8	0	0	D
NORTHAMPTON	21,066	4,463	3,638	331	813	1,151	187	*	*	*	*
PERSON	32,692	6,925	4,464	516	1,275	1,764	251	*	*	*	*
PITT	121,798	26,207	12,328	1,936	4,833	6,422	731	20	0	0	F
ROCKINGHAM	89,169	18,049	13,170	1,355	3,511	4,824	721	20	1	0	F
ROWAN	121,677	25,513	17,916	1,872	4,776	6,579	975	51	8	0	F
SWAIN	12,041	2,597	1,809	196	462	654	98	1	0	0	B
WAKE	533,306	110,187	41,780	7,997	21,697	27,876	2,887	58	6	0	F
YANCEY	16,255	3,058	2,915	232	647	888	150	0	0	0	A

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Red: Unhealthy **0.105-0.124 ppm ozone**
Purple: Very Unhealthy **0.125-0.374 ppm ozone**

AMERICAN LUNG ASSOCIATION®

NORTH DAKOTA

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under14	Over65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
BILLINGS	1,133	276	128	22	41	61	8	*	*	*	*
CASS	113,238	22,119	11,462	1,669	4,612	5,949	685	0	0	0	A
MC KENZIE	5,815	1,498	840	114	207	317	44	0	0	0	A
MERCER	9,504	2,398	1,247	180	347	513	67	0	0	0	A
OLIVER	2,232	550	273	43	80	121	16	0	0	0	A
STEELE	2,265	437	443	35	86	126	23	0	0	0	A

Notes: * indicates incomplete monitoring data for all three years.
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Orange: Unhealthy For Sensitive Groups 0.085-0.014 ppm ozone
Red: Unhealthy 0.105-0.124 ppm ozone
Purple: Very Unhealthy 0.125-0.374 ppm ozone

AMERICAN LUNG ASSOCIATION®

OHIO (page 1 of 2)

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under14	Over65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
ALLEN	108,396	23,945	15,126	1,794	4,169	5,836	810	16	1	0	F
ASHTABULA	102,367	22,506	15,136	1,710	3,901	5,549	809	21	1	0	F
BUTLER	**323,519**	**69,534**	**34,430**	**5,193**	**12,703**	**17,211**	**2,098**	**43**	**2**	**0**	**F**
CLARK	147,177	30,331	21,167	2,299	5,752	7,953	1,162	37	4	0	F
CLERMONT	169,593	40,695	14,517	3,037	6,417	9,007	973	23	0	0	F
CLINTON	38,669	8,659	4,915	649	1,483	2,077	276	32	2	0	F
CRAWFORD	47,363	10,050	7,150	763	1,826	2,571	385	*	*	*	*
CUYAHOGA	1,399,272	278,141	224,531	20,704	55,625	75,580	11,582	24	2	0	F
DELAWARE	83,208	18,346	7,699	1,386	3,222	4,435	520	*	*	*	*
FRANKLIN	1,012,156	209,098	101,680	15,427	40,721	53,318	6,145	30	1	0	F
GEAUGA	86,050	19,134	11,241	1,443	3,279	4,658	651	*	*	*	*
GREENE	146,951	29,903	15,448	2,274	5,833	7,826	974	*	*	*	*
HAMILTON	855,815	185,547	119,204	13,687	33,371	45,957	6,374	27	2	0	F
JEFFERSON	76,982	14,011	14,291	1,091	3,067	4,209	722	3	0	0	C
KNOX	51,728	10,452	7,317	793	2,040	2,786	401	20	1	0	F
LAKE	223,239	44,006	30,430	3,322	8,894	12,004	1,714	35	4	0	F
LAWRENCE	64,090	13,647	8,770	1,053	2,458	3,473	498	19	4	0	F
LICKING	133,793	28,349	16,043	2,138	5,217	7,189	961	31	1	0	F
LOGAN	45,396	10,177	6,243	773	1,723	2,454	343	9	0	0	D
LORAIN	281,173	61,487	34,576	4,677	10,834	15,079	1,972	17	0	0	F
LUCAS	451,620	98,091	60,562	7,357	17,527	24,214	3,268	21	1	0	F
MADISON	41,055	7,974	4,281	604	1,665	2,169	261	39	1	0	F
MAHONING	259,407	51,026	47,047	3,876	10,204	14,137	2,336	22	1	0	F

AMERICAN LUNG ASSOCIATION®

OHIO (page 2 of 2)

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under14	Over65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
MEDINA	138,854	31,218	14,644	2,372	5,307	7,437	917	21	0	0	F
MIAMI	96,974	20,787	12,489	1,571	3,750	5,233	726	21	1	0	F
MONTGOMERY	565,227	115,069	77,724	8,545	22,446	30,338	4,273	24	3	0	F
PICKAWAY	52,697	10,023	5,514	760	2,144	2,793	347	*	*	*	*
PORTAGE	149,630	29,957	15,938	2,259	6,013	7,922	962	20	1	0	F
PREBLE	42,591	9,436	5,459	711	1,631	2,297	314	14	0	0	F
STARK	374,303	75,422	56,912	5,706	14,737	20,233	3,033	24	1	0	F
SUMMIT	535,160	107,286	76,334	8,023	21,284	28,759	4,132	27	1	0	F
TRUMBULL	226,780	44,961	35,482	3,440	8,916	12,302	1,895	36	2	0	F
UNION	37,434	8,135	3,718	619	1,454	1,993	236	*	*	*	*
WARREN	135,034	29,146	12,955	2,185	5,291	7,180	848	31	3	0	F
WASHINGTON	63,782	12,977	9,066	989	2,499	3,446	502	18	1	0	F
WOOD	117,474	23,353	13,007	1,762	4,740	6,203	750	*	*	*	*

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

Orange: Unhealthy For Sensitive Groups — 0.085-0.014 ppm ozone
Red: Unhealthy — 0.105-0.124 ppm ozone
Purple: Very Unhealthy — 0.125-0.374 ppm ozone

AMERICAN LUNG ASSOCIATION®

OKLAHOMA

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under14	Over65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
CLEVELAND	193,642	42,201	15,037	3,173	7,636	10,167	1,037	5	1	0	D
COMANCHE	114,973	26,817	10,714	1,988	4,433	6,063	647	5	0	0	C
LATIMER	10,265	2,297	1,698	172	389	560	87	*	*	*	*
MC CLAIN	25,433	5,603	3,149	434	962	1,379	190	6	0	0	C
MAYES	36,483	7,865	6,199	597	1,386	2,000	323	*	*	*	*
MUSKOGEE	69,747	15,607	10,756	1,179	2,641	3,790	564	*	*	*	*
OKLAHOMA	627,388	136,797	78,582	10,192	24,385	33,618	4,443	11	0	1	F
OKMULGEE	37,767	8,292	6,065	633	1,428	2,063	320	*	*	*	*
TULSA	**529,603**	**115,454**	**63,543**	**8,564**	**20,653**	**28,319**	**3,662**	**28**	**2**	**0**	**F**

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

Orange: Unhealthy For Sensitive Groups 0.085-0.014 ppm ozone
Red: Unhealthy 0.105-0.124 ppm ozone
Purple: Very Unhealthy 0.125-0.374 ppm ozone

AMERICAN LUNG ASSOCIATION®

OREGON

At-Risk Groups								Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
County	Total Population	Under14	Over65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
CLACKAMAS	**323,684**	**68,186**	**37,567**	5,195	12,584	17,425	2,332	**5**	**4**	**0**	**F**
COLUMBIA	42,713	9,777	5,151	744	1,605	2,313	312	0	0	0	A
JACKSON	168,250	33,822	27,399	2,566	6,583	9,161	1,451	6	0	0	C
LANE	306,384	60,166	41,719	4,532	12,262	16,420	2,306	7	0	0	D
MARION	**260,317**	**57,589**	**34,005**	**4,326**	**10,003**	**14,009**	**1,901**	**11**	**0**	**0**	**F**

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

Orange: Unhealthy For Sensitive Groups 0.085-0.014 ppm ozone
Red: Unhealthy 0.105-0.124 ppm ozone
Purple: Very Unhealthy 0.125-0.374 ppm ozone

PENNSYLVANIA

AMERICAN LUNG ASSOCIATION®

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under14	Over65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
ADAMS	84,457	17,809	11,924	1,326	3,309	4,542	642	*	*	*	*
ALLEGHENY	1,292,996	231,678	235,129	17,211	52,783	70,079	11,698	44	9	0	F
ARMSTRONG	73,772	14,662	13,350	1,111	2,893	4,023	664	*	*	*	*
BEAVER	186,623	36,280	33,743	2,716	7,389	10,187	1,708	30	2	0	F
BERKS	351,933	69,823	55,702	5,198	13,994	19,016	2,909	30	3	0	F
BLAIR	131,243	26,602	22,661	2,007	5,131	7,144	1,148	25	1	0	F
BUCKS	579,348	123,384	70,799	9,180	22,706	31,040	4,116	38	2	1	F
CAMBRIA	158,644	29,803	30,937	2,287	6,295	8,664	1,494	21	2	0	F
CENTRE	132,106	20,447	12,988	1,531	5,782	6,827	768	*	*	*	*
CLEARFIELD	80,884	16,412	13,447	1,254	3,153	4,395	689	*	*	*	*
DAUPHIN	245,879	49,526	35,703	3,672	9,787	13,218	1,915	30	4	0	F
DELAWARE	546,964	107,686	88,084	7,960	21,879	29,496	4,514	39	3	0	F
ELK	35,096	7,433	5,896	562	1,350	1,914	303	*	*	*	*
ERIE	278,383	60,542	40,260	4,522	10,779	14,982	2,112	19	2	0	F
FRANKLIN	126,757	25,318	19,524	1,925	4,991	6,860	1,039	28	3	0	F
GREENE	40,851	8,249	6,432	632	1,605	2,201	326	*	*	*	*
LACKAWANNA	212,721	38,852	42,428	2,931	8,548	11,619	2,044	16	0	0	F
LANCASTER	450,385	101,266	62,576	7,467	17,324	24,229	3,342	47	4	0	F
LAWRENCE	95,699	18,627	18,534	1,405	3,770	5,238	904	8	0	0	D
LEHIGH	297,292	56,833	49,182	4,211	11,967	16,060	2,520	35	1	0	F
LUZERNE	320,398	56,573	65,009	4,290	12,962	17,521	3,138	18	1	0	F
LYCOMING	118,855	24,765	18,577	1,854	4,642	6,431	968	4	0	0	C
MERCER	122,231	23,428	22,012	1,783	4,845	6,658	1,103	37	5	0	F
MONROE	119,334	25,645	15,150	1,887	4,681	6,391	855	*	*	*	*
MONTGOMERY	710,309	133,741	115,960	9,925	28,693	38,387	6,038	35	7	0	F
NORTHAMPTON	256,870	50,646	39,358	3,758	10,271	13,834	2,069	25	0	0	F
PERRY	43,693	9,688	5,104	732	1,681	2,341	300	16	0	0	F
PHILADELPHIA	1,471,504	313,905	219,820	23,138	57,623	79,130	11,358	39	5	0	F
SOMERSET	80,468	16,138	14,199	1,225	3,151	4,379	709	*	*	*	*
WASHINGTON	**206,287**	**38,272**	**37,219**	**2,912**	**8,254**	**11,237**	**1,882**	**47**	**8**	**0**	**F**
WESTMORELAND	375,477	68,864	68,437	5,200	15,099	20,459	3,460	7	2	0	F
YORK	368,221	74,981	49,250	5,605	14,588	19,771	2,762	34	0	0	F

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

Orange: Unhealthy For Sensitive Groups **0.085-0.014 ppm ozone**
Red: Unhealthy **0.105-0.124 ppm ozone**
Purple: Very Unhealthy **0.125-0.374 ppm ozone**

AMERICAN LUNG ASSOCIATION®

RHODE ISLAND

At-Risk Groups								Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
County	Total Population	Under14	Over65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
KENT	**161,727**	**31,653**	**26,263**	**2,354**	**6,460**	**8,736**	**1,351**	**16**	**0**	**0**	**F**
PROVIDENCE	576,772	116,448	93,831	8,586	22,977	31,003	4,647	9	0	0	D
WASHINGTON	117,838	24,487	15,209	1,787	4,706	6,275	829	*	*	*	*

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AMERICAN LUNG ASSOCIATION®

SOUTH CAROLINA

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under14	Over65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
ABBEVILLE	24,318	4,938	3,702	373	955	1,316	198	14	0	0	F
AIKEN	**132,416**	**29,054**	**16,070**	**2,164**	**5,126**	**7,113**	**943**	**33**	**0**	**0**	**F**
ANDERSON	156,391	30,865	21,166	2,343	6,197	8,445	1,227	26	3	0	F
BARNWELL	21,501	5,219	2,611	392	798	1,157	148	16	0	0	F
BERKELEY	131,936	35,217	9,474	2,565	4,857	6,965	653	4	0	0	C
CHARLESTON	306,606	64,382	37,646	4,668	12,248	16,297	2,098	6	0	0	C
CHEROKEE	47,918	9,859	6,260	759	1,868	2,583	361	21	1	0	F
CHESTER	33,415	7,397	4,279	559	1,279	1,802	246	22	1	0	F
COLLETON	36,752	8,481	4,655	644	1,380	1,987	268	*	*	*	*
DARLINGTON	65,268	14,106	7,924	1,100	2,497	3,511	463	13	0	0	F
EDGEFIELD	19,602	4,380	2,312	327	755	1,050	134	14	1	0	F
OCONEE	62,540	12,002	9,634	908	2,488	3,398	533	9	0	0	D
PICKENS	103,336	18,695	12,296	1,405	4,271	5,479	720	12	0	0	F
RICHLAND	302,242	57,031	29,530	4,320	12,441	15,836	1,798	23	2	0	F
SPARTANBURG	242,859	47,561	30,935	3,599	9,704	13,034	1,811	20	1	0	F
UNION	30,582	5,921	4,707	452	1,212	1,658	256	9	0	0	D
WILLIAMSBURG	37,231	9,309	4,609	715	1,350	2,011	257	0	0	0	A
YORK	146,460	30,578	15,977	2,291	5,782	7,818	990	9	0	0	D

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Orange: Unhealthy For Sensitive Groups — **0.085-0.014 ppm ozone**
Red: Unhealthy — **0.105-0.124 ppm ozone**
Purple: Very Unhealthy — **0.125-0.374 ppm ozone**

TENNESSEE

AMERICAN LUNG ASSOCIATION®

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under14	Over65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
ANDERSON	71,510	13,871	11,264	1,040	2,845	3,882	609	16	0	0	F
BLOUNT	98,781	18,406	13,683	1,394	3,993	5,318	781	55	7	0	F
BRADLEY	79,954	15,958	9,376	1,209	3,181	4,282	571	*	*	*	*
CLAIBORNE	28,763	5,804	3,763	451	1,126	1,549	216	*	*	*	*
COFFEE	44,760	9,460	6,332	703	1,740	2,429	360	*	*	*	*
DAVIDSON	533,483	102,655	62,220	7,570	21,821	28,249	3,607	26	2	0	F
DEKALB	15,450	3,022	2,370	230	610	840	131	*	*	*	*
GILES	28,463	5,861	4,190	442	1,111	1,544	232	*	*	*	*
HAMBLEN	53,281	10,060	6,868	773	2,132	2,875	416	*	*	*	*
HAMILTON	294,245	57,910	40,972	4,353	11,737	15,833	2,286	38	5	0	F
HAYWOOD	19,674	4,793	2,845	358	727	1,065	148	15	2	0	F
HUMPHREYS	16,707	3,341	2,528	254	654	910	142	*	*	*	*
JEFFERSON	40,309	6,949	5,336	543	1,649	2,173	323	49	11	0	F
KNOX	**363,654**	**67,783**	**46,329**	**5,047**	**14,882**	**19,390**	**2,661**	**62**	**14**	**0**	**F**
LAWRENCE	38,645	8,282	5,631	620	1,492	2,097	311	*	*	*	*
LOUDON	37,241	6,887	5,786	527	1,495	2,021	318	*	*	*	*
PUTNAM	57,415	10,564	7,694	792	2,348	3,070	435	*	*	*	*
RUTHERFORD	154,116	35,289	11,877	2,609	6,003	8,102	817	11	0	0	F
SEVIER	61,356	11,662	8,156	888	2,459	3,309	481	66	8	0	F
SHELBY	864,215	198,524	89,332	14,708	33,308	45,903	5,341	44	5	0	F
SULLIVAN	149,364	26,137	23,055	2,017	6,071	8,104	1,291	29	0	0	F
SUMNER	119,403	26,613	12,446	2,004	4,592	6,396	793	55	7	0	F
WILLIAMSON	106,341	25,201	9,018	1,869	4,037	5,674	639	29	2	0	F
WILSON	79,238	17,874	7,565	1,327	3,057	4,232	505	16	0	0	F

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

Orange: Unhealthy For Sensitive Groups — **0.085-0.014 ppm ozone**
Red: Unhealthy — **0.105-0.124 ppm ozone**
Purple: Very Unhealthy — **0.125-0.374 ppm ozone**

TEXAS

AMERICAN LUNG ASSOCIATION®

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under14	Over65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
BEXAR	1,310,343	323,238	135,201	23,910	49,036	69,890	8,057	13	1	0	F
BRAZORIA	219,898	54,771	18,615	4,056	8,214	11,699	1,255	11	0	1	F
BREWSTER	9,059	1,779	1,410	132	363	488	73	0	0	0	A
CAMERON	311,559	90,017	32,642	6,815	10,663	16,767	1,848	1	0	0	B
COLLIN	372,754	91,385	19,312	6,786	14,153	19,580	1,730	47	4	0	F
DALLAS	1,988,963	455,876	172,373	33,457	77,384	104,987	11,264	39	4	1	F
DENTON	348,384	82,685	17,787	6,011	13,624	18,084	1,480	58	9	0	F
EL PASO	677,757	181,199	62,263	1,874	3,530	5,198	590	8	1	0	D
ELLIS	96,975	25,274	9,316	13,645	24,336	36,161	3,822	12	2	0	F
GALVESTON	239,648	55,347	26,274	4,096	9,147	12,853	1,613	24	5	5	F
GREGG	111,814	25,808	14,805	1,914	4,243	6,033	823	23	3	0	F
HARRIS	**3,106,629**	**752,800**	**237,790**	**55,467**	**118,354**	**163,911**	**16,453**	**65**	**34**	**19**	**F**
HIDALGO	490,124	147,337	47,878	11,097	16,513	26,313	2,725	0	0	0	A
JEFFERSON	242,505	53,893	34,520	3,977	9,329	13,101	1,870	26	2	0	F
MARION	10,476	2,085	2,063	161	403	581	105	*	*	*	*
NUECES	314,219	80,281	33,246	5,955	11,540	16,827	1,964	8	0	0	D
ORANGE	84,095	19,675	10,098	1,477	3,150	4,555	613	8	2	0	F
SMITH	164,267	36,551	22,905	2,735	6,286	8,876	1,253	19	0	0	F
TARRANT	1,298,245	304,928	111,209	22,256	50,111	68,636	7,353	44	6	0	F
TRAVIS	680,786	144,684	50,557	10,531	27,563	35,383	3,400	12	0	0	F
VICTORIA	81,523	21,025	9,248	1,569	2,960	4,390	537	2	0	0	B
WEBB	175,015	53,126	13,326	3,975	5,921	9,341	864	0	0	0	A

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

Orange: Unhealthy For Sensitive Groups — **0.085-0.014 ppm ozone**
Red: Unhealthy — **0.105-0.124 ppm ozone**
Purple: Very Unhealthy — **0.125-0.374 ppm ozone**

AMERICAN LUNG ASSOCIATION®

UTAH

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under14	Over65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
CACHE	84,429	23,705	6,573	1,769	3,015	4,441	388	0	0	0	A
DAVIS	221,577	66,758	15,586	5,067	7,477	11,814	1,056	13	0	0	F
SALT LAKE	**827,780**	**219,873**	**69,529**	**16,576**	**29,972**	**43,875**	**4,324**	**27**	**2**	**0**	**F**
SAN JUAN	13,510	4,437	1,056	335	431	727	67	0	0	0	A
UTAH	321,199	91,847	22,358	6,979	11,278	16,885	1,379	9	0	0	D
WASHINGTON	75,948	20,684	12,335	1,588	2,618	4,149	586	*	*	*	*
WEBER	179,459	45,470	19,891	3,480	6,524	9,615	1,125	7	0	0	D

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

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Red: Unhealthy — 0.105-0.124 ppm ozone
Purple: Very Unhealthy — 0.125-0.374 ppm ozone

AMERICAN LUNG ASSOCIATION®

VERMONT

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under14	Over65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
BENNINGTON	**36,188**	**7,331**	**5,595**	**549**	**1,422**	**1,964**	**302**	**5**	**0**	**0**	**C**
CHITTENDEN	140,266	26,698	12,554	2,001	5,772	7,358	826	1	0	0	B

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

Orange:	Unhealthy For Sensitive Groups	0.085-0.014 ppm ozone
Red:	Unhealthy	0.105-0.124 ppm ozone
Purple:	Very Unhealthy	0.125-0.374 ppm ozone

VIRGINIA

AMERICAN LUNG ASSOCIATION®

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under14	Over65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
ARLINGTON	175,179	24,194	19,049	1,756	7,848	9,116	1,155	26	3	0	F
CAROLINE	21,446	4,624	2,539	344	835	1,152	153	15	2	0	F
CHARLES CITY	6,853	1,318	800	100	276	368	50	31	3	0	F
CHESTERFIELD	240,986	58,671	13,720	4,354	9,155	12,693	1,175	15	1	0	F
FAIRFAX	**900,166**	**180,974**	**67,858**	**13,503**	**36,348**	**47,503**	**5,238**	**41**	**8**	**0**	**F**
FAUQUIER	51,716	11,576	5,292	845	2,010	2,766	343	17	0	0	F
FREDERICK	53,766	11,922	5,313	879	2,090	2,874	352	14	1	0	F
HANOVER	76,844	15,752	8,554	1,176	3,044	4,120	544	34	3	0	F
HENRICO	241,889	46,223	30,117	3,430	9,853	12,878	1,728	21	2	0	F
HENRY	56,078	10,399	7,846	789	2,260	3,033	458	*	*	*	*
LOUDOUN	123,425	28,228	7,546	2,059	4,835	6,485	627	*	*	*	*
MADISON	12,352	2,588	1,916	191	482	672	104	24	4	0	F
MONTGOMERY	75,801	11,645	6,529	872	3,334	3,900	412	*	*	*	*
PRINCE EDWARD	18,719	3,231	2,651	245	782	991	137	*	*	*	*
PRINCE WILLIAM	249,099	63,440	10,038	4,635	9,442	12,981	1,000	17	2	0	F
ROANOKE	81,480	14,568	11,210	1,120	3,310	4,398	659	14	1	0	F
SMYTH	32,951	5,928	5,244	464	1,320	1,794	289	*	*	*	*
STAFFORD	84,799	18,600	4,461	1,368	3,396	4,394	373	20	2	0	F
WYTHE	26,245	4,947	4,165	377	1,048	1,426	226	7	0	0	D
ALEXANDRIA CITY	114,629	15,253	14,402	1,116	5,151	5,980	805	14	2	0	F
HAMPTON CITY	137,622	28,964	14,503	2,124	5,489	7,293	880	23	0	0	F
SUFFOLK CITY	58,814	13,292	7,196	988	2,250	3,169	423	28	0	0	F

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

Orange: Unhealthy For Sensitive Groups — **0.085-0.014 ppm ozone**
Red: Unhealthy — **0.105-0.124 ppm ozone**
Purple: Very Unhealthy — **0.125-0.374 ppm ozone**

AMERICAN LUNG ASSOCIATION®

WASHINGTON

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under14	Over65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
CLALLAM	63,176	12,399	13,309	928	2,476	3,478	632	0	0	0	A
CLARK	305,182	71,440	30,539	5,378	11,547	16,322	1,937	3	0	0	C
COWLITZ	89,691	19,904	12,261	1,504	3,419	4,854	685	*	*	*	*
KING	**1,618,097**	**302,324**	**180,460**	**22,499**	**66,554**	**85,684**	**10,904**	**9**	**2**	**0**	**F**
KLICKITAT	18,505	4,433	2,397	335	685	1,002	135	*	*	*	*
LEWIS	66,751	15,464	9,993	1,175	2,485	3,637	535	*	*	*	*
PIERCE	655,640	149,843	69,201	11,053	25,300	34,912	4,173	4	1	0	C
SKAGIT	95,414	20,865	14,331	1,561	3,661	5,175	767	0	0	0	A
SNOHOMISH	544,578	125,860	53,331	9,229	21,010	28,944	3,345	*	*	*	*
SPOKANE	403,939	88,280	50,334	6,638	15,634	21,653	2,849	0	0	0	A
THURSTON	196,468	43,289	22,305	3,269	7,580	10,519	1,334	*	*	*	*
WHATCOM	152,282	31,882	18,108	2,387	6,017	8,112	1,037	0	0	0	A

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

Orange: Unhealthy For Sensitive Groups	0.085-0.014 ppm ozone
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Purple: Very Unhealthy	0.125-0.374 ppm ozone

AMERICAN LUNG ASSOCIATION®

WEST VIRGINIA

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under14	Over65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
CABELL	**95,975**	**15,680**	**15,792**	**1,208**	**3,987**	**5,182**	**838**	**20**	**7**	**0**	**F**
GILMER	7,177	1,283	1,168	97	293	387	61	*	*	*	*
GREENBRIER	35,621	6,308	6,203	487	1,437	1,941	325	14	4	0	F
HANCOCK	34,676	5,719	6,100	455	1,414	1,890	322	10	0	0	F
KANAWHA	204,704	35,740	33,499	2,732	8,351	11,097	1,796	14	0	0	F
OHIO	49,364	8,153	9,408	623	2,035	2,687	470	12	0	0	F
TUCKER	7,748	1,347	1,319	104	315	422	70	*	*	*	*
WOOD	87,466	15,956	13,455	1,231	3,517	4,742	743	29	0	0	F

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WISCONSIN

AMERICAN LUNG ASSOCIATION®

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under14	Over65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
BROWN	212,451	46,469	23,245	3,508	8,267	11,296	1,363	9	0	0	D
COLUMBIA	49,900	10,477	7,351	802	1,929	2,702	397	4	0	0	C
DANE	415,412	77,815	39,865	5,781	17,257	21,715	2,445	3	0	0	C
DODGE	81,265	17,476	11,307	1,325	3,139	4,380	615	5	0	0	C
DOOR	26,824	5,502	4,931	417	1,041	1,465	242	16	3	0	F
FLORENCE	5,239	1,094	859	86	200	287	45	2	0	0	B
FOND DU LAC	94,204	20,393	13,525	1,556	3,619	5,084	721	4	0	0	C
JEFFERSON	73,040	15,077	9,324	1,158	2,860	3,916	528	4	0	0	C
KENOSHA	141,333	31,020	16,682	2,339	5,463	7,568	973	24	5	0	F
KEWAUNEE	19,594	4,350	3,060	335	739	1,064	158	8	3	0	F
MANITOWOC	**82,263**	**17,561**	**13,335**	**1,328**	**3,165**	**4,469**	**686**	**24**	**4**	**2**	**F**
MARATHON	121,445	27,493	15,755	2,086	4,611	6,537	874	1	0	0	B
MILWAUKEE	926,951	199,323	127,194	14,812	36,253	49,617	6,731	15	3	1	F
ONEIDA	35,350	6,616	6,299	503	1,404	1,937	331	1	0	0	B
OUTAGAMIE	152,564	35,402	16,771	2,651	5,810	8,145	986	4	0	0	C
OZAUKEE	80,040	16,785	9,857	1,274	3,118	4,313	591	13	5	0	F
POLK	37,790	8,572	5,790	657	1,416	2,054	302	1	0	0	B
RACINE	184,377	41,211	22,811	3,110	7,061	9,903	1,301	6	5	0	F
ROCK	149,896	32,567	18,790	2,475	5,775	8,063	1,082	12	0	0	F
SAINT CROIX	56,056	13,507	5,673	1,020	2,098	2,993	346	0	0	0	A
SAUK	52,095	11,370	7,791	864	1,993	2,819	410	1	0	0	B
SHEBOYGAN	109,377	23,498	15,675	1,787	4,219	5,898	837	11	4	0	F
TAYLOR	19,228	4,674	2,941	355	704	1,045	150	*	*	*	*
VERNON	27,258	6,000	4,849	457	1,028	1,493	241	1	0	0	B
WALWORTH	83,153	16,206	11,349	1,228	3,331	4,453	623	7	0	0	D
WASHINGTON	111,355	25,016	12,042	1,900	4,258	5,963	739	5	0	0	C
WAUKESHA	343,424	72,026	38,942	5,543	13,352	18,446	2,416	6	0	0	C
WINNEBAGO	149,161	29,140	19,502	2,182	6,010	7,961	1,085	2	0	0	B

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AMERICAN LUNG ASSOCIATION®

WYOMING

County	At-Risk Groups							Number of High Ozone Days in the Unhealthy Ranges 1996-1998			
	Total Population	Under14	Over65	Pediatric Asthma	Adult Asthma	Chronic Bronchitis	Emphysema	Orange	Red	Purple	Grade
ALBANY	30,562	4,907	2,515	375	1,325	1,574	162	*	*	*	*
SUBLETTE	5,572	1,141	691	89	216	302	42	*	*	*	*
TETON	**13,586**	**2,572**	**966**	**191**	**562**	**712**	**76**	**0**	**0**	**0**	**A**

Notes: * indicates incomplete monitoring data for all three years.
Therefore, those counties are excluded in the Grade analysis.

Orange: Unhealthy For Sensitive Groups — 0.085-0.014 ppm ozone
Red: Unhealthy — 0.105-0.124 ppm ozone
Purple: Very Unhealthy — 0.125-0.374 ppm ozone

(1) Grades are as follows:

Those counties with a weighted average[2] of

0.0	A
0.3-0.7	B
1.0-2.0	C
2.2-3.2	D
3.3+	F

(2) The weighted average was derived by adding the three years of individual level data (1996-1998), multiplying the sums of each level by the assigned standard weights, ie 1=orange, 1.5=red, 2.0=purple, and taking the average of the three levels weighted averages.

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