State of the Air 2009

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S.O.T.A. – '09

A brief summary for the A/BC AQCB

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[First paragraphs of Executive Summary, ’09 Report]:

Air pollution continues to threaten the lives and health of millions of people in the United States despite great progress since the modern Clean Air Act was first passed in 1970. Even as the nation explores the complex challenges of global warming and energy strategy, air pollution remains widespread and dangerous.

This year marks the tenth annual *American Lung Association State of the Air* report and provides an excellent opportunity to look back over the changes in the past ten years. This 2009 report looks at ozone and particle pollution year-round (annual average) and short-term levels (24-hour) of particle pollution ($PM_{2.5}$) found in monitoring sites across the United States in 2005, 2006, and 2007.

- **America needs to clean our air at the same time we face the challenges of global warming and energy independence. The American Lung Association urges all of us, as well as Congress and the EPA, to choose solutions that help solve all three challenges.**
- **Sometimes, what sounds like a good solution for one problem can actually make air pollution worse. For example, wood is a renewable fuel, and it sounds really "eco-friendly" to burn wood for heat. But burning wood drives up particle pollution making our most deadly air pollution an even bigger problem.**
- **Ozone –or smog—is the most widespread air pollutant. When you inhale ozone, it irritates your lungs, leaving them with something like a bad sunburn. It can cause health problems the day you breathe it in, and even days after. Ozone can cause wheezing, coughing, asthma attacks, and can even shorten your life.**
- **This year's *State of the Air* report tells us that six out of 10 people in the United States live in counties that got an F, because they have unhealthy levels of ozone air pollution. We based the grades on the tighter ozone standard EPA put in effect in March 2008 after their scientists warned them that ozone was harmful at much lower levels.**
- **Particle pollution is a noxious mix of microscopic bits of ash, soot, diesel exhaust, chemicals, metals and aerosols. Particle pollution is the most dangerous and deadly of the outdoor air pollutants that are widespread in America.**

AQI colors

EPA has assigned a specific color to each AQI category to make it easier for people to understand quickly whether air pollution is reaching unhealthy levels in their communities. For example, the color orange means that conditions are "unhealthy for sensitive groups," while red means that conditions may be "unhealthy for everyone," and so on.

Air Quality Index Levels of Health Concern	Numerical Value	Meaning
Good	0-50	Air quality is considered satisfactory, and air pollution poses little or no risk.
Moderate	51-100	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.
Unhealthy for Sensitive Groups	101-150	Members of sensitive groups may experience health effects. The general public is not likely to be affected.
Unhealthy	151-200	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.
Very Unhealthy	201-300	Health alert: everyone may experience more serious health effects.
Hazardous	> 300	Health warnings of emergency conditions. The entire population is more likely to be affected.

National Ambient Air Quality Standards

	Primary Standards		Secondary Standards	
Pollutant	**Level**	**Averaging Time**	**Level**	**Averaging Time**
Carbon Monoxide	**9 ppm (10 mg/m^3)**	**8-hour [(1)]**	**None**	
	35 ppm (40 mg/m^3)	**1-hour [(1)]**		
Lead	**0.15 µg/m^3 [(2)]**	**Rolling 3-Month Average**	**Same as Primary**	
	1.5 µg/m^3	**Quarterly Average**	**Same as Primary**	
Nitrogen Dioxide	**0.053 ppm (100 µg/m^3)**	**Annual (Arithmetic Mean)**	**Same as Primary**	
Particulate Matter (PM_{10})	**150 µg/m^3**	**24-hour [(3)]**	**Same as Primary**	
Particulate Matter ($PM_{2.5}$)	**15.0 µg/m^3**	**Annual [(4)] (Arithmetic Mean)**	**Same as Primary**	
	35 µg/m^3	**24-hour [(5)]**	**Same as Primary**	
Ozone	**0.075 ppm (2008 std)**	**8-hour [(6)]**	**Same as Primary**	
	0.08 ppm (1997 std)	**8-hour [(7)]**	**Same as Primary**	
	0.12 ppm	**1-hour [(8)] (Applies only in limited areas)**	**Same as Primary**	
Sulfur Dioxide	**0.03 ppm**	**Annual (Arithmetic Mean)**	**0.5 ppm (1300 µg/m^3)**	**3-hour [(1)]**
	0.14 ppm	**24-hour [(1)]**		

(modifying footnotes omitted here)

Grading System& Data

- ***State of the Air: 2009*** **gives "report card" grades from A to F to every county with an air pollution monitor—roughly 1,000 of the 3,141 counties in the country. Grades tell how clean or dirty the air is for the three most widespread outdoor air pollutants---ozone; 24-hour particle pollution; and year-round particle pollution levels. The report also ranks the cities and counties most polluted by ozone, 24-hour particle pollution and annual averages of particle pollution. (pp 16-24, Full Report)**

- **This 10th anniversary release of *State of the Air* also shows trends in the levels of ozone and year-round levels of particle pollution in the 25 most-polluted cities in the United States. The report has tracked ozone levels over the past decade and particle pollution for the past six years.**

- **The Lung Association bases its grades on air pollution data that come from the EPA, database. Each state gathers these data year-round from air pollution monitors that are set up throughout the country, and sends them to EPA.**

- ***State of the Air 2009*** **uses air quality data for 2005-2007, which are the most recent, quality-reviewed information that EPA could provide.**

  - **The ozone grades are based on the new, tighter standards that EPA announced in March 2008. The 24-hour particle and annual particle pollution grades are based on the standards EPA adopted in 2006.**

Each table by county summarizes, for each of the 3 years, the number of days the ozone level was within the ranges identified by the EPA based on the EPA Air Quality Index:

0 .000 – 0 .059 ppm Good (Green)

0 .060 – 0 .075 ppm Moderate (Yellow)

0 .076 – 0 .095 ppm Unhealthy for Sensitive Groups (Orange)

0 .096 – 0 .115 ppm Unhealthy (Red)

0 .116 – 0 .374 ppm Very Unhealthy (Purple)

>0 .374 ppm Hazardous (Maroon)

The goal of this report was to identify the number of days that 8-hour daily maximum concentrations occurred within the defined ranges, not just those days that would fall under the requirements for attaining the national ambient air quality standards.

People at Risk from Short-term Particle Pollution (24-Hour $PM_{2.5}$)

In Counties where the Grades were:	Chronic Diseases						Age Groups		Total Population	Number of Counties
	Adult Asthma	Pediatric Asthma	Chronic Bronchitis	Emphysema	CV Disease	Diabetes	Under 18	Over 65		
Grade A (0.0)	829,553	285,298	337,702	165,471	3,569,069	765,450	3,138,239	1,621,022	13,080,289	79
Grade B (0.3-0.9)	1,508,328	587,947	654,603	320,398	6,914,480	1,482,837	6,467,372	3,116,360	25,737,174	114
Grade C (1.0-2.0)	3,039,579	1,077,734	1,277,031	635,278	13,587,841	2,925,415	11,854,949	6,261,138	49,112,969	182
Grade D (2.1-3.2)	1,615,570	599,558	678,505	331,719	7,163,388	1,535,736	6,595,070	3,226,800	26,583,196	75
Grade F (3.3+)	5,745,865	2,114,718	2,337,548	1,121,158	24,468,633	5,222,298	23,261,650	10,676,585	92,794,285	134
National Population in Counties with PM_{25} Monitors	13,125,794	4,801,690	5,441,329	2,652,011	57,366,628	12,290,279	52,818,024	25,673,306	213,344,636	670

People at Risk from Year-Round Particle Pollution (Annual $PM_{2.5}$)

In Counties where the Grades were:	Chronic Diseases						Age Groups		Total Population	Number of Counties
	Adult Asthma	Pediatric Asthma	Chronic Bronchitis	Emphysema	CV Disease	Diabetes	Under 18	Over 65		
Pass	8,900,962	3,222,756	3,725,035	1,827,567	39,389,136	8,451,886	35,450,023	17,817,941	144,968,781	466
Fail	2,846,454	1,099,884	1,168,859	555,959	12,190,347	2,596,401	12,098,580	5,261,998	47,024,001	61
National Population in Counties with PM_{25} Monitors	13,125,798	4,801,679	5,441,335	2,652,005	57,366,628	12,290,287	52,818,024	25,673,306	213,344,636	670

People at Risk from Ozone

		Chronic Diseases					Age Groups		Total Population	Number of Counties
		Report Year	Adult Asthma	Pediatric Asthma	Chronic Bronchitis	Emphysema	Under 18	Over 65		
Grade A	(0.0)	2009	360,716	122,369	160,463	80,466	1,346,061	814,035	6,017,415	40
Grade B	(0.3-0.9)	2009	406,226	152,226	163,920	80,278	1,674,464	797,027	6,509,310	37
Grade C	(1.0-2.0)	2009	872,014	328,182	400,503	205,192	3,609,961	2,151,902	15,156,293	81
Grade D	(2.1-3.2)	2009	413,060	149,032	194,139	100,545	1,639,337	1,058,261	7,198,179	43
Grade F	(3.3+)	2009	10,875,304	3,996,013	4,439,068	2,145,510	43,955,790	20,441,256	175,378,757	485
National Population in Counties with Ozone Monitors		2009	14,025,715	5,110,896	5,802,213	2,831,715	56,219,254	27,444,372	227,268,090	821

Note: The State of the Air 2009 covers the period 2005-2007. The Appendix provides a full discussion of the methodology.

NEW MEXICO

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AT-RISK GROUPS

County	Total Population	Under 18	65 & Over	Lung Diseases: Pediatric Asthma	Lung Diseases: Adult Asthma	Lung Diseases: Chronic Bronchitis	Lung Diseases: Emphysema	CV Disease	Diabetes
BERNALILLO	629,292	155,593	75,933	14,145	41,008	16,061	7,833	169,371	36,291
CHAVES	62,595	16,550	9,297	1,505	3,969	1,605	838	17,476	3,795
DONA ANA	198,791	54,656	23,455	4,969	12,443	4,758	2,250	49,548	10,505
EDDY	51,002	13,410	7,011	1,219	3,251	1,320	686	14,327	3,116
GRANT	29,699	6,613	5,728	601	1,984	847	481	9,599	2,126
LEA	58,043	16,529	6,871	1,503	3,589	1,401	683	14,777	3,162
LUNA	26,996	7,402	5,474	673	1,674	714	413	8,176	1,810
SAN JUAN	122,427	33,845	12,827	3,077	7,680	2,965	1,403	30,848	6,568
SANDOVAL	117,866	30,420	12,648	2,765	7,586	2,949	1,408	30,793	6,576
SANTA FE	142,955	30,181	18,725	2,744	9,782	3,951	2,011	42,449	9,212
VALENCIA	71,364	18,614	8,091	1,692	4,571	1,784	862	18,731	4,007
TOTALS	**1,511,030**	**383,813**	**186,050**	**34,892**	**97,537**	**38,356**	**18,868**	**406,097**	**87,168**

HIGH OZONE DAYS/2005-2007

PARTICLE POLLUTION DAYS/2005-2007

						24-Hour					Annual	
County	Orange	Red	Purple	Wgt. Avg	Grade	Orange	Red	Purple	Wgt. Avg	Grade	Design Value	Pass/ Fail
BERNALILLO	15	0	0	5.0	F	2	0	0	0.7	B	7.1	PASS
CHAVES	DNC	DNC	DNC	DNC	DNC	0	0	0	0.0	A	6.6	PASS
DONA ANA	18	0	0	6.0	F	6	0	0	2.0	C	9.7	PASS
EDDY	6	0	0	2.0	C	DNC	DNC	DNC	DNC	DNC	DNC	DNC
GRANT	0	0	0	0.0	A	0	0	0	0.0	A	DNC	INC
LEA	6	0	0	2.0	C	0	0	0	0.0	A	DNC	INC
LUNA	*	*	*	*	*	DNC	DNC	DNC	DNC	DNC	DNC	DNC
SAN JUAN	24	0	0	8.0	F	0	0	0	0.0	A	5.8	PASS
SANDOVAL	7	0	0	2.3	D	2	0	0	0.7	B	7.8	PASS
SANTA FE	*	*	*	*	*	0	0	0	0.0	A	4.7	PASS
VALENCIA	*	*	*	*	*	DNC	DNC	DNC	DNC	DNC	DNC	DNC

Notes:
(1) The weighted average was derived by adding the three years of individual level data (2005-2007), multiplying the sums of each level by the assigned standard weights, i.e. 1=orange, 1.5=red, 2.0=purple and calculating the average. (2) Asterisk (*) indicates incomplete monitoring data for all three years. Therefore, those counties are excluded from the grade analysis or received an Incomplete. (3) DNC indicates that data on that particular pollutant is not collected in that county. (4) Grades are as follows: A=0.0, B=0.3-0.9, C=1.0-2.0, D=2.1-3.2, F=3.3+.

Summary

The SOTA09 report presents a useful collection of Air Quality comparisons for the unhealthy catagories: O_3 and $PM_{2.5}$ throughout the country.

In general, concentration trends have been declining as a result of applied control strategies which have been based on emissions reduction, but decline rates have leveled off and values are still in the unhealthy range in many places.

Bernalillo County got an ozone grade of "F" this year because of the more stringent standard (75 ppb vs 80 ppb) in effect, and possibly from meteorological effects of pollutants transport from distant upwind source regions. The latter makes designing a local mitigation strategy a significant challenge.

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