

## **Lead (Pb) Air Quality Data Update 2007-2008 & 2006-2008 Design Values**

The following is a brief summary of EPA's 2008 air quality update for lead based on ambient monitoring data for the two year period, 2007-2008 with regards to the 1978 Pb NAAQS, and for the 3-year period, 2006-2008 with regards to the 2008 Pb NAAQS. During these timeframes:

- Of the 13 original designated nonattainment areas for the 1978 Pb NAAQS, two are still designated as nonattainment. One of these two areas, the Herculaneum, MO Pb nonattainment area violated the Pb NAAQS for 2007-2008. No 2007-2008 data were available for the other remaining designated Pb nonattainment area of East Helena in Lewis and Clark County, MT. The source associated with the East Helena area closed in early 2001 and monitoring ceased in late 2001; the latest available quarters of data (from 2001) were below the 1978 NAAQS level (i.e., 1.5  $\mu\text{g}/\text{m}^3$ ). Of the 11 original Pb nonattainment areas that were subsequently redesignated to attainment, one area (Dent Township, MO - part of Iron County) violated the 1978 NAAQS with 2007-2008 data; two areas met the NAAQS in 2007-2008, and the remaining eight redesignated areas had incomplete or no data for 2007-2008. (Table 1)
- Two additional areas (counties) not part of an original designated Pb nonattainment area violated the 1978 Pb NAAQS in 2007-2008. (Table 2)
- With regard to the 2008 Pb NAAQS, 52 counties contained Pb sites (128 total sites in the 52 counties) with 2006-2008 FRM/FEM data that ostensibly could be compared to the new NAAQS. Thirty-one of these 52 counties contained at least one site that met the completeness criteria for the 2008 NAAQS (64 total sites in the 32 counties). Fourteen of the 31 counties with at least one complete site did not meet the 2008 Pb NAAQS based on the highest design value of the complete sites, and the other 17 counties met the 2008 NAAQS based on the highest design value of the complete sites. (Table 3) (Note that a county aggregation was utilized for this table based solely on historical precedence and convenience. When actual attainment/nonattainment designations are made for the 2008 Pb NAAQS, numerous factors will be used to delineate the designated area boundaries. In some cases designated areas may be based on single counties, on multiple counties (e.g., a CBSA), and/or on partial counties (e.g., townships).

In 1978, the EPA established the Pb NAAQS for lead (measured in Pb-TSP) as a 1.5 microgram per cubic meter ( $\mu\text{g}/\text{m}^3$ ) maximum quarterly average. The 1978 Pb standard is not met at a monitor if the maximum quarterly average for the two most recent calendar years of monitoring data exceeds 1.5  $\mu\text{g}/\text{m}^3$  (1.55 rounds up to 1.6 and is a violation). In 2008, the EPA strengthened the Pb NAAQS to a 0.15  $\mu\text{g}/\text{m}^3$  maximum 3-month average over the most recent three calendar years. Although Pb-TSP was kept as the chief indicator, The Pb-TSP measurements are now required to be expressed in local conditions (i.e., actual temperature and pressure at the site, "LC") as opposed to the 1978 NAAQS which requires Pb-TSP measurements to be reported at standard temperature and pressure (STP). Further, the 2008 CFR Pb NAAQS also permits, in certain situations, Pb-PM10 data to be compared to the NAAQS, but specifically only for identifying violations.

Air quality data from EPA's Air Quality System (AQS) were used to calculate lead design values. The data used for these calculations were obtained from AQS on July 7, 2009. As of August 31, 2009, no regulatory decisions on attainment status have been made for any area based on these specific calculations.

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**Table 1. Areas previously designated nonattainment for the 1978 Pb NAAQS, 2007-2008.**

<u>State</u>	<u>Designated Area</u>	<u>EPA Region</u>	<u>Designation Status</u> <sup>1</sup>	<u>2007-2008 Design Value (based on 1978 NAAQS, max quarterly average)</u> <sup>2,3,4,5</sup>	<u>Met 1978 NAAQS 2007-2008?</u> <sup>4,5</sup>
AL	Jefferson Co, AL	4	Maintenance	ND	ND
GA	Muscogee Co, GA	4	Maintenance	ND	ND
IN	Marion Co, IN	5	Maintenance	ND	ND
MN	Dakota Co, MN	5	Maintenance	0.4	Incomplete
MO	Dent Township, MO (part of Iron County)	7	Maintenance	1.9	No
MO	Herculaneum, MO (part of Jefferson County)	7	Nonattainment	2.9	No
MO	Liberty and Arcadia, MO (part of Iron County)	7	Maintenance	0.1	Yes
MT	East Helena Area (Lewis and Clark Co.), MT	8	Nonattainment	ND	ND
NE	Douglas County, NE (portion of city of Omaha)	7	Maintenance	ND	ND
TN	Fayette Co, TN	4	Maintenance	ND	ND
TN	Shelby Co, TN	4	Maintenance	ND	ND
TN	Williamson Co, TN	4	Maintenance	ND	ND
TX	Collin Co, TX	6	Maintenance	1.2	Yes

1. Area designation status as of August 1, 2009.

2. The 1978 Pb NAAQS is based on a Pb-TSP maximum quarterly average concentration statistic. The level of the 1978 Pb NAAQS is 1.5 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) which is not to be exceeded in any calendar quarter. Per EPA guidance, an area designated nonattainment for the 1978 NAAQS must show two consecutive calendar years (i.e., 8 quarters) of valid (i.e., complete) quarterly means, all less than or equal the level of the standard, in order to be considered for redesignation to attainment. The air quality "design value" (DV) for the 1978 Pb NAAQS has been defined, in practice, as the maximum quarterly average over a 2-year period (i.e., 2007-2008). The updated DVs are computed for the 2007-2008 period using federal reference method (FRM) and federal equivalent method (FEM) Pb-TSP (parameter code 12128) data reported by the States, Tribes, and local agencies to EPA's Air Quality System (AQS) as of July 7, 2009. DVs that are shown in bold and colored (red or blue) font are valid. All other DVs are invalid and are shown in normal black font.

3. Concentrations flagged by States, Tribes, and local agencies as exceptional events (e.g. high winds, wildfires, volcanic eruptions, construction) that are concurred by the EPA Regional Office are not included in the calculation of these design values.

4. No regulatory decisions on attainment status have been made for areas based upon this data. In some cases the data are still under review.

5. ND = No Data

Source: U.S. EPA's Air Quality System (AQS) as of July 7, 2009.

**Table 2. Additional areas (counties) failing to meet the 1978 Pb NAAQS in 2007-2008.**

<u>State</u>	<u>County</u>	<u>EPA Region</u>	<u>State FIPS</u>	<u>County FIPS</u>	<u>2007-2008 Design Value (based on 1978 NAAQS, max quarterly average)</u> <sup>1,2,3</sup>	<u>2007-2008 Design Value Site (highest site-level design value in the county based on 1978 NAAQS)</u>	<u>CBSA Name</u>
Florida	Hillsborough	4	12	057	1.6	120571066	Tampa-St. Petersburg-Clearwater, FL
Indiana	Delaware	5	18	035	2.3	180350009	Muncie, IN

1. The 1978 Pb NAAQS is based on a Pb-TSP maximum quarterly average concentration statistic. The level of the 1978 Pb NAAQS is 1.5 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) which is not to be exceeded in any calendar quarter. Per EPA guidance, an area designated nonattainment for the 1978 NAAQS must show two consecutive calendar years (i.e., 8 quarters) of valid (i.e., complete) quarterly means, all less than or equal the level of the standard, in order to be considered for redesignation to attainment. The air quality "design value" (DV) for the 1978 Pb NAAQS has been defined, in practice, as the maximum quarterly average over a 2-year period (i.e., 2007-2008). The updated DVs are computed for the 2007-2008 period using federal reference method (FRM) and federal equivalent method (FEM) Pb-TSP data reported by the States, Tribes, and local agencies to EPA's Air Quality System (AQS) as of April 6, 2009. The DVs in this table are all shown in bold and red-colored font, indicating that they are all valid and in violation of the NAAQS.

2. Concentrations flagged by States, Tribes, and local agencies as exceptional events (e.g. high winds, wildfires, volcanic eruptions, construction) that are concurred by the EPA Regional Office are not included in the calculation of these design values.

3. No regulatory decisions on attainment status have been made for areas based upon this data. In some cases the data are still under review.

Source: U.S. EPA's Air Quality System (AQS) as of July 7, 2009.

**Table 3. Pb-TSP FRM/FEM county<sup>1</sup> summary, 2006-2008 (2008 CFR NAAQS)**

<u>State</u>	<u>County<sup>1</sup></u>	<u>County population (2000 Census)</u>	<u>EPA Region</u>	<u>State FIPS</u>	<u>County FIPS</u>	<u>Number of sites with FRM/FEM data, 2006-2008</u>	<u>Number of sites with valid FRM/FEM Design Values</u>	<u>Number of violating sites, 2006-2008</u>	<u>Number of sites that meet 2008 NAAQS, 2006-2008</u>	<u>Design Value, 2006-2008<sup>2a</sup></u>	<u>Design Value Site, 2006-2008</u>	<u>CBSA name</u>
Alabama	Pike	29,605	4	01	109	2	2	2		1.21	011090003	Troy, AL
California	Imperial	142,361	9	06	025	1	1		1	0.03	060250005	El Centro, CA
California	Los Angeles	9,519,338	9	06	037	6				0.03	060371103	Los Angeles-Long Beach-Santa Ana, CA
California	Riverside	1,545,387	9	06	065	2				0.02	060658001	Riverside-San Bernardino-Ontario, CA
California	San Bernardino	1,709,434	9	06	071	2				0.02	060711004	Riverside-San Bernardino-Ontario, CA
Florida	Hillsborough	998,948	4	12	057	2	2	2		1.77	120571066	Tampa-St. Petersburg-Clearwater, FL
Florida	Pinellas	921,482	4	12	103	1				0.00	121033005	Tampa-St. Petersburg-Clearwater, FL
Illinois	Cook	5,376,741	5	17	031	8	7		7	0.06	170310026	Chicago-Naperville-Joliet, IL-IN-WI
Illinois	Macoupin	49,019	5	17	117	1	1		1	0.01	171170002	St. Louis, MO-IL
Illinois	Madison	258,941	5	17	119	2	2	1	1	0.28	171190010	St. Louis, MO-IL
Illinois	Peoria	183,433	5	17	143	1	1		1	0.01	171430037	Peoria, IL
Illinois	Saint Clair	256,082	5	17	163	1	1		1	0.05	171630010	St. Louis, MO-IL
Indiana	Delaware	118,769	5	18	035	2	2	2		2.16	180350009	Muncie, IN
Indiana	Lake	484,564	5	18	089	3	1		1	0.06	180892011	Chicago-Naperville-Joliet, IL-IN-WI
Indiana	Marion	860,454	5	18	097	3	2		2	0.04	180970063	Indianapolis-Carmel, IN
Indiana	Vanderburgh	171,922	5	18	163	1				0.01	181630006	Evansville, IN-KY
Massachusetts	Suffolk	689,807	1	25	025	1				0.02	250250002	Boston-Cambridge-Quincy, MA-NH
Michigan	Genesee	436,141	5	26	049	1				0.01	260490021	Flint, MI
Michigan	Kent	574,335	5	26	081	1				0.00	260810020	Grand Rapids-Wyoming, MI
Michigan	Missaukee	14,478	5	26	113	1				0.00	261130001	Cadillac, MI

**Table 3. Pb-TSP FRM/FEM county<sup>1</sup> summary, 2006-2008 (2008 CFR NAAQS)**

<u>State</u>	<u>County</u> <sup>1</sup>	<u>County population (2000 Census)</u>	<u>EPA Region</u>	<u>State FIPS</u>	<u>County FIPS</u>	<u>Number of sites with FRM/FEM data, 2006-2008</u>	<u>Number of sites with valid FRM/FEM Design Values</u>	<u>Number of violating sites, 2006-2008</u>	<u>Number of sites that meet 2008 NAAQS, 2006-2008</u>	<u>Design Value, 2006-2008<sup>2</sup><sub>3,4,5</sub></u>	<u>Design Value Site, 2006-2008</u>	<u>CBSA name</u>
Michigan	Washtenaw	322,895	5	26	161	1				0.00	261610008	Ann Arbor, MI
Michigan	Wayne	2,061,162	5	26	163	6	1		1	0.03	261630015	Detroit-Warren-Livonia, MI
Minnesota	Dakota	355,904	5	27	037	6	2	1	1	0.70	270370465	Minneapolis-St. Paul-Bloomington, MN-WI
Minnesota	Hennepin	1,116,200	5	27	053	8	2		2	0.01	270530965	Minneapolis-St. Paul-Bloomington, MN-WI
Minnesota	Ramsey	511,035	5	27	123	2	1		1	0.01	271230866	Minneapolis-St. Paul-Bloomington, MN-WI
Minnesota	Saint Louis	200,528	5	27	137	2	1		1	0.00	271377555	Duluth, MN-WI
Minnesota	Washington	201,130	5	27	163	2				0.01	271630009	Minneapolis-St. Paul-Bloomington, MN-WI
Missouri	Iron	10,697	7	29	093	4	4	2	2	2.46	290930016	
Missouri	Jefferson	198,099	7	29	099	10	10	10		2.89	290990015	St. Louis, MO-IL
Missouri	Saint Louis	1,016,315	7	29	189	1	1		1	0.06	291892003	St. Louis, MO-IL
New Jersey	Middlesex	750,162	2	34	023	1				0.15	340231003	New York-Northern New Jersey-Long Island, NY-NJ-PA
New York	Kings	2,465,326	2	36	047	1	1		1	0.02	360470122	New York-Northern New Jersey-Long Island, NY-NJ-PA
New York	Orange	341,367	2	36	071	3	2		2	0.09	360713002	Poughkeepsie-Newburgh-Middletown, NY
Ohio	Butler	332,807	5	39	017	1				0.01	390170015	Cincinnati-Middletown, OH-KY-IN
Ohio	Columbiana	112,075	5	39	029	3				0.03	390290019	East Liverpool-Salem, OH
Ohio	Cuyahoga	1,393,978	5	39	035	6	1	1		0.17	390350049	Cleveland-Elyria-Mentor, OH
Ohio	Franklin	1,068,978	5	39	049	1				0.01	390490025	Columbus, OH
Ohio	Fulton	42,084	5	39	051	1	1	1		0.69	390510001	Toledo, OH
Ohio	Logan	46,005	5	39	091	5	4	4		0.27	390910005	Bellefontaine, OH
Ohio	Washington	63,251	5	39	167	2				0.01	391670008	Parkersburg-Marietta-Vienna, WV-OH
Pennsylvania	Allegheny	1,281,666	3	42	003	2	1		1	0.03	420032001	Pittsburgh, PA

**Table 3. Pb-TSP FRM/FEM county<sup>1</sup> summary, 2006-2008 (2008 CFR NAAQS)**

<u>State</u>	<u>County</u> <sup>1</sup>	<u>County population (2000 Census)</u>	<u>EPA Region</u>	<u>State FIPS</u>	<u>County FIPS</u>	<u>Number of sites with FRM/FEM data, 2006-2008</u>	<u>Number of sites with valid FRM/FEM Design Values</u>	<u>Number of violating sites, 2006-2008</u>	<u>Number of sites that meet 2008 NAAQS, 2006-2008</u>	<u>Design Value, 2006-2008<sup>2</sup></u>	<u>Design Value Site, 2006-2008</u>	<u>CBSA name</u>
Pennsylvania	Beaver	181,412	3	42	007	1	1	1		0.20	420070505 420111717	Pittsburgh, PA
Pennsylvania	Berks	373,638	3	42	011	3	3	2	1	0.36 <sup>6</sup>	6	Reading, PA
Pennsylvania	Cambria	152,598	3	42	021	1	1		1	0.07	420210808	Johnstown, PA
Pennsylvania	Delaware	550,864	3	42	045	1				0.05	420450002	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD
Pennsylvania	Westmoreland	369,993	3	42	129	1	1		1	0.05	421290007	Pittsburgh, PA
Tennessee	Sullivan	153,048	4	47	163	3	1	1		0.26	471633001	Kingsport-Bristol-Bristol, TN-VA
Texas	Cameron	335,227	6	48	061	1				0.01	480610006	Brownsville-Harlingen, TX
Texas	Collin	491,675	6	48	085	3	3	3		1.26 <sup>6</sup>	480850009	Dallas-Fort Worth-Arlington, TX
Texas	Dallas	2,218,899	6	48	113	2				0.04	481130018	Dallas-Fort Worth-Arlington, TX
Texas	Harris	3,400,578	6	48	201	1				0.01	482011034	Houston-Sugar Land-Baytown, TX
Texas	Webb	193,117	6	48	479	1				0.01	484790016	Laredo, TX

1. A county-level aggregation has been used here to display summary design value (DV) information. The decision to use counties for DV summarization was based solely on historical precedence and convenience. When actual attainment/nonattainment designations are made for the 2008 CFR Pb NAAQS, numerous factors will be used to delineate the designated area boundaries. In some cases designated areas may be based on single counties, on multiple counties (e.g., a CBSA), and/or on partial counties (e.g., townships).

2. The air quality design value (DV) for the 2008 Pb NAAQS is defined as the maximum rolling 3-month Pb-TSP average over a 3-year period (i.e., 2006-2008). The level of the 2008 Pb NAAQS is 0.15 micrograms per cubic meter (µg/m<sup>3</sup>) which is not to be exceeded in any 3-month period. The updated DVs are computed for the 2006-2008 period using only federal reference method (FRM) or federal equivalent method (FEM) Pb-TSP data reported by the States, Tribes, and local agencies to EPA's Air Quality System (AQS) as of July 7, 2009. Although the indicator for the 2008 Pb NAAQS is Pb-TSP at "local conditions" (i.e., actual temperature and pressure), 2006-2008 Pb-TSP data reported in "standard

temperature and pressure" (i.e., 25 ° C, 760 mmHg) are also considered valid for NAAQS comparisons and related attainment/nonattainment determinations if the sampling and analysis methods that were utilized to collect that data were consistent with previous or newly designated FRMs or FEMs and quality assurance requirements were met.

3. DVs that are bolded and colored (red or blue) are valid. All other design values are invalid and are shown in normal black font. For counties with invalid design values, the value shown in this column is the highest valid 3-month mean for sites in the county if at least one valid 3-month mean exists. If the county had sites that reported FRM/FEM data for the 2006-2008 period but none of the sites had valid 3-month means, the DV value shown is the highest 3-month mean of the invalid ones; these latter cases are underlined if present.

4. Concentrations flagged by States, Tribes, and local agencies as exceptional events (e.g. high winds, wildfires, volcanic eruptions, construction) that are concurred by the EPA Regional Office are not included in the calculation of these design values.

5. No regulatory decisions on attainment status have been made for areas based upon this data. In some cases the data are still under review.

6. These site locations are in the process of being reviewed to determine if they are/were publicly accessible and hence eligible to be used in NAAQS comparisons. Inasmuch as the design values at these sites are below the 1978 NAAQS, these sites have not affected Table 1 or Table 2.

Source: U.S. EPA's Air Quality System (AQS) as of July 7, 2009.