$PM_{2.5}$ Air Quality Data Update
2006-2008 Design Values

The following is a brief summary of EPA's air quality update for $PM_{2.5}$ based on ambient monitoring data for the three-year period, 2006-2008. During this three-year period:

- Fifteen of the original 39 areas designated nonattainment for the $PM_{2.5}$ NAAQS in April, 2005 (using 2001-2003 data) failed to meet the annual $PM_{2.5}$ NAAQS in 2006-2008. Seventeen of the original 39 nonattainment areas met the annual NAAQS in 2006-2008. Seven areas have insufficient data to allow a determination of compliance with respect to the annual $PM_{2.5}$ NAAQS in 2006-2008; in each of these seven areas, one or more sites for which compliance cannot be determined for 2006-2008 clearly violated the NAAQS in a previous period (e.g., for 2005-2007). (Table 1a).
- Thirty-one areas were designated nonattainment for the 24-hour $PM_{2.5}$ NAAQS in September, 2008. Twenty-eight of these 31 areas failed to meet the NAAQS with 2006-2008 data. The other three areas are shown to have incomplete data with respect to the 24-hour $PM_{2.5}$ NAAQS; in each of these three areas, one or more sites for which compliance cannot be determined for 2006-2008 clearly violated the NAAQS in a previous period (e.g., for 2005-2007). (Table 1b).
- Four counties outside of existing (previous and new) $PM_{2.5}$ nonattainment areas violated one or both $PM_{2.5}$ NAAQS in 2005-2007. (Table 2).
    - Two counties, outside of existing nonattainment areas, did not meet the $PM_{2.5}$ annual NAAQS.
    - Three counties, outside of existing nonattainment areas, did not meet the $PM_{2.5}$ 24-hour NAAQS. (One county violated both the annual and the 24-hour NAAQS with 2006-2008 data.)
    - In some of these cases, EPA is still reviewing state requests for exclusion of data affected by exceptional events. The outcome of this review may change these findings.

In 1997, EPA established the $PM_{2.5}$ NAAQS for the protection of public health. The annual standard was set at a level of 15.0 micrograms per cubic meter (μg/m3) and the 24-hour standard was set at a level of 65 $\mu g/m^3$. In October 2006, the 24-hour $PM_{2.5}$ NAAQS was strengthened to 35 $\mu g/m^3$.

Air quality data from EPA's Air Quality System (AQS) were used to calculate $PM_{2.5}$ design values. The specific calculations are explained in footnotes to the tables. Most of the data used for these calculations were obtained from AQS on July 7, 2009; in some isolated situations, site data were re-extracted at later dates to encompass subsequent AQS changes. Detailed 2006-2008 information (plus information for previous 3-year periods from 1999-2001) for all $PM_{2.5}$ FRM/FEM sites are available in the downloadable spreadsheet file.

For information concerning these data and/or calculations, contact:
Mark Schmidt
U.S. Environmental Protection Agency
Air Quality Trends and Analysis Group (C304-01)
Research Triangle Park, NC 27711
(919) 541-2416, (919) 541-3613 (FAX)
Schmidt.mark@epa.gov

Table 1a. 2006-2008 $PM_{2.5}$ annual standard design values for areas previously designated nonattainment for the 1997 NAAQS

Designated Nonattainment Area	State	EPA Region	Designation Status [1]	2006-2008 Annual Design Value [2,3]	Met Annual NAAQS in 2006-2008? [2,3]
Atlanta	GA	4	Nonattainment	15.3	no
Baltimore	MD	3	Nonattainment	14.0	yes
Birmingham	AL	4	Nonattainment	17.6	no
Canton-Masillon	OH	5	Nonattainment	see footnote [4]	see footnote [4]
Charleston	WV	3	Nonattainment	15.4	no
Chattanooga	TN-GA-AL	4	Nonattainment	see footnote [4]	see footnote [4]
Chicago-Gary-Lake County	IL-IN	5	Nonattainment	see footnote [4]	see footnote [4]
Cincinnati-Hamilton	OH-KY-IN	4, 5	Nonattainment	15.7	no
Cleveland-Akron-Lorain	OH	5	Nonattainment	15.1	no
Columbus	OH	5	Nonattainment	13.7	yes
Dayton-Springfield	OH	5	Nonattainment	14.2	yes
Detroit-Ann Arbor	MI	5	Nonattainment	15.4	no
Evansville	IN	5	Nonattainment	13.7	yes
Floyd County	GA	4	Nonattainment	see footnote [4]	see footnote [4]
Greensboro-Winston Salem-High Point	NC	4	Nonattainment	14.5	yes
Harrisburg-Lebanon-Carlisle	PA	3	Nonattainment	13.8	yes
Hickory-Morganton-Lenoir	NC	4	Nonattainment	14.2	yes
Huntington-Ashland	WV-KY-OH	3, 4, 5	Nonattainment	15.2	no
Indianapolis	IN	5	Nonattainment	14.7	yes
Johnstown	PA	3	Nonattainment	14.4	yes
Knoxville	TN	4	Nonattainment	see footnote [4]	see footnote [4]
Lancaster	PA	3	Nonattainment	14.5	yes
Libby	MT	8	Nonattainment	13.7	yes
Liberty-Clairton	PA	3	Nonattainment	18.3	no
Los Angeles-South Coast Air Basin	CA	9	Nonattainment	19.7	no
Louisville	KY-IN	4, 5	Nonattainment	15.3	no
Macon	GA	4	Nonattainment	15.3	no
Martinsburg, WV-Hagerstown	MD	3	Nonattainment	14.9	yes
New York-N.New Jersey-Long Island	NY-NJ-CT	1, 2	Nonattainment	see footnote [4]	see footnote [4]

Table 1a. 2006-2008 $PM_{2.5}$ annual standard design values for areas previously designated nonattainment for the 1997 NAAQS

Designated Nonattainment Area	State	EPA Region	Designation Status [1]	2006-2008 Annual Design Value [2,3]	Met Annual NAAQS in 2006-2008? [2,3]
Parkersburg-Marietta	WV-OH	3, 5	Nonattainment	14.6	yes
Philadelphia-Wilmington	PA-NJ-DE	2, 3	Nonattainment	see footnote [4]	see footnote [4]
Pittsburgh-Beaver Valley	PA	3	Nonattainment	15.2	no
Reading	PA	3	Nonattainment	13.6	yes
San Joaquin Valley	CA	9	Nonattainment	21.5	no
St. Louis	MO-IL	5, 7	Nonattainment	15.6	no
Steubenville-Weirton	OH-WV	3, 5	Nonattainment	15.4	no
Washington	DC-MD-VA	3	Nonattainment	13.1	yes
Wheeling	WV-OH	3, 5	Nonattainment	14.2	yes
York	PA	3	Nonattainment	14.6	yes

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

2. The annual standard design values shown here are calculated in accordance with 40 CFR Part 50, Appendix N (2006). The annual standard design value (i.e., the 3-year average annual mean concentration) is computed at each site by averaging the daily FRM samples taken each quarter, averaging these quarterly averages to obtain an annual average, and then averaging the three annual averages. (Note that special rules apply if an area has been approved for spatial averaging.) The NAAQS level for the annual standard is 15.0 micrograms per cubic meter ($\mu g/m^3$). In general, EPA regulations require at least 75% data capture in each quarter of a consecutive 3-year period in order for a design value to be valid. However, if an annual mean (or 3-year annual design value) is over the level of the standard, less data (i.e., 11 samples per quarter for the corresponding 4 quarters) are sufficient to deem that mean valid. Further, EPA regulations and guidance permit data substitution under certain circumstances in order to to consider design values as valid that otherwise would be considered incomplete. The information presented in this update is based on data after applying the substitution protocols.

3. Data that have been flagged for exceptional events, for which documentation has been submitted and approved by the EPA (AQS concurrence field set to 'Y'), if any, were excluded from the design value calculations. In several situations, submitted documentation is still under review and as such, revisions to design values are possible. The EPA has approved exclusion of certain flagged exceptional event data for the 24-hour NAAQS (based on reviews of supporting documentation submitted by the applicable monitoring agencies), but the EPA has not made a final determination on the exclusion of such data with regards to the annual standard. In this report, these data have been excluded from the annual standard design values (and associated statistical components); hence, the stated annual standard design values (and related statistics) may actually be understated and may later be revised upwards.

4. One or more previously violating sites (e.g., for 2005-2007) in this area do not have valid 2006-2008 annual design values (i.e., those meeting NAAQS completeness criteria). As such, a 2006-2008 area-level design value is not shown, even in situations where there are additional sites in the area with valid/complete ones, because the highest of those might not represent actual maximum population exposure in the area. The 2006-2008 site listing included in the Excel version of this file show 2006-2008 design values for each site.

Table 1b. 2006-2008 $PM_{2.5}$ 24-hour standard design values for areas designated nonattainment for the 2006 NAAQS on July 31, 2009.

Designated Nonattainment Area [1]	State	EPA Region	Designation Status [1]	2006-2008 24-hr Design Value [2,3]	Met 24-hour NAAQS (2006 CFR) in 2006-2008? [2,3]
Allentown	PA	3	Nonattainment	36	no
Birmingham	AL	4	Nonattainment	39	no
Canton-Massillon	OH	5	Nonattainment	see footnote [4]	see footnote [4]
Charleston	WV	3	Nonattainment	36	no
Chico	CA	9	Nonattainment	69	no
Cleveland-Akron-Lorain	OH	5	Nonattainment	38	no
Detroit-Ann Arbor	MI	5	Nonattainment	37	no
Fairbanks	AK	10	Nonattainment	41	no
Harrisburg-Lebanon-Carlisle	PA	3	Nonattainment	36	no
Imperial County	CA	9	Nonattainment	36	no
Johnstown	PA	3	Nonattainment	see footnote [4]	see footnote [4]
Klamath Falls	OR	10	Nonattainment	46	no
Knoxville-Sevierville-La Follette	TN	4	Nonattainment	see footnote [4]	see footnote [4]
Lancaster	PA	3	Nonattainment	37	no
Liberty-Clairton	PA	3	Nonattainment	53	no
Logan	UT-ID	8, 10	Nonattainment	36	no
Los Angeles-South Coast Air Basin	CA	9	Nonattainment	53	no
Milwaukee-Racine	WI	5	Nonattainment	37	no
New York-N. New Jersey-Long Island	NY-NJ-CT	1, 2	Nonattainment	38	no
Nogales	AZ	9	Nonattainment	40	no
Oakridge	OR	10	Nonattainment	40	no
Philadelphia-Wilmington	PA-NJ-DE	2, 3	Nonattainment	36	no
Pittsburgh-Beaver Valley	PA	3	Nonattainment	39	no
Provo	UT	8	Nonattainment	44	no
Sacramento	CA	9	Nonattainment	56	no
Salt Lake City	UT	8	Nonattainment	48	no
San Francisco Bay Area	CA	9	Nonattainment	36	no
San Joaquin Valley	CA	9	Nonattainment	70	no
Seattle-Tacoma	WA	10	Nonattainment	44	no
Steubenville-Weirton	OH-WV	3, 5	Nonattainment	41	no

Table 1b. 2006-2008 $PM_{2.5}$ 24-hour standard design values for areas designated nonattainment for the 2006 NAAQS on July 31, 2009.

Designated Nonattainment Area [1]	State	EPA Region	Designation Status [1]	2006-2008 24-hr Design Value [2,3]	Met 24-hour NAAQS (2006 CFR) in 2006-2008? [2,3]
Yuba City-Marysville	CA	9	Nonattainment	47	no

1. A Federal Register notice regarding 24-hour PM2.5 nonattainment designations based primarily on 2005-2007 design values was signed by the EPA Administrator Steven Johnson in December 2008 but never published in the Federal Register. The areas listed in this table were designated nonattainment for the 2006 NAAQS by Administrator Lisa Jackson in 2009.

2. The 24-hour standard design values shown here are calculated in accordance with 40 CFR Part 50, Appendix N (2006, ammended 2007). The 24-hour (or 'daily') standard design value (i.e., the 3-year average 98th percentile) is computed at each site by determining the 98th percentile of the daily FRM samples taken in a given year for each of the three years, and then averaging these three numbers. The NAAQS level for the 24-hour standard is 35 micrograms per cubic meter (µg/m3). In general, EPA regulations require at least 75% data capture in each quarter of a consecutive 3-year period in order for a design value to be valid. However, if an annual 98th percentile (or 3-year 24-hour design value) is over the level of the standard, less data (i.e., only 1 sample in that year) is sufficient to make that 98th percentile valid. Further, EPA regulations and guidance permit data substitution under certain circumstances in order to consider design values as valid that otherwise would be considered incomplete. The information presented in this update is based on data after applying the substitution protocols.

3. Data that have been flagged for exceptional events, for which documentation has been submitted and approved by the EPA (AQS concurrence field set to 'Y'), if any, were excluded from the design value calculations. In several situations, submitted documentation is still under review and as such, revisions to design values are possible.

4. One or more previously violating sites (i.e., for 2005-2007) in this area do not have valid 2006-2008 24-hour design values (i.e., those meeting NAAQS completeness criteria). As such, a 2006-2008 area-level design value is not shown, even in situations where there are additional sites in the area with valid/complete ones, because the highest of those might not represent actual maximum population exposure in the area. The 2006-2008 site listing included in the Excel version of this file shows 2006-2008 design values for each site.

Table 2. 2006-2008 $PM_{2.5}$ design values for violating counties not part of a designated nonattainment area

State	County	CBSA	EPA Region	Annual Design Value [1, 3]	Met annual NAAQS in 2006-2008? [1, 3]	24-hr Design Value [2, 3]	Met 24-hour NAAQS in 2006-2008? [2, 3]	Met both NAAQS in 2006-2008?
Arizona	Pinal	Phoenix-Mesa-Scottsdale, AZ	9	21.6	no	48	no	no
California	Plumas		9	12.6	yes	49	no	no
California	Shasta	Redding, CA	9	9.6	yes	48	no	no
Texas	Harris	Houston-Sugar Land-Baytown, TX	6	15.2	no	30	yes	no

1. The annual standard design values shown here are calculated in accordance with 40 CFR Part 50, Appendix N (2006). The annual standard design value (i.e., 3-year average annual mean concentration) is computed at each site by averaging the daily FRM samples taken each quarter, averaging these quarterly averages to obtain an annual average, and then averaging the three annual averages. (Note that special rules apply if an area has been approved for spatial averaging.) The NAAQS level for the annual standard is 15.0 micrograms per cubic meter (µg/m3). In general, EPA regulations require at least 75% data capture in each quarter of a consecutive 3-year period in order for a design value to be valid. However, if an annual mean (or 3-year annual design value) is over the level of the standard, less data (i.e., 11 samples per quarter for the corresponding 4 quarters) are sufficient to deem that mean valid. Further, EPA regulations and guidance permit data substitution under certain circumstances in order to to consider design values as valid that otherwise would be considered incomplete. The information presented in this update is based on data after applying the substitution protocols.

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Data Source: U.S. EPA's Air Quality System (AQS) as of July 7, 2009 (and later dates in isolated situations).