PM$_{2.5}$ Air Quality Data Update
2004-2006 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, 2004-2006. During this three-year period:

- Thirty two of the original 39 areas designated nonattainment for the PM$_{2.5}$ NAAQS in April, 2005 (using 2001-2003 data) violated the annual PM$_{2.5}$ NAAQS in 2004-2006. Twenty nine of the original 39 nonattainment areas violated the 24-hour NAAQS in 2004-2006. (Table 1)
- Six of the original 39 designated nonattainment areas met the PM$_{2.5}$ annual NAAQS in 2004-2006. [In the Philadelphia nonattainment area, all the sites with complete data for 2004-2006 showed attainment but several other monitors which previously showed nonattainment have incomplete data for 2004-2006.] Ten nonattainment areas met the 24-hour PM$_{2.5}$ NAAQS for 2004-2006. Two nonattainment areas (Evansville, IN and Wheeling, WV-OH) met both the annual and 24-hour PM$_{2.5}$ NAAQS for 2004-2006. (Table 1)
- The single area (Greenville-Spartanburg, SC) designated as unclassifiable for the PM$_{2.5}$ NAAQS in April, 2005 again failed to meet the PM$_{2.5}$ NAAQS (annual standard) in 2004-2006 (Table 2).
- Six additional areas (counties not part of nonattainment areas) also failed to meet the annual PM$_{2.5}$ NAAQS for 2004-2006. Thirty two additional counties violated the 24-hour PM$_{2.5}$ NAAQS in 2004-2006. In sum, 39 counties outside of nonattainment areas violated one or both PM$_{2.5}$ NAAQS in 2004-2006. (Table 2)

Two primary PM$_{2.5}$ standards were established by EPA in 1997 for the protection of public health. In October, 2006 the PM$_{2.5}$ NAAQS were revised, most notably strengthening the 24-hour standard from 65 µg/m^3 to 35 µg/m^3. The annual PM$_{2.5}$ standard is met when the 3-year average of a site's annual mean concentration is 15.0 µg/m^3 (micrograms per cubic meter) or less. The 24-hour standard is met when the 3-year average of a site's annual 98th percentile values is 35 µg/m^3 or less. The secondary PM$_{2.5}$ standards, established for the protection of public welfare and the environment, are the same as the primary standards. [Note: Monitoring agencies are permitted to use a spatial average for a set of sites for comparisons to the annual mean standard if the set of sites meets criteria specified in 40 CFR Part 50, Appendix N.]

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 below. The data used for these calculations were obtained from AQS on July 11, 2007. To date, no regulatory decisions on attainment status have been made for any area based on these specific calculations. Detailed 2004-2006 information for all PM$_{2.5}$ FRM/FEM sites is available in the downloadable spreadsheet file. For information concerning these data and/or calculations, contact:

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Table 1. 2004-2006 PM2.5 Design Values for Previously Designated Nonattainment Areas

Designated Area	State	EPA Region	Status	2004-2006 Ann DV [1]	Met annual NAAQS 2004-2006?	2004-2006 24-hr DV [2]	Met 24-hour NAAQS 2004-2006?	Met both NAAQS 2004-2006?
Atlanta	GA	4	Nonattainment	17.6	no	36	no	no
Baltimore	MD	3	Nonattainment	16.0	no	39	no	no
Birmingham [3]	AL	4	Nonattainment	17.9	no	37	no	no
Canton-Masillon	OH	5	Nonattainment	15.9	no	37	no	no
Charleston	WV	3	Nonattainment	16.4	no	37	no	no
Chattanooga	TN-GA-AL	4	Nonattainment	15.5	no	36	no	no
Chicago-Gary-Lake County	IL-IN	5	Nonattainment	15.6	no	42	no	no
Cincinnati-Hamilton	OH-KY-IN	4,5	Nonattainment	17.4	no	40	no	no
Cleveland-Akron-Lorain	OH	5	Nonattainment	17.2	no	43	no	no
Columbus	OH	5	Nonattainment	15.0	yes	38	no	no
Dayton-Springfield	OH	5	Nonattainment	15.2	no	36	no	no
Detroit-Ann Arbor	MI	5	Nonattainment	17.2	no	44	no	no
Evansville	IN	5	Nonattainment	15.0	yes	34	yes	yes
Floyd County	GA	4	Nonattainment	16.1	no	34	yes	no
Greensboro-Winston Salem-High Point	NC	4	Nonattainment	15.2	no	31	yes	no
Harrisburg-Lebanon-Carlisle	PA	3	Nonattainment	15.0	yes	38	no	no
Hickory-Morganton-Lenoir	NC	4	Nonattainment	15.4	no	35	yes	no
Huntington-Ashland	WV-KY-OH	3,4,5	Nonattainment	16.1	no	34	yes	no
Indianapolis	IN	5	Nonattainment	15.7	no	38	no	no
Johnstown	PA	3	Nonattainment	15.3	no	39	no	no
Knoxville	TN	4	Nonattainment	15.6	no	33	yes	no
Lancaster	PA	3	Nonattainment	16.3	no	39	no	no
Libby	MT	8	Nonattainment	15.0	yes	43	no	no
Liberty-Clairton	PA	3	Nonattainment	20.4	no	65	no	no
Los Angeles-South Coast Air Basin	CA	9	Nonattainment	20.6	no	57	no	no
Louisville	KY-IN	4,5	Nonattainment	16.2	no	37	no	no
Macon	GA	4	Nonattainment	16.8	no	34	yes	no
Martinsburg, WV-Hagerstown	MD	3	Nonattainment	15.8	no	34	yes	no
New York-N.New Jersey-Long Island	NY-NJ-CT	1,2	Nonattainment	15.7	no	45	no	no
Parkersburg-Marietta	WV-OH	3,5	Nonattainment	15.3	no	35	yes	no
Philadelphia-Wilmington	PA-NJ-DE	2,3	Nonattainment	15.0 [4]	incomplete [4]	37	no	no
Pittsburgh-Beaver Valley	PA	3	Nonattainment	16.3	no	45	no	no
Reading	PA	3	Nonattainment	15.5	no	36	no	no
San Joaquin Valley	CA	9	Nonattainment	18.9	no	64	no	no
St, Louis	MO-IL	5,7	Nonattainment	16.6	no	39	no	no
Steubenville-Weirton	OH-WV	3,5	Nonattainment	16.4	no	43	no	no
Washington	DC-MD-VA	3	Nonattainment	14.5	yes	37	no	no
Wheeling	WV-OH	3,5	Nonattainment	15.0	yes	34	yes	yes
York	PA	3	Nonattainment	16.3	no	37	no	no

1. The annual standard design values shown here are calculated in accordance with 40 CFR Part 50, Appendix N. The 3-year average annual mean concentration (annual standard design value) 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.) 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 bolster completeness. The information presented in this update is based on data after applying the substitution guidance.

2. The 24-hour standard design values shown here are calculated in accordance with 40 CFR Part 50, Appendix N. The 3-year average 98th percentiles (daily standard design value) 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. 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.

3. Two sites in Jefferson County, AL are encompassed in a Community Monitoring Zone (i.e. utilize spatial averaging); the spatially averaged design value for the CMZ is 17.9, which is the maximum for the county.

4. The 15.0 µg/m^3 design value shown for Philadelphia is valid (i.e., complete); however, there are incomplete sites in the nonattainment area that were violating the NAAQS when designations were made. Therefore, this area is marked as incomplete for the annual NAAQS.

Note: 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'), were excluded from the design value calculations.

Source: U.S. EPA's Air Quality System (AQS) as of July 11, 2007.

Table 2. 2004-2006 PM2.5 Design Values for violating counties not part of a designated nonattainment area

State	County Name	EPA Region	Annual Design Value [1]	Met annual NAAQS 2004-2006?	24-hr Design Value [2]	Met 24-hour NAAQS 2004-2006?	Met both NAAQS 2004-2006?
AK	Fairbanks North Star	10		incomplete	43	no	no
AL	Etowah	4	14.7	yes	36	no	no
AL	Russell	4	15.8	no	36	no	no
AZ	Santa Cruz	9	13.4	yes	38	no	no
CA	Butte	9	13.5	yes	56	no	no
CA	Imperial	9	12.5	yes	40	no	no
CA	Placer	9	10.2	yes	38	no	no
CA	Sacramento	9	12.0	yes	49	no	no
CA	Santa Clara	9	11.4	yes	39	no	no
CA	Solano	9	10.2	yes	36	no	no
CA	Sutter	9	10.3	yes	40	no	no
GA	Muscogee	4	15.0	yes	36	no	no
GA	Richmond	4	16.0	no	33	yes	no
GA	Washington	4	15.5	no	31	yes	no
GA	Wilkinson	4	15.5	no	34	yes	no
ID	Shoshone	10	12.1	yes	38	no	no
IN	Knox	5	13.8	yes	36	no	no
MI	Kent	5	12.8	yes	37	no	no
MT	Missoula	8	10.4	yes	41	no	no
MT	Ravalli	8	8.6	yes	38	no	no
OH	Mahoning	5	15.0	yes	37	no	no
OH	Trumbull	5	14.4	yes	36	no	no
OR	Klamath	10	11.4	yes	46	no	no
OR	Lane	10	12.0	yes	48	no	no
PA	Centre	3	12.7	yes	36	no	no
PA	Northampton	3	13.6	yes	37	no	no
SC	Greenville [3]	4	15.9	no	33	yes	no
SC	Lexington	4	15.1	no	33	yes	no
TX	Harris	6	15.4	no	31	yes	no
UT	Cache	8	12.2	yes	64	no	no
UT	Davis	8	10.6	yes	38	no	no
UT	Salt Lake	8	12.1	yes	49	no	no
UT	Utah	8	10.7	yes	44	no	no
UT	Weber	8	11.4	yes	40	no	no
WA	Pierce	10	10.6	yes	42	no	no
WI	Brown	5	11.4	yes	37	no	no
WI	Milwaukee	5	13.5	yes	41	no	no
WI	Waukesha	5	13.9	yes	36	no	no

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2. The 24-hour standard design values shown here are calculated in accordance with 40 CFR Part 50, Appendix N. The 3-year average 98th percentiles (daily standard design value) 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.   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.
Note: 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'), were excluded from the design value calculations.
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