



State of Ohio Environmental Protection Agency

STREET ADDRESS:

Lazarus Government Center
50 W. Town St., Suite 700
Columbus, Ohio 43215

TELE: (614) 644-3020 FAX: (614) 644-3184
www.epa.state.oh.us

MAILING ADDRESS:

P.O. Box 1049
Columbus, OH 43216-1049

May 30, 2008

Bharat Mathur
Acting Regional Administrator
Attn.: R-19J
U.S. EPA, Region 5
77 West Jackson Blvd.
Chicago, Illinois 60604

Re: Recommendations on area boundaries for the 24-hour PM_{2.5} standard

Dear Administrator Mathur:

On April 1, 2008, I received your letter informing that additional areas in Ohio appear to be contributing to violations of the 24-hour PM_{2.5} standard in West Virginia.

Both identified areas (violating the 24-hour PM_{2.5} standard) located in West Virginia are Wood Co. adjacent to Washington Co. (Ohio) in the Parkersburg-Marietta area, and Cabell Co. adjacent to Lawrence Co., Scioto Co., Adams Co. and, Gallia Co. (all in Ohio) in the Huntington-Ashland area.

On December 17, 2007, I sent you Ohio EPA's 24-hour PM_{2.5} designation recommendations. In that letter, Ohio EPA recommended retaining Washington County as nonattainment for the Parkersburg-Marietta area due to the current nonattainment designation. On the other hand, since the monitors in Lawrence and Scioto counties show no violations for the 24-hour PM_{2.5} standard and together with Adams and Gallia counties have low population, low growth, and no significant level of commuters, Ohio EPA recommended attainment for Lawrence and Scioto counties. Due to the location of the monitor in Lawrence County, the current air quality levels are likely being detected from sources across the Ohio River. The low emissions demonstrate that Lawrence and Scioto counties are not a significant source of PM_{2.5}. In addition, Ohio EPA recommended attainment for Adams and Gallia counties due to the forecasted reductions as a result of CAIR requirements and the low population and insignificant commuting in these counties.

Ohio EPA would like to take this opportunity to reiterate its recommendations regarding the 24-hour PM_{2.5} designation areas in Ohio. Attached to this letter you will find additional information justifying our initial request.

Ted Strickland, Governor
Lee Fisher, Lieutenant Governor
Chris Korleski, Director

Ohio EPA is an Equal Opportunity Employer

Bharat Mathur

Re: Recommendations on area boundaries for the 24-hour PM2.5 standard

May 30, 2008

Page 2

I appreciate the opportunity to provide additional recommendations and will work cooperatively with U.S. EPA Region 5 staff as we both review new ambient data and U.S. EPA prepares their announcement on their intended designations. If you have any questions concerning these recommendations, please feel free to contact Carolina Prado of the Division of Air Pollution Control at (614) 644-2270.

Sincerely,

A handwritten signature in black ink, appearing to read "Chris Korleski". The signature is fluid and cursive, with the first name "Chris" written in a large, sweeping loop.

Chris Korleski
Director

cc: Cheryl L. Newton, Acting Division Director
Air and Radiation Division

Enclosures



State of Ohio Environmental Protection Agency
Division of Air Pollution Control

State of Ohio

24-Hour PM_{2.5}
Recommended Designations
Additional Information

Prepared by:
The Ohio Environmental Protection Agency
Division of Air Pollution Control

May 2008

Background

The original guidance for nonattainment boundaries for the initial (existing) PM_{2.5} designations was based on the metropolitan statistical areas (MSA). The Clean Air Act Fine Particle Implementation Rule, effective May 29, 2007, provides states more flexibility in boundary recommendations by allowing area assessment on a case-by-case basis. However, a nonattainment area must include not only the area that is violating the standard but also nearby areas that contribute to violation. Ohio EPA believes that the following documentation, including additional emission and air quality data, supports the recommended status for each area questioned on the April 1, 2008 letter.

The nonattainment levels of PM_{2.5} in Ohio consist of two major components. First there is a regional component associated primarily, but not entirely, with sulfur dioxide and oxides of nitrogen from coal-fired electric generating utilities. The second component is an urban/industrial component which is not as well defined at this time, but is impacting air quality in the urban cores.

The recommended PM_{2.5} boundaries for the revised standard were not based on MSAs but rather the existing federal designations for those areas currently designated nonattainment. The counties within and adjacent to the existing nonattainment boundaries were evaluated to determine what, if any, adjustments needed to be made to the existing nonattainment boundaries. Areas previously designated in attainment were evaluated in accordance with the current PM_{2.5} boundary determination guidance. Below are the current recommended PM_{2.5} nonattainment areas and the identification of Ohio EPA changes recommendations (redesignation or not) for specific counties:

| Area | Current PM _{2.5} Nonattainment Designation | Ohio EPA Recommended Nonattainment Counties |
|------------------------------|---|---|
| Parkersburg-Marietta, WV-OH | Washington | Washington |
| Huntington-Ashland, WV-KY-OH | Lawrence Scioto Adams (P) Gallia (P) | |

Parkersburg-Marietta, WV-OH:

The Parkersburg-Marietta PM_{2.5} nonattainment area is formed by Washington County (Ohio) and Wood County (West Virginia). Ohio EPA recommended retaining Washington County as nonattainment for the Parkersburg-Marietta area due to the high SO₂ emissions. Athens and Morgan are Ohio counties adjacent to Washington County. These counties have insignificant emissions, low population and growth, low commuting and consequently are not considered contributing counties. As shown in the tables below, the three-year annual average concentration (2004-2006 and 2005-2007) at site 54-107-1002 in Wood County, WV is not attaining the annual standard. There is a monitor in Athens County. This is not a violating monitor and is included for informational purposes.

Air Quality Data

Ohio

AQS: 24-hour average – 98th percentile (µg/m³)

| Site | County | 2004 | 2005 | 2006 | 2007 | 24-Hour Average |
|-------------|------------|------|------|------|------|-----------------|
| 39-009-0003 | Athens, OH | 33.1 | 33.1 | 29.5 | | 32 |
| | | | 33.1 | 29.5 | 37.2 | 33 |

* Exceeds Standard

AQS: Annual Average (µg/m³)

| Site | County | 2004 | 2005 | 2006 | 2007 | 24-Hour Average |
|-------------|------------|------|------|------|------|-----------------|
| 39-009-0003 | Athens, OH | 11.4 | 13.3 | 11.8 | | 12.2 |
| | | | 13.3 | 11.8 | 13.0 | 12.7 |

* Exceeds Standard

West Virginia

AQS: 24-hour average – 98th percentile (µg/m³)

| Site | County | 2004 | 2005 | 2006 | 2007 | 24-Hour Average |
|-------------|----------|------|------|------|------|-----------------|
| 54-107-1002 | Wood, WV | 34.7 | 36.2 | 35.1 | | 35 |
| | | | 36.2 | 35.1 | 38.8 | 37* |

* Exceeds Standard

AQS: Annual Average (µg/m³)

| Site | County | 2004 | 2005 | 2006 | 2007 | 24-Hour Average |
|-------------|----------|------|------|------|------|-----------------|
| 54-107-1002 | Wood, WV | 14.9 | 16.4 | 14.7 | | 15.3* |
| | | | 16.4 | 14.7 | 15.3 | 15.4* |

* Exceeds Standard

Emissions Data (tons per year)

Ohio

| 2005 Emission Inventory | | | |
|-------------------------|-----------------|-----------------|-------------------|
| County | SO ₂ | NO _x | PM _{2.5} |
| Washington | 486.60 | 38.02 | 2.91 |
| Athens | 0.24 | 4.64 | 0.77 |
| Morgan | 0.08 | 1.18 | 0.28 |

| 2009 Emission Inventory | | | |
|-------------------------|-----------------|-----------------|-------------------|
| County | SO ₂ | NO _x | PM _{2.5} |
| Washington | 222.48 | 25.99 | 9.21 |
| Athens | 0.12 | 5.16 | 0.77 |
| Morgan | 0.05 | 1.57 | 0.28 |

West Virginia

| 2005 Emission Inventory | | | |
|-------------------------|-----------------|-----------------|-------------------|
| County | SO ₂ | NO _x | PM _{2.5} |
| Wood | 14.48 | 16.68 | 2.07 |
| Pleasants | 25.61 | 7.18 | 1.10 |
| Wirt | 0.05 | 0.53 | 0.15 |
| Tyler | 0.11 | 3.92 | 0.32 |

| 2009 Emission Inventory | | | |
|-------------------------|-----------------|-----------------|-------------------|
| County | SO ₂ | NO _x | PM _{2.5} |
| Wood | 13.53 | 7.50 | 1.65 |
| Pleasants | 122.01 | 18.44 | 6.15 |
| Wirt | 0.04 | 0.19 | 0.10 |
| Tyler | 0.05 | 2.77 | 0.23 |

From the tables above it can be determined that Washington County 2005 emission contribution to the Parkersburg-Marietta area (Washington and Wood counties) accounts for 97% SO₂, 84% NO_x, and 72.5% PM_{2.5}. The 2009 emission contribution to the Parkersburg-Marietta area from Washington County is 94.2% SO₂, 77.6% NO_x, and 84.8% PM_{2.5}.

The emission reduction programs which will have the greatest potential impact on PM_{2.5} concentrations in this area are the NO_x trading program and the Clean Air Interstate Rule which will bring about largest reductions in precursor or primary emissions of any of the PM_{2.5} species (sulfates, nitrates, organic carbon, elemental carbon and crustal) affecting this area.

Even though, there are expected large emission reductions from the programs already in place, Ohio EPA recommends retaining Washington County as nonattainment for the Parkersburg-Marietta area due to the high SO₂ emissions. SO₂ emissions make up for more than 94% of the total area, for both 2005 and 2009 emission inventories.

Huntington-Ashland, WV-KY-OH

The Huntington-Ashland PM_{2.5} nonattainment area is formed by counties in three adjacent states. Ohio's counties are Lawrence, Scioto, Gallia and Adams, Kentucky counties are Boyd and Lawrence, and West Virginia counties are Cabell, Mason and, Wayne. There are no violating monitors in Lawrence or Scioto counties. Adams County contains the DP&L Killen Generating Station and the DP&L J.M. Stuart Generating Station. Gallia County contains the Ohio Power Gavin power plant and the Ohio Valley Electric Corporation Kyger Creek power plant.

The counties in this area have low population and growth, low kDVMT and no significant levels of commuters. Ohio EPA recommended the redesignation to attainment for Lawrence and Scioto counties due to no monitor violations (for 2004-2006 design values), low population and insignificant commuting. Due to the location of the monitor in Lawrence County, it is likely the levels being detected are coming from across the Ohio River. The low emissions demonstrate that Lawrence and Scioto counties are not a significant source of PM_{2.5}. In addition, Ohio EPA recommended the redesignation to attainment for Adams and Gallia counties (which are currently partial attainment) due to the forecasted reductions as a result of the CAIR requirements and the low population and insignificant commuting in these counties.

Air Quality Data

Ohio

AQS: 24-hour average – 98th percentile ($\mu\text{g}/\text{m}^3$)

| Site | County | 2004 | 2005 | 2006 | 2007 | 24-Hour Average |
|-------------|----------|------|------|------|------|-----------------|
| 39-087-0010 | Lawrence | 31.2 | 38.5 | 30.8 | | 34 |
| | | | 38.5 | 30.8 | 35.2 | 34.7 |
| 39-145-0013 | Scioto | 29.4 | 40.3 | 30.5 | | 33 |
| | | | 40.3 | 30.5 | 37.5 | 36.1* |

* Exceeds Standard

AQS: Annual Average ($\mu\text{g}/\text{m}^3$)

| Site | County | 2004 | 2005 | 2006 | 2007 | 24-Hour Average |
|-------------|----------|------|------|------|-------|-----------------|
| 39-087-0010 | Lawrence | 13.7 | 17.0 | 14.4 | | 15.0 |
| | | | 17.0 | 14.4 | 14.97 | 15.4* |
| 39-145-0013 | Scioto | 13.0 | 16.2 | 14.3 | | 14.5 |
| | | | 16.2 | 14.3 | 13.99 | 14.8 |

West Virginia

AQS: 24-hour average – 98th percentile ($\mu\text{g}/\text{m}^3$)

| Site | County | 2004 | 2005 | 2006 | 2007 | 24-Hour Average |
|-------------|----------|------|------|------|------|-----------------|
| 54-107-1002 | Wood, WV | 34.7 | 36.2 | 35.1 | | 35 |
| | | | 36.2 | 35.1 | 38.8 | 37* |

* Exceeds Standard

AQS: Annual Average ($\mu\text{g}/\text{m}^3$)

| Site | County | 2004 | 2005 | 2006 | 2007 | 24-Hour Average |
|-------------|----------|------|------|------|------|-----------------|
| 54-107-1002 | Wood, WV | 14.9 | 16.4 | 14.7 | | 15.3* |
| | | | 16.4 | 14.7 | 15.3 | 15.4* |

* Exceeds Standard

Kentucky

AQS: 24-hour average – 98th percentile ($\mu\text{g}/\text{m}^3$)

| Site | County | 2004 | 2005 | 2006 | 2007 | 24-Hour Average |
|-------------|------------|------|------|------|------|-----------------|
| 21-019-0017 | Boyd, KY | 30.3 | 36.1 | 28.6 | | 32 |
| | | | 36.1 | 28.6 | 38.5 | 34.4 |
| 21-043-0500 | Carter, KY | 24.5 | 37.2 | 25.5 | | 29 |
| | | | 37.2 | 25.5 | 30.9 | 31.2 |

* Exceeds Standard

AQS: Annual Average ($\mu\text{g}/\text{m}^3$)

| Site | County | 2004 | 2005 | 2006 | 2007 | 24-Hour Average |
|-------------|------------|------|------|------|-------|-----------------|
| 21-019-0017 | Boyd, KY | 13.3 | 16.0 | 13.8 | | 14.4 |
| | | | 16.0 | 13.8 | 14.34 | 14.7 |
| 21-043-0500 | Carter, KY | 11.1 | 13.6 | 11.5 | | 12.1 |
| | | | 13.6 | 11.5 | 12.81 | 12.6 |

* Exceeds Standard

Emissions Data (tons per year)

Ohio

| 2005 Emission Inventory | | | |
|-------------------------|--------|-------|-------|
| County | SO2 | NOx | PM2.5 |
| Lawrence | 0.37 | 7.49 | 0.51 |
| Scioto | 3.03 | 10.32 | 0.70 |
| Adams (P) | 400.96 | 34.23 | 10.93 |
| Gallia (P) | 249.47 | 34.01 | 3.21 |
| Highland | 0.37 | 4.73 | 0.53 |
| Pike | 3.95 | 4.68 | 0.70 |
| Jackson | 0.17 | 2.92 | 0.42 |
| Vinton | 0.08 | 1.52 | 0.23 |
| Meigs | 0.20 | 3.36 | 0.28 |
| 2009 Emission Inventory | | | |
| County | SO2 | NOx | PM2.5 |
| Lawrence | 0.26 | 7.82 | 0.51 |
| Scioto | 2.88 | 11.04 | 0.69 |
| Adams (P) | 63.08 | 24.80 | 11.19 |
| Gallia (P) | 64.76 | 32.32 | 11.53 |
| Highland | 0.18 | 4.17 | 0.48 |
| Pike | 3.88 | 5.34 | 0.70 |
| Jackson | 0.11 | 3.82 | 0.43 |
| Vinton | 0.05 | 1.39 | 0.22 |
| Meigs | 0.14 | 3.59 | 0.28 |

West Virginia

| 2005 Emission Inventory | | | |
|-------------------------|--------|-------|-------|
| County | SO2 | NOx | PM2.5 |
| Cabell | 4.60 | 17.36 | 2.34 |
| Mason | 0.57 | 8.71 | 0.70 |
| Wayne | 2.52 | 23.04 | 1.14 |
| Kanawha | 11.31 | 50.39 | 3.44 |
| Putnam | 2.99 | 8.15 | 0.82 |
| 2009 Emission Inventory | | | |
| County | SO2 | NOx | PM2.5 |
| Cabell | 3.89 | 11.19 | 1.91 |
| Mason | 123.92 | 38.50 | 8.06 |
| Wayne | 2.31 | 17.87 | 0.87 |
| Kanawha | 55.32 | 56.03 | 4.01 |
| Putnam | 71.14 | 28.99 | 9.86 |

Kentucky

| 2005 Emission Inventory | | | |
|-------------------------|-----------------|-----------------|-------------------|
| County | SO ₂ | NO _x | PM _{2.5} |
| Boyd | 31.14 | 28.70 | 4.85 |
| Carter | 0.27 | 0.60 | 0.69 |
| Greenup | 6.15 | 8.20 | 0.73 |
| Lewis | 1.21 | 7.28 | 0.61 |

| 2009 Emission Inventory | | | |
|-------------------------|-----------------|-----------------|-------------------|
| County | SO ₂ | NO _x | PM _{2.5} |
| Boyd | 31.14 | 30.63 | 4.88 |
| Carter | 2.81 | 0.59 | 0.74 |
| Greenup | 7.82 | 8.18 | 0.75 |
| Lewis | 1.20 | 8.17 | 0.62 |

From the tables above it can be determined that Ohio's 2005 emission contribution to the Huntington-Ashland area accounts for 94% SO₂, 52% NO_x, and 62% PM_{2.5}. The 2009 emission contribution accounts for 44% SO₂, 43% NO_x, and 60% PM_{2.5}.

The emission reduction programs which will have the greatest potential impact on PM_{2.5} concentrations in this area are the NO_x trading program, the Clean Air Interstate Rule, reductions in industrial activity, on-road and off-road diesel control programs in conjunction with ultra low sulfur diesel requirements and, other Ohio diesel reduction initiatives.

CAIR will bring about largest reductions in precursor or primary emissions of any of the PM_{2.5} species (sulfates, nitrates, organic carbon, elemental carbon and crustal) in this area, although there has also been a loss of industry within this part of the Ohio River Valley. For example, the dramatic decrease of Ohio's SO₂ emissions from 2005 and 2009 (there has been a 500% decrease in SO₂ emissions), is the result of several control strategies in the area, like CAIR, and a severe loss in industry.

In addition, LADCO used air quality modeling and other information to determine whether existing ("on the books") controls would be sufficient to provide for attainment of the NAAQS PM_{2.5} and if not, then what additional emission reductions would be necessary for attainment. The table below shows the modeled 24-Hour PM_{2.5} levels at Lawrence and Scioto monitors. The table shows modeling results using year 2005 as the base year (Round 5/Base M); this modeling round demonstrated that both monitors show attainment for 2005 and for the 2009 future year design value.

Summary of 24-Hour PM_{2.5} Modeling Results (2009 - Round 5)

| Monitor | County | Average '03-'05 | Average '04-'06 | Average '05-'07 | Base Year Design Value | Future Year Design Value |
|----------------|---------------|----------------------------|----------------------------|----------------------------|-----------------------------------|-------------------------------------|
| 390870010 | Lawrence | 33 | 34 | 35 | 34 | 25 |
| 391450013 | Scioto | 34 | 33 | 35 | 34 | 27 |

Data Source: LADCO

From the above, Ohio EPA reiterates its recommendation to redesignate as attaining the 24-hour PM_{2.5} levels at the Huntington-Ashland area.

