



OFFICE OF THE GOVERNOR
INDIANAPOLIS, INDIANA 46204-2797

JOSEPH E. KERNAN
GOVERNOR

February 15, 2004

Thomas V. Skinner
Regional Administrator
US EPA Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Dear Mr. Skinner:

Today Commissioner Kaplan is forwarding to your attention Indiana's preliminary recommendations regarding attainment of the fine particle standard, as required by the federal Clean Air Act. These recommendations follow on the heels of correspondence from Commissioner Kaplan and me regarding the ozone standard. I am committed to achieve air quality throughout Indiana that meets both of these important health standards.

I understand that EPA's intent is to make the PM_{2.5} nonattainment areas consistent with ozone nonattainment areas, and I urge you to reconsider that position. Indiana and other states in the midwest are finding that fine particle pollution behaves differently from ozone, and there is far less technical certainty about how it is formed and how best to reduce it.

I urge you to focus on areas where monitored air quality shows non-compliance and quickly propose, then finalize, implementation guidance that gives states flexibility to fashion cost effective plans that, in combination with regional controls, will achieve clean air. In particular, EPA should not impose mandatory measures, such as stricter new source review. There is as yet no understanding among air quality officials and technical experts that new source review restrictions in nonattainment areas are necessary or will assist the attainment effort. And, as I have noted in prior correspondence, we know the adverse effects these restrictions place on urban areas struggling to recover economically, while attempting to find appropriate reuse for brownfield sites as we preserve agricultural land and open space.

I look forward to the consultation process as we work together to ensure that appropriate decisions are made for the State of Indiana.

Sincerely

Joseph E. Kernan

JEK/lfk/jgm
Attachments
cc: Lori F. Kaplan



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We make Indiana a cleaner, healthier place to live.

Joseph E. Kernan
Governor

Lori F. Kaplan
Commissioner

100 North Senate Avenue
P.O. Box 6015
Indianapolis, Indiana 46206-6015
(317) 232-8603
(800) 451-6027
www.IN.gov/idem

February 15, 2004

Mr. Thomas V. Skinner
Regional Administrator
U.S. Environmental Protection Agency
Region 5
77 West Jackson Blvd.
Chicago, IL 60604

RE: Preliminary Recommendations Concerning
Air Quality Designations for PM2.5 National
Ambient Air Quality Standards

Dear Mr. Skinner:

This letter is in response to the United States Environmental Protection Agency's (EPA) April 1, 2003 guidance memorandum concerning air quality designations for the National Ambient Air Quality Standard for PM2.5. The guidance indicates EPA's intention to propose designations in July of 2004 and finalize them by December 15, 2004, and requests that states submit their recommendations by February 15, 2004.

In 1997, EPA promulgated new standards for particulate matter of the size 2.5 microns and smaller (PM2.5 or "fine particulate"). Thorough studies have shown that exposure to certain levels of fine particulate can have adverse effects on humans. We share in this effort to improve the health of our citizens.

Pursuant to the Clean Air Act Section 107, formal steps to implement the new standards begin with the designation of areas that do not attain the standards or are contributing to such an area. This letter provides the state's preliminary recommendations for the nonattainment areas in Indiana. Indiana is committed to implementing the planning process and providing healthy air for all of our citizens.

At the outset, I am pleased to note that Indiana does not have any violations of the 24-hour standard. Therefore, our recommendations are limited to designations for the annual standard.

We make preliminary recommendations today. Several factors greatly complicate the ability of the public, the State of Indiana and EPA to make nonattainment designations for PM2.5:

1. **EPA has not proposed or finalized essential guidance on implementing the PM2.5 standards.** The PM2.5 implementation rule is critical to understanding the significance and consequences of a nonattainment designation and the planning procedures that a nonattainment designation triggers.
2. **EPA is poised to automatically impose tougher permit requirements that have not been shown to be necessary for every new nonattainment area.** Based on EPA's statements to date relative to the ozone standard, it is presumed that EPA will seek to impose nonattainment area new source review immediately for any area designated as nonattainment for PM2.5. Indiana cannot support that approach. A careful evaluation should be conducted to determine the measures needed to attain and maintain the PM2.5 standard, given air quality measures already in place at the state and federal level, before any new requirements are established. We believe that is the purpose of the planning process in the federal Clean Air Act. If this presumption is not correct, the significance of a nonattainment designation would be different.
3. **The science associated with determining the causes and contributions to PM2.5 nonattainment is developing and not yet ready to draw conclusions.** Modeling and other technical analyses have not progressed to the point where we can know with certainty which geographic areas to control, which sources to control and the quantity of pollutants to control. Significant technical work will take place to fill these gaps over the next 10 months before final designations and beyond. Until these analyses are conducted and more is known relative to the causes and contributions to PM2.5 nonattainment and the trends in PM2.5 air quality, any areas designated as nonattainment should be limited to those that clearly directly influence the existing monitor readings.
4. **A significant regional component to PM2.5 nonattainment exists.** Current scientific evidence, including EPA's modeling for the proposed Interstate Air Quality Rule and the Lake Michigan Air Directors' Consortium technical analysis, does show there is a large regional component to PM2.5, in addition to a local component. There is widespread recognition that regional controls of SO₂ and NO_x will be necessary to address PM2.5 nationwide. For those counties with violations, regional controls should take them a long way toward compliance. (For example, EPA's modeling shows its proposed Interstate Transport Rule will bring all Indiana counties into attainment by 2015, though I note that states have not yet had an opportunity to thoroughly review EPA's technical work.) Despite this regional component, Indiana's monitors do not show widespread violations of the annual standard. Many of Indiana's urban and suburban counties monitor compliance. Nonattainment designations for these urban and suburban counties would impose economic hardships and encourage urban sprawl beyond the current urban boundaries without contributing to attainment in adjacent counties. As noted above, nonattainment designations would lead to mandatory local controls, including stricter permitting of new sources, which may be unnecessary. Technical analysis to date is not conclusive on the issue of how local emissions decreases will impact PM2.5 concentrations.

As a final matter, we urge EPA to complete the PM2.5 implementation rule soon, and in doing so, provide states with as much flexibility as possible to develop State Implementation Plans. In addition, we urge EPA to reconcile the attainment dates for PM2.5 with the NO_x and SO₂ reduction dates in the Interstate Air Quality Rule. PM2.5 SIPs will be due in early 2008, and attainment will be required by early 2010. If the first set of proposed reductions do not occur until

2010, attainment cannot be shown until 2013 at the earliest. We also urge EPA to harmonize as much as possible the planning and implementation for PM2.5 with ozone and regional haze efforts.

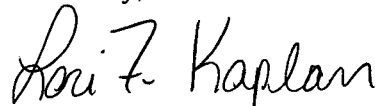
This letter includes several attachments and figures setting forth our preliminary recommendations:

- Enclosure 1 - list of Indiana counties and Indiana's recommendations at this time
 - Figure 1 - table of PM2.5 monitor values in the state
 - Figure 2 - map of recommendations in Enclosure 1
- Enclosure 2 - an analysis and discussion of each area within Indiana using the criteria in EPA's guidance documents.
 - Figures 3.1-3.3 – tables of incomplete monitor data analysis

As the above documents note, Indiana does not support the designation of nonattainment for any county that does not have a monitored violation of the PM2.5 National Ambient Air Quality Standard. Indiana is also prepared to track the PM2.5 readings in 2004 closely and will urge an attainment designation for any county in Indiana that is clearly trending toward attainment before EPA makes its final designations (or to immediately request redesignation to attainment after EPA makes its final designations).

Thank you for this opportunity to make recommendations on this important matter. If you have any questions, please do not hesitate to contact me at (317) 232-8611 or Janet McCabe at (317) 232-8222.

Sincerely,



Lori F. Kaplan
Commissioner

LFK/kw

Enclosures

cc: Steve Rothblatt, Region 5

Jay Bortzer, Region 5

Enclosure 1

County	Designation Recommendation
Adams	Attainment/unclassifiable
Allen	Attainment
Bartholomew	Attainment/unclassifiable
Benton	Attainment/unclassifiable
Blackford	Attainment/unclassifiable
Boone	Attainment/unclassifiable
Brown	Attainment/unclassifiable
Carroll	Attainment/unclassifiable
Cass	Attainment/unclassifiable
Clark	Nonattainment
Clay	Attainment/unclassifiable
Clinton	Attainment/unclassifiable
Crawford	Attainment/unclassifiable
Daviess	Attainment/unclassifiable
Dearborn	Attainment/unclassifiable
Decatur	Attainment/unclassifiable
DeKalb	Attainment/unclassifiable
Delaware	Attainment
Dubois	Nonattainment
Elkhart	Nonattainment
Fayette	Attainment/unclassifiable
Floyd	Attainment
Fountain	Attainment/unclassifiable
Franklin	Attainment/unclassifiable
Fulton	Attainment/unclassifiable
Gibson	Attainment/unclassifiable
Grant	Attainment/unclassifiable
Greene	Attainment/unclassifiable
Hamilton	Attainment/unclassifiable
Hancock	Attainment/unclassifiable
Harrison	Attainment/unclassifiable
Hendricks	Attainment/unclassifiable
Henry	Attainment
Howard	Attainment
Huntington	Attainment/unclassifiable
Jackson	Attainment/unclassifiable
Jasper	Attainment/unclassifiable
Jay	Attainment/unclassifiable
Jefferson	Attainment/unclassifiable
Jennings	Attainment/unclassifiable
Johnson	Attainment/unclassifiable
Knox	Attainment/unclassifiable
Kosciusko	Attainment/unclassifiable
LaGrange	Attainment/unclassifiable
Lake	Nonattainment
LaPorte	Attainment

Enclosure 1

County	Designation Recommendation
Lawrence	Attainment/unclassifiable
Madison	Attainment
Marion	Nonattainment
Marshall	Attainment/unclassifiable
Martin	Attainment/unclassifiable
Miami	Attainment/unclassifiable
Monroe	Attainment/unclassifiable
Montgomery	Attainment/unclassifiable
Morgan	Attainment/unclassifiable
Newton	Attainment/unclassifiable
Noble	Attainment/unclassifiable
Ohio	Attainment/unclassifiable
Orange	Attainment/unclassifiable
Owen	Attainment/unclassifiable
Parke	Attainment/unclassifiable
Perry	Attainment/unclassifiable
Pike	Attainment/unclassifiable
Porter	Attainment
Posey	Attainment/unclassifiable
Pulaski	Attainment/unclassifiable
Putnam	Attainment/unclassifiable
Randolph	Attainment/unclassifiable
Ripley	Attainment/unclassifiable
Rush	Attainment/unclassifiable
St. Joseph	Attainment
Scott	Attainment/unclassifiable
Shelby	Attainment/unclassifiable
Spencer	Attainment
Starke	Attainment/unclassifiable
Steuben	Attainment/unclassifiable
Sullivan	Attainment/unclassifiable
Switzerland	Attainment/unclassifiable
Tiptecanoe	Attainment/Unclassifiable
Tipton	Attainment/unclassifiable
Union	Attainment/unclassifiable
Vanderburgh	Nonattainment
Vermillion	Attainment/unclassifiable
Vigo	Attainment
Wabash	Attainment/unclassifiable
Warren	Attainment/unclassifiable
Warrick	Attainment
Washington	Attainment/unclassifiable
Wayne	Attainment/unclassifiable
Wells	Attainment/unclassifiable
White	Attainment/unclassifiable
Whitley	Attainment/unclassifiable

Figure 1
(Enclosure 1)
Indiana PM2.5 Summary (2000-2003)
Annual Design Values

Note: The Annual Standard is 15 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) and attainment is determined by the average of the Particulate Matter (PM) 2.5 values over a three-year period.

County	Site #	City	Site Name	Annual Means				Site Design Value	
				2000*	2001	2002	2003	00-02*	01-03
ALLEN	180030004	Fort Wayne	Beacon St	15.70	14.25	14.56	14.13	14.8	14.3
ALLEN	180030014	Fort Wayne	Taylor Univ	14.29	14.17	14.26	13.65	14.2	14.0
CLARK	180190005	Jeffersonville	Spring St	18.59	16.85	16.02	14.68	17.2	15.8
CLARK	180190006	Jeffersonville	Pfau				19.12		19.1
CLARK	180190005/6	Jeffersonville	Combine sites	18.59	16.85	16.02	15.78	17.2	16.2
DELAWARE	180350006	Muncie	Muncie Central HS	16.24	14.49	14.51	14.02	15.1	14.3
DUBOIS	180372001	Jasper	200 W 6th St	17.16	16.54	16.34	15.72	16.7	16.2
ELKHART	180390003	Elkhart	Pierre Moran School	15.67	15.70	14.98	14.85	15.5	15.2
FLOYD	180431004	New Albany	Green Valley School	16.27	15.73	14.62	14.44	15.5	14.9
HOWARD	180670003	Kokomo	215 W Superior St	15.59	15.01	14.72	14.26	15.1	14.7
LAKE	180890006	East Chicago	Franklin School	15.76	16.11	14.92	14.60	15.6	15.2
LAKE	180890027	Highland	Eldon Ready School	14.04	15.18	14.60	14.10	14.6	14.6
LAKE	180891003	Gary	Ivanhoe School	15.33	14.98	15.22	14.14	15.2	14.8
LAKE	180891016	Gary	Federal Bldg	16.03	16.26	15.92		16.1	monitor shut down Sep 2002
LAKE	180892004	Hammond	Purdue	14.96	15.38	14.70	14.55	15.0	14.9
LAKE	180892010	Hammond	Robertsdale	14.34	15.55	14.88	14.26	14.9	14.9
LA PORTE	180910011	Michigan City	Marsh Elementary Sch	13.37	14.25	13.24	12.81	13.6	13.4
LA PORTE	180910012	LaPorte	1119 Lake St	12.56	14.17	13.47	13.20	13.4	13.6

*2000 represents the highest annual average for most sites

Value above the Annual Standard

Incomplete Data

Indiana PM2.5 Summary (2000-2003) Annual Design Values

Note: The Annual Standard is 15 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) and attainment is determined by the average of the Particulate Matter (PM) 2.5 values over a three-year period.

County	Site #	City	Site Name	Annual Means				Site Design Value	
				2000*	2001	2002	2003	00-02*	01-03
MADISON	180950009	Anderson	44 W 5th St	15.55	14.61	14.91	14.35	15.0	14.6
MARION	180970042	Indianapolis	Mann Road	15.19	14.78	15.22	14.53	15.1	14.8
MARION	180970078	Indianapolis	Washington Park	17.75	16.58	16.55	15.45	17.0	16.2
MARION	180970079	Indianapolis	7250 E. 75th St	16.36	16.25	15.68	14.67	16.1	15.5
MARION	180970081	Indianapolis	W 18th St	16.78	17.14	14.24	16.21	16.1	15.9
MARION	180970083	Indianapolis	E. Michigan St.	17.00	17.09	16.72	16.32	16.9	16.7
PORTER	181270020		Dunes Natl Lakeshore	13.53	13.62	13.24	13.19	13.5	13.4
PORTER	181270024	Ogden Dunes	Water Treatment Plant	14.55	14.18	14.20	12.94	14.3	13.8
ST JOSEPH	181410014	South Bend	Nuner Elementary Sch	13.78	14.04	14.27	13.82	14.0	14.0
ST JOSEPH	181411008	South Bend	Angela & Eddy	14.10	14.72	14.39	13.80	14.4	14.3
ST JOSEPH	181412004	South Bend	LaSalle HS	13.78	14.48	13.91	13.49	14.1	14.0
TIPPECANOE	181570007	Lafayette	Fire Station	15.67	14.90	15.66		15.4	monitor relocated in Oct 2002
TIPPECANOE	181570008	Lafayette	3401 Greenbush St			14.07	13.97	14.1	14.0
TIPPECANOE	181570007/8	Lafayette	Combine sites	15.67	14.90	15.26	13.97	15.2	14.7
VANDEBURGH	181630006	Evansville	Civic Center	16.17	15.45	15.36	14.93	15.7	15.2
VANDEBURGH	181630012	Evansville	W Mill Rd	16.17	15.15	15.27	15.27	15.5	15.2
VANDEBURGH	181630016	Evansville	Univ of Evansville	15.70	16.16	15.24	15.09	15.7	15.5
VIGO	181670018	Terre Haute	Lafayette St	15.72	15.18	14.55	14.11	15.2	14.6
VIGO	181670023	Terre Haute	Devaney School	13.79	13.40	13.39	13.40	13.5	13.4

*2000 represents the highest annual average for most sites

Value above the Annual Standard

Incomplete Data

Indiana PM2.5 Summary (2000-2003)
Annual Values for Background, Transport, and Source Monitors

County	Site #	City	Site Name	Annual Means				Site Design Value	
				2000*	2001	2002	2003	00-02*	01-03
HENRY**	180650003		Shenandoah HS	12.90	13.64	13.65	13.36	13.4	13.6
KNOX**	180830004		SW Purdue Ag Cntr	13.87	13.39	14.20	13.96	13.8	13.9
LAKE***	180890022	Gary	IITRI	17.38	18.11	16.43	16.64	17.3	17.0
LAKE***	180890026	Gary	Burr St	17.24	18.19	17.67	17.38	17.7	17.7
MARION***	180970043	Indianapolis	S. West St	18.44	17.69	17.02	17.23	17.7	17.3
MARION***	180970066	Indianapolis	English Ave	18.90	18.63	18.35	17.46	18.6	18.1
SPENCER**	181470009	Dale	David Turnham Sch	16.32	14.52	14.06	14.63	15.0	14.4

* 2000 represents the highest annual average for most sites

Value above the Annual Standard

Incomplete Data

** Background/Transport monitor site. Data collected for the daily and annual standard.

*** Monitoring sites intended to reflect air quality in a relatively small geographic area directly influenced by a specific source or sources of air pollution.

Data from these sites are intended to be used for determining attainment status under the daily standard and not intended for use in the annual standard.

Although the daily values for these sites are below the standard, the annual average values exceed the standard. IDEM will work with the source or sources that may be contributing to these values to decrease emissions and ultimately reduce the annual values.

Figure 2
IDEM's Preliminary PM 2.5 Recommendations



Enclosure 2

IDEM's Preliminary Assessment of the Fine Particulate (PM 2.5) Standard

Consistent with the United States Environmental Protection Agency's (USEPA) April 1, 2003 guidance memorandum titled "Designations for the Fine Particulate National Ambient Air Quality Standards", the Indiana Department of Environmental Management (IDEM) has conducted a thorough review of the affected areas in Indiana. IDEM's review focused on the following primary and secondary analysis criteria:

Primary Analysis Criteria:

1. Monitoring data.
 - ❑ The annual standard is 15 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) and attainment is determined by the average of the Particulate Matter (PM) 2.5 values over a three-year period. Due to rounding, values greater than 15.0 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) are considered to exceed the standard.
 - ❑ The daily standard is 65 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) and attainment is determined by taking the 98th percentile of the PM 2.5 values over a three-year period. Due to rounding, values greater than 65.0 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) are considered to exceed the standard.
2. Existing MSA/CMSA boundaries
 - ❑ Following the current April 2003 guidance, IDEM's core evaluation is based on the 1999 MSA boundary definitions.
 - ❑ The U.S. Office of Management and Budget published revised MSA boundary definitions on June 6, 2003. Therefore, IDEM has done a cursory evaluation of the counties affected by the new definitions and has incorporated the relevant information into this evaluation, as appropriate.

Secondary Analysis Criteria:

1. Emissions and air quality in adjacent areas (including adjacent MSAs/CMSAs). Data are available for volatile organic compounds (VOC), oxides of nitrogen (NO_x), direct PM 2.5, and sulfur dioxide (SO_2). Ammonia emissions inventories are not available at this time.
2. Population density and degree of urbanization including commercial development.
3. Monitoring data representing ozone concentrations in local areas and larger areas (urban or regional scale) as surrogate for PM 2.5 where we are not monitoring for PM 2.5. Location of emission sources.
4. Traffic and commuting patterns.
5. Expected growth.
6. Meteorology.
7. Jurisdictional boundaries, including existing 1-hour and proposed 8-hour ozone nonattainment area boundaries.
8. Level of control of emissions.
9. Regional emission reductions (e.g., NO_x SIP call or other enforceable regional strategies).

Table I outlines the MSAs/CMSAs and Indiana Counties subjected to the analysis criteria. A map of the affected Indiana Counties, titled Figure 2, accompanies this document. Figure I summarizes PM 2.5 monitoring information. IDEM's core analysis is based on the 1999 defined MSA/CMSA boundaries. As a result of the 2000 Census, the 2003 MSA/CMSA boundary definitions were published on June 6, 2003. IDEM has incorporated a cursory review of the counties affected by the new boundary definitions into our core analysis.

Table I

<u>Evansville Area</u>	<u>Other Potentially Affected Areas</u>
Gibson County ¹	
Posey County	<u>Cincinnati Area</u>
Vanderburgh County	Dearborn County
Warrick County	Franklin County ¹
	Ohio County
<u>Indianapolis/Central Indiana</u>	
Boone County	Dubois County
Brown County ¹	
Hamilton County	<u>Fort Wayne Area</u>
Hancock County	Adams County ²
Hendricks County	Allen County
Johnson County	DeKalb County ²
Madison County ³	Huntington County ²
Marion County	Wells County
Morgan County	Whitley County
Putnam County ¹	
Shelby County	<u>Kokomo Area</u>
	Howard County
<u>Louisville Area</u>	Tipton County
Clark County	
Floyd County	<u>Lafayette Area</u>
Harrison County	Benton County ¹
Scott County ²	Carroll County ¹
Washington County ¹	Tippecanoe County
	Clinton County ²
<u>Northwest Indiana</u>	<u>Muncie Area</u>
Jasper County ¹	Delaware County
Lake County	
LaPorte County ⁴	<u>Terre Haute Area</u>
Newton County ¹	Clay County
Porter County	Sullivan County
	Vermillion County
<u>South Bend/Elkhart/Goshen</u>	Vigo County
Elkhart County	
St. Joseph County	

¹ County added to MSA in June 2003 as a result of the 2000 Census.

² County removed from the MSA in June 2003 as a result of the 2000 Census.

³ County redefined as a separate MSA in June 2003 as a result of the 2000 Census.

⁴ County defined as its own MSA in June 2003 as a result of the 2000 Census.

As a result of thorough analysis, IDEM has developed the following evaluation of nonattainment area boundaries for designating areas under the NAAQS for fine particulate matter. This evaluation is based on 2000-2002 and 2001 through 2003 monitoring data. There are no areas within Indiana that exceed the daily standard of 65 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). Therefore this analysis focuses only on the annual standard of 15 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).

PM_{2.5} is both emitted directly in particulate form by select sources and is formed in the atmosphere by precursor gases from a variety of sources. Direct emissions come from combustion sources, such as power plants, forest fires and vehicle emissions. Precursor gases include NO_x, VOCs, SO₂ and ammonia. These gases come from a variety of sources including combustion sources, mobile sources, manufacturing that involves coatings and solvents, and agriculture. Precursor gases can condense into particles that are made up of varying amounts of NO_x, SO₂, VOCs and ammonia. The PM 2.5 direct inventory estimates referenced within this document pertain solely to emissions from stationary sources.

Although IDEM has been monitoring coarse particulates (PM 10) for some time, only two relatively small geographic areas were affected by the previous particulate standard. PM 2.5 and PM 10 are very different and require separate monitoring equipment. IDEM established its PM 2.5 monitoring network in 1999, following U.S. EPA guidance for site location, which focused primarily on densely populated urban areas. Much technical work needs to be done to better understand PM 2.5. States and the U.S. EPA are still working to identify the local and regional nature of PM 2.5 formation, as well as its precursors and relative source contributions. Therefore, it is difficult to develop conclusions as to how the secondary evaluation criteria should apply to PM 2.5 nonattainment area considerations. For example, it is difficult to assume that commuting from a county that monitors attainment to a county that monitors values above the standard significantly contributes to the PM 2.5 concentrations in the county that has values above the standard.

Also, based on our data analysis, high PM 2.5 concentrations appear to be more prominent in areas where there is high population density or where there is a strong industrial base. Current scientific evidence, including EPA's modeling for the proposed Interstate Air Quality Rule and the Lake Michigan Air Directors' Consortium technical analysis, does show there is a large regional component to PM_{2.5}, in addition to a local component. Despite this regional component, Indiana's monitors do not show widespread violations of the annual standard. Many of Indiana's urban and suburban counties monitor compliance. Regional controls, such as EPA's proposed Interstate Air Quality Rule, should secure the compliance of these counties into the future.

As noted in this document, three PM 2.5 monitoring sites produced data that is deemed incomplete, meaning that a 2001-2003 average value cannot be determined. EPA’s monitoring guidance stipulates that a minimum of 75% of the data per quarter must be available in order to determine if the design value represents attainment. If less than 75% of the data is valid, then the maximum quarterly value for that given quarter over the three-year period is substituted for all missing samples for that quarter. This method is obviously a very conservative methodology for calculating an average value. In determining whether a monitor with incomplete data attains the PM 2.5 standard, EPA encourages states to explore alternative methods for evaluating the data. As noted in this document, IDEM has done this for the Madison, Delaware, and Tippecanoe County monitor sites.

There is one further thing to note about Indiana’s PM 2.5 monitoring network. IDEM maintains four monitoring sites that are intended to reflect air quality in a relatively small geographic area directly influenced by a specific source or sources of air pollution. The data from these sites are not intended to be used to determine nonattainment status for the annual PM 2.5 standard. IDEM has included the monitored annual values from these sites in Figure 1 to Enclosure 1 and we note that the monitors are in compliance with the daily standard, but not in compliance with the annual standard. IDEM will work with the sources to address emissions that are contributing to the high annual values at these sites.

IDEM Analysis by Region

Evansville Area:

Indiana Counties within the Area: Gibson, Posey, Vanderburgh, and Warrick.

EPA Proposed 8-hour Ozone Nonattainment Area:

Vanderburgh and Warrick Counties

Monitor Values (average value in micrograms per cubic meter):

COUNTY	MONITOR LOCATION	2000-2002 AVERAGE VALUE	2001-2003 AVERAGE VALUE
Vanderburgh	Civic Center	15.7	15.2
Vanderburgh	Fire Station #17	15.5	15.2
Vanderburgh	University of Evansville	15.7	15.5

Evaluation:

<u>County</u>	<u>Feb 15, 2004 Preliminary Designation Recommendations</u>
Gibson	Attainment/Unclassifiable
Posey	Attainment/Unclassifiable
Vanderburgh	Nonattainment
Warrick	Attainment/Unclassifiable

Discussion:

There are three PM 2.5 monitors within the MSA and they are all located in Vanderburgh County. All three monitors in Vanderburgh County exceed the standard. Although urban growth is occurring in Warrick and Gibson counties, the majority of the region's vehicle miles traveled and traffic congestion is generated within the core urban area in Vanderburgh County. Vanderburgh County has the highest population density and maintains an in-county workforce ratio of 94%. Warrick County has the second highest population density and has an in-county workforce ratio of 51%. Posey County maintains low population density and has less of an emissions base than the other counties within the region.

Half (50%) of all of the VOCs (Volatile Organic Compounds) emitted annually within Indiana's portion of the MSA derive from Vanderburgh County. The total Nitrogen Oxide (NO_x) emissions of the area derive primarily from Gibson (47%) and Warrick (28%) counties. The majority (75%) of the area's direct PM 2.5 emissions from stationary sources originate in Warrick County. The sulfur dioxide (SO₂) emissions released by stationary sources within Indiana's portion of the MSA are primarily from Warrick (42%) and Gibson (52%) counties. However, based on wind rose analysis, neither county is upwind of Vanderburgh; Gibson is north of Vanderburgh and Warrick is east. Thus, neither county is likely to contribute significantly to PM 2.5 values in Vanderburgh County. Rural background monitors are located east of Warrick County in Spencer County and North of Gibson County in Knox County. To a significant degree, these monitors receive air masses that have just crossed the state line. These have design values of 14.4 and 13.9, respectively, indicating high background levels coming into the area, despite being below the standard. These values also are an indication that PM values in the neighboring counties (i.e. Warrick and Gibson) would likely be below the standard if monitors were present. The 2002 to 2003 design values have dropped and NO_x emissions are expected to decrease throughout the Midwest over the next few years due to the NO_x SIP Call and new federal engine and fuel standards. It is reasonable to expect the PM 2.5 design values in Vanderburgh County to continue to go down, possibly below the standard, without additional controls. Therefore, it is unnecessary to extend the restrictions that accompany a nonattainment designation to additional counties at this time.

Henderson County, Kentucky is also part of the Evansville MSA and Indiana has and will continue to communicate with the State of Kentucky concerning its status.

2003 MSA Revised Boundary Definitions:

Gibson County was incorporated in the 2003 revised boundary definition for the Evansville MSA. IDEM incorporated Gibson County in its core analysis and recommends that it be designated attainment/unclassifiable.

Central Indiana Area:

Indiana Counties within the Area: Boone, Brown, Hamilton, Hancock, Hendricks, Johnson, Madison, Marion, Morgan, Putnam, and Shelby.

EPA Proposed 8-hour Ozone Nonattainment Area:

Boone, Hamilton, Hancock, Hendricks, Johnson, Madison, Marion, Morgan, and Shelby Counties

Monitor Values (average value in micrograms per cubic meter):

COUNTY	MONITOR LOCATION	2000-2002 AVERAGE VALUE	2001-2003 AVERAGE VALUE
Madison	Anderson	15.0	14.6*
Marion	W. 18 th Street	16.1	15.9
Marion	E. 30 th Street	17.0	16.2
Marion	E. 75 th Street	16.1	15.5
Marion	Mann Road	15.1	14.8
Marion	E. Michigan Street	16.9	16.7

*Data is considered incomplete.

Evaluation:

<u>County</u>	<u>Feb 15, 2004 Preliminary Designation Recommendations</u>
Boone	Attainment/Unclassifiable
Hamilton	Attainment/Unclassifiable
Hancock	Attainment/Unclassifiable
Hendricks	Attainment/Unclassifiable
Johnson	Attainment/Unclassifiable
Madison	Attainment/Unclassifiable
Marion	Nonattainment
Morgan	Attainment/Unclassifiable
Shelby	Attainment/Unclassifiable

Discussion:

The only monitored violations of the standard within the MSA occur in Marion County. Four of the six monitors within the MSA exceed the standard. Marion County (Indianapolis) maintains the highest concentration for employment, VMT, commerce, and recreation compared to the other counties within the MSA. Mobile source emissions represent the largest portion of the VOC and NO_x emissions inventories for Marion County, as well as for the MSA as a whole. The majority of the traffic congestion is limited to Marion County. A significant level of commuting occurs from the surrounding counties to Marion County, meaning that a fairly large portion of Marion County's VMT originates from the surrounding counties. The Indianapolis MSA's population density is spreading well beyond Marion County, but Marion County maintains the highest population and an in-county workforce ratio of 94%. Stationary sources within Marion County account for over half (50%) of the direct PM 2.5 emissions from stationary sources within Central Indiana and the next closest is Morgan County with 11%. Sources within

Marion County also account for 70% of the SO₂ emissions from stationary sources within the Central Indiana Region. It is worth noting that despite its large geographic size, the total direct PM_{2.5} and SO₂ emissions inventories for stationary sources within Central Indiana are relatively small in comparison with other MSAs within the state (e.g., NW Indiana and Evansville).

Unlike ozone, PM 2.5 monitoring values indicate that PM 2.5 values decrease away from the core of the Indianapolis urban area into the suburban area. This is represented by the lower values registered at the Mann Road monitor which is Southwest of the core urban area and by the Madison County monitor which is Northeast of the core urban area. Both of these monitors register values below the standard. The monitor locations are aligned such that their readings describe the profile of PM_{2.5} levels from the urban edges through the urban center. Recent analysis by LADCO indicates a common “cone-shaped” profile of PM 2.5 values in densely populated urban areas with the peak value at the urban center (core) and values decreasing gradually based on distance from the urban core (both upwind and downwind). The Indianapolis urban area appears to follow this profile, with the peak value being represented at the Michigan Street monitor at 16.7 µg/m³ (closest monitor to the center or core of the urban area). The W. 18th Street monitor is just Northwest of the urban monitor alignment; it follows this “cone-shaped” profile as well at 15.9 µg/m³. In projecting likely monitor values through radial extrapolation (method based on PM 2.5 concentration decrease per mile from the urban center, the Michigan St. monitor in this instance), the following table illustrates that the actual and predicted monitor values indeed follow a “cone-shaped” curve.

location	miles	actual value	predicted value
Michigan St.	0	16.7	16.7
Washington Park	2.7	16.2	16.3
W 18th	4.7	15.9	16
75th	8.2	15.5	15.5
Mann Rd	10.3	14.8	15.2
Hamilton Cty line	11.8		14.9

Furthermore, the predicted values based on radial extrapolation are very consistent with the actual values for existing monitor sites. Using this same methodology, a calculation was made to determine what the likely design value would be if a monitor was located at the Hamilton County line. As the table illustrates, the projected value at the Hamilton County line is below the standard. This is significant, because if any county outside of Marion were to have a monitored value above the standard, it would likely be Hamilton due to the fact that it is directly downwind of urban area. Since this exercise demonstrates that the likely PM 2.5 concentrations for Hamilton County are below the standard, and this represents a worst-case scenario for any of the collar counties, this analysis suggests that none of the collar counties would violate the standard if monitors were present.

As noted previously, Marion County accounts for the majority of the PM 2.5 direct and precursor emissions. Morgan County does account for a recognizable portion of the PM 2.5 and SO₂ emissions within the MSA, however, IDEM believes that these emissions have little to no effect on the PM_{2.5} values in Marion County. This is supported by the fact that the closest downwind monitor to Morgan County (Mann Rd.) has the lowest PM 2.5 value in Marion County. Furthermore, we believe that including any of the collar counties in the nonattainment area would not lead to lower PM 2.5 values in Marion County. In comparing upwind background monitor values with those registered outside the core urban area, it appears that the PM 2.5 concentrations associated with urban excess is confined to central Marion County. Therefore, it is unnecessary to extend the restrictions that accompany a nonattainment designation to additional counties at this time.

2003 MSA Boundary Definition:

The U.S. Office of Management and Budget published revised MSA boundary definitions on June 6, 2003. Brown and Putnam Counties were incorporated as part of the Indianapolis MSA and Madison County was excluded from the Indianapolis MSA and defined as the Anderson MSA. There are no PM 2.5 monitors in Brown or Putnam County. Both counties are fairly rural with low population density and VMT, and neither county has a significant emissions base. Therefore, Brown and Putnam Counties should be excluded from the nonattainment area as well.

According to EPA guidance, monitoring data for the Madison County site is considered incomplete, though we note that it is just one sample for one quarter short of being complete. Figure 3.1 attached to this document provides a summary of alternate methods for evaluating the captured data.

IDEM does not believe that the substitution of the quarterly maximum value (worst-case scenario) results in a PM 2.5 value representative of the PM 2.5 concentrations registered at Madison County monitor. As noted in Figure 3.1, three reasonable data analysis methods indicate that the three-year (2001-2003) average PM 2.5 value is below the standard. Additionally, since the critical value (the quarterly average value required for the three-year average to exceed the standard) for the fourth quarter of 2002 is 18.29, and no quarterly average during the three year period even approaches this critical value, we are confident in stating that the PM 2.5 concentrations in Madison County are below the standard. Also worth noting is that the three-year average value resulting from calculation scenarios A, C, and D are similar to the actual monitor value associated with neighboring Delaware County (14.3). Since Madison County is now its own MSA, we believe it should be designated attainment and not associated with Indianapolis.

Louisville Area:

Indiana Counties within the Area:

Clark, Floyd, Harrison, Scott, and Washington

EPA Proposed 8-hour Ozone Nonattainment Area:

Clark and Floyd Counties

Monitor Values (average value in micrograms per cubic meter):

COUNTY	MONITOR LOCATION	2000-2002 AVERAGE VALUE	2001-2003 AVERAGE VALUE
Clark	Jeffersonville	17.2	16.2
Floyd	New Albany	15.5	14.9

Evaluation:

<u>County</u>	<u>Feb 15, 2004 Preliminary Designation Recommendations</u>
Clark	Nonattainment
Floyd	Attainment
Harrison	Attainment/Unclassifiable
Scott	Attainment/Unclassifiable
Washington	Attainment/Unclassifiable

Discussion:

There are only two PM 2.5 monitors within Indiana's portion of the MSA (one monitor in each Clark and Floyd Counties). The Jeffersonville site in Clark County is the only monitor in violation of the standard. Harrison and Scott Counties are predominantly rural in nature, with low to moderate population density. Because the majority of Clark and Floyd Counties are urban, the two counties account for 61% of the area's total VOC emissions and 70% of the area's NO_x emissions. Sources within Clark and Floyd counties account for 88% of the direct PM 2.5 emissions from stationary sources, and 100% of the SO₂ emissions from stationary sources. There are no major stationary sources located within Harrison or Scott Counties. Scott County in particular maintains a high in-county workforce employment rate at 67%, meaning that there is not much commuting occurring between Scott County residents and the remainder of the MSA. Growth in Harrison and Scott Counties has not been significant, although there is potential for new growth in Harrison County due to recent commercial development. Currently, Harrison County accounts for 16% of the VOC emissions that comprise Indiana's portion of the MSA and only 12% of the NO_x. Scott County only accounts for 13% of the VOC and 7% of the NO_x emissions within the Indiana portion of the MSA. Harrison and Scott counties account for less than 4% of the direct PM 2.5 and SO₂ emissions from stationary sources within the Indiana portion of the MSA. It does not appear that emissions from Harrison or Scott Counties have a significant impact on air quality within the Louisville MSA.

The difference between the monitor values at the Jeffersonville (Clark County) site and the New Albany (Floyd County) site suggests a geographically isolated spike in PM 2.5 concentrations in Clark County. This is further exemplified by the slightly lower PM 2.5 monitor values recorded within the urban core of Louisville, as it is unusual for the highest value within the urban area to be outside of the core county (Jefferson, KY). This seems to indicate the possibility that the isolated spikes associated with the Clark County monitor may be affected by a local source or sources within Clark County. There is a power plant in Floyd County. However, it is not known whether the power plant is a significant contributor to the Jeffersonville monitor value. Additionally, this source will be regulated by future control requirements (e.g., the Interstate Air Quality Rule) regardless of Floyd County's attainment status.

Air quality in Floyd County meets the PM 2.5 standard. According to recent EPA modeling, the entire Louisville region will attain the PM 2.5 standard upon the implementation of the Interstate Air Quality Rule. Therefore, it is unnecessary to extend the restrictions that accompany a nonattainment designation to Floyd County at this time. Thus, IDEM recommends that Clark County be designated nonattainment and Floyd County be designated attainment.

Since it does not appear that Harrison and Scott Counties contribute to PM 2.5 values in the Louisville MSA, IDEM recommends Harrison and Scott Counties be designated attainment/unclassifiable.

2003 MSA Boundary Definition:

The U.S. Office of Management and Budget published revised MSA boundary definitions on June 6, 2003. As a result, Scott County is no longer part of the MSA, however, Washington County has been incorporated into the revised boundary definition for the Louisville MSA. The total population of Washington County is just under 29,000, with an annual growth rate of 2%, compared to a total population of 172,000 in Clark and Floyd Counties. Washington County has an insignificant emissions base (i.e. 2% of regional direct PM_{2.5} emissions and 0% of regional SO₂ emissions), low population density and low concentrations of VMT. There are no PM 2.5 monitors in Washington County. IDEM recommends that Washington County be designated attainment/unclassifiable.

Northwest Indiana:

Indiana Counties within the Area:

Jasper, Lake, Newton, and Porter.

EPA Proposed 8-hour Ozone Nonattainment Area:

Lake and Porter Counties

Monitor Values (average value in micrograms per cubic meter):

COUNTY	MONITOR LOCATION	2000-2002 AVERAGE VALUE	2001-2003 AVERAGE VALUE
Lake	East Chicago	15.6	15.2
Lake	Gary Federal Building	16.1*	
Lake	Gary Ivanhoe School	15.2	14.8
Lake	Hammond Purdue Univ Calumet	15.0	14.9
Lake	Hammond Robertsdale Clark HS	14.9	14.9
Lake	Highland	14.6	14.6
Porter	Dunes Lake Shore	13.5	13.4
Porter	Ogden Dunes WWTP	14.3	13.8

* 1999 – 2001 Average

Evaluation:

<u>County</u>	<u>Feb 15, 2004 Preliminary Designation Recommendations</u>
Jasper	Attainment/Unclassified
Lake	Nonattainment
Newton	Attainment/Unclassified
Porter	Attainment

Discussion:

The only monitored violation of the standard within the CMSA occurs in Lake County, at one of the five monitors (East Chicago). Due to on-site electrical work associated with refurbishing, the monitor at the Gary Federal Building was shut down on September 20, 2002 making that year incomplete, however, the 1999 through 2001 data were compared against the standard. Once refurbishing of the Gary Federal Building is complete, it is uncertain as to whether the PM 2.5 monitor will be reactivated. Nevertheless, there are a number of PM 2.5 monitoring sites nearby providing data representative of the area.

Lake and Porter Counties comprise the Gary PMSA, which is Indiana’s portion of the greater Chicago CMSA. Lake County accounts for the greatest level of employment and commerce within the region. Lake County also maintains the highest population and an in-county workforce ratio of 83%. Lake County does have a greater amount of VMT compared to Porter County. Over 25,000 people drive into or through Lake County from Porter County to work. This accounts for a very small portion of Lake County’s total VMT. Lake County accounts for three times more total VOC and 30% more total NO_x than Porter County. Also, Lake County accounts for 70% of the total direct PM 2.5 emitted by stationary sources and 60% of the SO₂ emitted by stationary sources.

Only one monitor in the three-county Northwest Indiana Region violates the standard. The values in these northern Indiana areas, unlike ozone, are significantly lower than those found in south and central Indiana areas. Although these counties have high PM_{2.5} direct emissions, this does not translate to high monitor readings, indicating that direct PM_{2.5} emissions are not a significant contributor to the local values. Wind rose analysis indicates that Porter County is not a contributor to Lake County PM 2.5 values. Since Porter County is upwind of LaPorte County, and LaPorte County's monitor values are well below the standard, Porter County does not appear to be contributing to PM 2.5 values anywhere within the region. With a high value of only 15.2 µg/m³, it is reasonable to assume that Lake County should attain the standard with the implementation of regional controls. However, if local controls are necessary, the implementation of local controls beyond Lake County will not impact PM 2.5 values within Lake County. Therefore, IDEM recommends that Lake County be designated attainment, and Porter County attainment.

2003 MSA Boundary Definition:

The U.S. Office of Management and Budget published revised MSA boundary definitions on June 6, 2003. As a result, Jasper and Newton Counties have been incorporated into the revised boundary definition for the Chicago CMSA (Gary PMSA). The total population of Newton County is just over 15,000, and the total population of Jasper County is just over 30,000. Total NO_x and VOC emissions released in Jasper are 32,000 tons combined while total NO_x and VOC emissions released within Newton County are less than 3,000 tons for each pollutant, compared to 20,000 tons of VOC and 49,000 tons of NO_x (79,000 combined) emitted within Lake and Porter Counties. Newton County accounts for 0% of the direct PM 2.5 and SO₂ emissions released by stationary sources within the region. Jasper County accounts for just 8% of the direct PM 2.5 and 32% of the SO₂ emissions released by stationary sources within the new PMSA. Jasper and Newton Counties both have low population density and low concentrations of VMT. There are no PM 2.5 monitors in Jasper or Newton Counties. IDEM recommends that Jasper and Newton Counties be designated attainment/unclassifiable.

Michigan City/LaPorte Area:

Indiana Counties within the Area:

LaPorte

EPA Proposed 8-hour Ozone Nonattainment Area:

LaPorte

Monitor Values (average value in micrograms per cubic meter):

COUNTY	MONITOR LOCATION	2000-2002 AVERAGE VALUE	2001-2003 AVERAGE VALUE
LaPorte	Michigan City	13.6	13.4
LaPorte	LaPorte	13.4	13.6

Evaluation:

County February 15, 2004 Designation Recommendation
LaPorte Attainment

Discussion:

LaPorte County monitor values are well below the standard. Based on monitor values within its neighboring counties of Porter and St. Joseph, it does not appear that LaPorte County is contributing to any nearby areas with violating monitors. Therefore, IDEM recommends that LaPorte County be designated attainment.

South Bend/Elkhart/Goshen Area:

Indiana Counties within the Area:

Elkhart MSA: Elkhart County
South Bend MSA: St. Joseph County

EPA Proposed 8-hour Ozone Nonattainment Area:

Elkhart and St. Joseph Counties

Monitor Values (average value in micrograms per cubic meter):

COUNTY	MONITOR LOCATION	2000-2002 AVERAGE VALUE	2001-2003 AVERAGE VALUE
Elkhart	Elkhart Pierre Moran School	15.5	15.2
St. Joseph	South Bend Children's Hospital Grounds	14.4	14.3
St. Joseph	South Bend Lasalle High School	14.1	14.0
St. Joseph	South Bend Nuner Elementary School	14.0	14.0

Evaluation:

County Feb 15, 2004 Preliminary Designation Recommendations
Elkhart Nonattainment
St. Joseph Attainment

Discussion:

The monitor located in Elkhart County is the only monitor within the region that exceeds the standard. Values for all three monitors located within St. Joseph County are well below the standard. Elkhart County accounts for the majority of the region's NO_x and VOC emissions from stationary sources. St. Joseph County accounts for 46% of the direct PM 2.5 and 98% (4,731 tons) of the SO₂ emissions from stationary sources. A relatively equal amount of traffic volume and congestion occurs in St. Joseph and Elkhart Counties. St. Joseph County maintains the highest population and an in-county workforce ratio of 94%. Elkhart County's growth rate is twice that of St. Joseph County and it maintains an in-county workforce ratio of 90%. St. Joseph and Elkhart Counties are under the jurisdiction of a single Metropolitan Planning Organization and are within the same Transportation Management Area.

The Elkhart monitor value of 15.2 $\mu\text{g}/\text{m}^3$ is marginally above the standard. It is reasonable to assume that regional controls such as the NO_x SIP call and low sulfur fuels will likely reduce PM 2.5 concentrations to enable Elkhart County to attain the standard in a timely manner. Although emissions from St. Joseph County may slightly impact PM 2.5 values in Elkhart County, IDEM does not feel that there is a significant impact. Additionally, it does not appear that there will be a need for local controls in either St. Joseph or Elkhart Counties. Therefore, IDEM recommends that Elkhart County be designated nonattainment and St. Joseph County attainment.

Other Counties:

Counties Affected:

Dubois County

Monitor Values (average value in micrograms per cubic meter):

COUNTY	MONITOR LOCATION	2000-2002 AVERAGE VALUE	2001-2003 AVERAGE VALUE
Dubois	Jasper	16.7	16.2

Evaluation:

County
Dubois

Feb 15, 2004 Preliminary Designation Recommendations
Nonattainment

Discussion:

The lone monitor located in Dubois County exceeds the standard. Dubois County is rural and it maintains very low population density. Dubois County also maintains a high in-county workforce ratio of 94%. The VOC inventory for stationary sources in Dubois County is rather significant, however, the NO_x, direct PM 2.5, and SO₂ inventories are relatively small (insignificant). The PM 2.5 background monitor in Spencer County (upwind of Dubois County) does maintain annual monitor values below the standard, suggesting that there may be more of a local than regional effect on values registered at the Dubois County site. There is a concentration of wood furniture manufacturers in Dubois County in the vicinity of the monitor site. However, it is unclear at this time whether emissions from these industries contribute significantly to PM 2.5 monitor values in Dubois County.

Other Potentially Affected Areas:

Cincinnati Area

Counties Affected:

Cincinnati Area: Dearborn and Ohio Counties

EPA Proposed 8-hour Ozone Nonattainment Area:

Cincinnati Area: Dearborn County

Monitor Values : No monitor in Dearborn or Ohio Counties

Evaluation:

<u>County</u>	<u>Feb 15, 2004 Preliminary Designation Recommendations</u>
Dearborn	Attainment/Unclassifiable
Franklin	Attainment/Unclassifiable
Ohio	Attainment/Unclassifiable

Discussion:

There are no PM 2.5 monitors in Dearborn or Ohio County. There is only one significant stationary source in Indiana's portion of the Cincinnati Consolidated MSA (CMSA), which is the Tanners Creek power plant. Dearborn and Ohio Counties combined account for just 2.33% of the total population within the CMSA. The Tanners Creek power plant has reduced its emissions in recent years by installing permanent combustion controls to address requirements associated with Title IV and the NO_x SIP Call. This facility has installed low-NO_x burners on three of its four units, and over-fire air on the fourth, largest unit. From 1999 to 2002, annual NO_x emissions from this facility have been reduced by over 20,000 tons (60% decrease).

If monitors were located in Dearborn or Ohio County, it is reasonable to assume that the values would be consistent with background values elsewhere in the state and Midwest. Therefore, IDEM does not believe that PM 2.5 concentrations exceed the standard in Dearborn or Ohio County. Additionally, based on analysis of similar urban areas, IDEM does not believe that emissions from Dearborn and Ohio Counties contribute significantly to PM 2.5 values elsewhere in the Cincinnati CMSA. For example, Morgan County is an upwind county within the Indianapolis MSA and it contains a power plant. The closest downwind monitor within the core county (Marion) maintains a value below the standard, illustrating that emissions from Morgan County are unlikely contributing to the values in Marion County. IDEM feels it reasonable to assume that the same would stand true with regard to Dearborn and Ohio Counties' impact on values within the Cincinnati CMSA. Furthermore, since urban excess seems to be apparent in the core of the Cincinnati CMSA, and neither Dearborn or Ohio Counties are in the core, nor contribute significantly to the urban excess, IDEM recommends that Dearborn and Ohio Counties be designated attainment/unclassifiable.

Franklin County was added to the Cincinnati CMSA following the 2000 Census. This is a rural county with low population density and VMT, and an insignificant emissions base. Therefore, IDEM recommends that Franklin County be designated attainment/unclassifiable as well.

Fort Wayne Area:

Fort Wayne Area: Adams, Allen, DeKalb, Huntington, Wells, Whitley Counties

EPA Proposed 8-hour Ozone Nonattainment Area:

Fort Wayne Area: Allen, Huntington Counties

Monitor Values (average value in micrograms per cubic meter):

COUNTY	MONITOR LOCATION	2000-2002 AVERAGE VALUE	2001-2003 AVERAGE VALUE
Allen	Fort Wayne Beacon St	14.8	14.3
Allen	Fort Wayne Taylor University	14.2	14.0

Evaluation:

<u>County</u>	<u>Feb 15, 2004 Preliminary Designation Recommendations</u>
Adams	Attainment/Unclassifiable
Allen	Attainment
DeKalb	Attainment/Unclassifiable
Wells	Attainment/Unclassifiable
Whitley	Attainment/Unclassifiable

Discussion:

The only monitors within the Fort Wayne MSA are located in the Fort Wayne Urban Area. All values for 2000-2002 and 2001-2003 are below the standard. Since it is reasonable to assume that the highest values within the MSA would occur where urban excess is most likely, and those values are below the standard, IDEM believes that the entire MSA is in compliance with the PM 2.5 standard. Therefore, IDEM recommends that Allen County be designated attainment, and the remaining counties within the MSA be designated attainment/unclassifiable.

Kokomo Area:

Counties Affected:

Kokomo Area: Howard and Tipton Counties

EPA Proposed 8-hour Ozone Nonattainment Area:

None: Kokomo Area is Attainment

Monitor Values (average value in micrograms per cubic meter):

COUNTY	MONITOR LOCATION	2000-2002 AVERAGE VALUE	2001-2003 AVERAGE VALUE
Howard	Kokomo	15.1	14.7

Evaluation:

<u>County</u>	<u>Feb 15, 2004 Preliminary Designation Recommendations</u>
Howard	Attainment
Tipton	Attainment/Unclassifiable

Discussion:

Based on 2000-2002 data, the monitor located in Howard County marginally exceeded the standard. However, the year 2000 represented the highest annual average for many sites in Indiana and weighted the 2000-2002 average adversely. The 2001-2003 average PM 2.5 value for the Howard County monitor is below the standard and consistent with values registered at background sites. Therefore, IDEM recommends that Howard and Tipton Counties be designated attainment and attainment/unclassifiable respectively.

Lafayette Area:

Counties Affected:

Lafayette Area: Tippecanoe and Carroll Counties

EPA Proposed 8-hour Ozone Nonattainment Area:

None: Lafayette is attainment

Monitor Values (average value in micrograms per cubic meter):

COUNTY	MONITOR LOCATION	2000-2002 AVERAGE VALUE	2001-2003 AVERAGE VALUE
Tippecanoe	Fire Station	15.4*	
Tippecanoe	3401 Greenbush St	14.1*	14.0*
Tippecanoe	Scenario A**	15.2	14.7
Tippecanoe	Scenario B	14.8	14.3
Tippecanoe	Scenario C	14.9	14.3
Tippecanoe	Scenario D	14.9	14.3
Tippecanoe	Scenario E	14.7	14.2

* The monitor was moved in 2002. These are the averages at each location; this data is incomplete.

** These are different scenarios for filling in the missing data (see below for details).

Evaluation:

<u>County</u>	<u>Feb 15, 2004 Preliminary Designation Recommendations</u>
Tippecanoe	Attainment/Unclassifiable
Carroll	Attainment/Unclassifiable

Discussion:

According to EPA guidance, the monitoring data for the Lafayette monitor site is incomplete. Furthermore, since the capture rate for the third quarter of 2002 is less than 50%, a quarterly maximum substitution is not advisable. Although a three-year average based on complete data will not be available until at least the close of 2005, IDEM has summarized alternate methods for evaluating the captured data in Figure 3.2 (attached to this document).

As illustrated by each of the data analysis methods in Figure 3.2, the three-year average PM 2.5 value (2001-2003) for the Lafayette monitor site is likely below the standard. Additionally, since the critical value (the quarterly average value required for the three-year average to exceed the standard) for the third quarter of 2002 is 22.44, and no quarterly average during the three year period even approaches this critical value, we are confident in stating that the PM 2.5 concentrations in Tippecanoe County are below the standard. Therefore, IDEM recommends that Tippecanoe, along with Benton and Carroll Counties be designated attainment/unclassifiable.

Muncie Area:

Counties Affected:

Muncie Area: Delaware County

EPA Proposed 8-hour Ozone Nonattainment Area:

Muncie Area: Delaware County

Monitor Values (average value in micrograms per cubic meter):

COUNTY	MONITOR LOCATION	2000-2002 AVERAGE VALUE	2001-2003 AVERAGE VALUE
Delaware	Muncie, Scenario A*	15.1	14.3
Delaware	Scenario B	16.0	16.1
Delaware	Scenario C	15.0	14.5
Delaware	Scenario D	14.6	13.6
Delaware	Scenario E	14.8	14.0
Delaware	Scenario F	14.7	13.8

* This monitor data is incomplete; it is missing the required amount of data in two different quarters. These are scenarios for filling in the missing data (see below for more details).

Evaluation:

County
Delaware

Feb 15, 2004 Preliminary Designation Recommendations
Attainment

Discussion:

According to EPA guidance, the monitoring data for the Delaware County site is incomplete. Figure 3.3 (attached to this document) provides a summary of alternate methods for evaluating the captured data.

IDEM does not believe that the substitution of the quarterly maximum value (worst-case scenario) results in a PM 2.5 value representative of the PM 2.5 concentrations registered at the Delaware County monitor. As noted in Figure 3.3, four reasonable data analysis methods indicate that the three-year average PM 2.5 value is below the standard. Additionally, in using the highest first quarter value among 2000 and 2002 as a substitution for either first quarter 2001 or first quarter 2002, the critical value (the quarterly average value required for the three-year average to exceed the standard) for either quarter is 20.74. No quarterly average during the three year period even approaches this critical value, so we are confident in stating that the PM 2.5 concentrations in Delaware County are below the standard. Also worth noting is that the three-year average value resulting from calculation scenarios A, C, and D are similar to the actual monitor value associated with neighboring Madison County (14.6).

IDEM believes that a recommendation for Delaware County to be designated attainment is consistent with monitored PM 2.5 values within the area.

Terre Haute Area:

Counties Affected:

Terre Haute Area: Clay, Sullivan, Vermillion and Vigo Counties

EPA Proposed 8-hour Ozone Nonattainment Area:

Terre Haute Area: Vigo County

Monitor Values (average value in micrograms per cubic meter):

COUNTY	MONITOR LOCATION	2000-2002 AVERAGE VALUE	2001-2003 AVERAGE VALUE
Vigo	Terre Haute	15.2	14.6
Vigo	Terre Haute Devaney School	13.5	13.4

Evaluation:

<u>County</u>	<u>Feb 15, 2004 Preliminary Designation Recommendations</u>
Sullivan	Attainment/Unclassifiable
Vermillion	Attainment/Unclassifiable
Vigo	Attainment
Clay	Attainment/Unclassifiable

Discussion:

Based on 2000-2002 monitoring data, one of the two monitors located in Vigo County exceeded the standard. However, the year 2000 represented the highest annual average for many sites in Indiana and weighted the 2000-2002 average adversely. The 2001-2003 average PM 2.5 values for Vigo County monitors are below the standard and consistent with values registered at nearby background sites. Therefore, IDEM recommends that Vigo County be designated attainment and the remaining counties within the MSA be designated attainment/unclassifiable.

FIGURE 3.1

MADISON COUNTY

	% Valid	Average A	Average B	Average C	Average D
1Q 2000	94%	16.6827586			
2Q 2000	90%	14.7925926			
3Q 2000	87%	13.5962963			
4Q 2000	87%	17.1269231			
Year 2000 Average		15.5496426	15.5496426	15.5496426	15.5496426
1Q 2001	93%	17.5714286			
2Q 2001	90%	13.5035714			
3Q 2001	93%	14.6892857			
4Q 2001	81%	12.688			
Year 2001 Average		14.6130714	14.6130714	14.6130714	14.6130714
1Q 2002	83%	13.004	13.004	13.004	13.004
2Q 2002	87%	14.4115385	14.4115385	14.4115385	14.4115385
3Q 2002	81%	18.572	18.572	18.572	18.572
4Q 2002	74%	13.6391304	20.8806451	11.996	15.3291795
Year 2002 Average		14.9066672	16.7170459	14.49588463	15.3291795
1Q 2003	90%	15.3592593			
2Q 2003	90%	13.2703704			
3Q 2003	100%	17.4580645			
4Q 2003	83%	11.304			
Year 2003 Average		14.3479235	14.3479235	14.3479235	14.3479235
3 Year Average (2000-2002)		15.0	15.6	14.9	15.2
3 Year Average (2001-2003)		14.6	15.2	14.5	14.8

A: Averages based on no substitution

B: Averages based on substituting quarterly max (20.88064516)

C: Average based on substituting the average of 4th quarter value from year 2001 and 2003 (11.996)

D: Average based on substituting the average of the first three quarters from 2002 (15.3291795)

**Critical Average Value for 4Q 2002 would have to be 18.29 or higher to result in a 2001-2003 average above the standard.

FIGURE 3.3

DELAWARE COUNTY

	% Valid	Average A	Average B	Average C	Average D	Average E	Average F
1Q 2000	97%	17.4266666					
2Q 2000	90%	15.7037037					
3Q 2000	97%	14.6566666					
4Q 2000	87%	17.1615385					
Year 2000 Average		16.2371439	16.2371439	16.2371439	16.2371439	16.2371439	16.2371439
1Q 2001	67%	18.06	28.6733333	17.4266666	12.1833333	14.805	13.3005621
2Q 2001	84%	13.7615385	13.7615385	13.7615385	13.7615385	13.7615385	13.7615385
3Q 2001	93%	14.2642857	14.2642857	14.2642857	14.2642857	14.2642857	14.2642857
4Q 2001	94%	11.8758621	11.8758621	11.8758621	11.8758621	11.8758621	11.8758621
Year 2001 Average		14.4904216	17.1437549	14.33208823	13.0212549	13.6766716	13.3005621
1Q 2002	80%	12.1833333					
2Q 2002	100%	14.2233333					
3Q 2002	81%	17.984					
4Q 2002	100%	13.6548387					
Year 2002 Average		14.5113763	14.5113763	14.5113763	14.5113763	14.5113763	14.5113763
1Q 2003	70%	15.4095238	25.7566666	17.4266666	12.1833333	14.805	13.56373497
2Q 2003	97%	12.6103448	12.6103448	12.6103448	12.6103448	12.6103448	12.6103448
3Q 2003	100%	17.1741935	17.1741935	17.1741935	17.1741935	17.1741935	17.1741935
4Q 2003	100%	10.9066666	10.9066666	10.9066666	10.9066666	10.9066666	10.9066666
Year 2003 Average		14.0251822	16.61196788	14.52946788	13.21863455	13.8740512	13.56373497
3 Year Average (2000-2002)		15.1	16.0	15.0	14.6	14.8	14.7
3 Year Average (2001-2003)		14.3	16.1	14.5	13.6	14.0	13.8

A: Averages based on no substitution

B: Averages based on substituting quarterly max (1Q 2001 28.6733333) and (1Q 2003 25.7566666)

C: Average based on substituting the average of 1st quarter value from year 2000 (17.4266666)

D: Average based on substituting the average of 1st quarter value from year 2002 (12.1833333)

E: Average based on substituting the average of 1st quarter value from year 2000 (17.4266666) and 2002 (12.1833333)

F: Average based on substituting the average of the last three quarters from 2001 (13.3005621) and 2003 (13.563735)

**Critical Average Value for 1Q 2001 and 1Q 2003 would have to be 20.74 or higher to result in a 2001-2003 average above the standard.

FIGURE 3.2

TIPPECANOE COUNTY Monitor 18-157-0007

	% Valid	Average A
1Q 2000	90%	15.5928571
2Q 2000	93%	13.3535714
3Q 2000	97%	15.3566666
4Q 2000	90%	18.0259259
Year 2000 Average		15.822553
1Q 2001	100%	19.4
2Q 2001	97%	13.59
3Q 2001	87%	13.8846154
4Q 2001	97%	12.74
Year 2001 Average		14.9036538
1Q 2002	100%	12.8
2Q 2002	100%	14.31
3Q 2002	19%	19.8666666
4Q 2002	0%	MONITOR DISCONTINUED ON 7/16/2002
Year 2002 Average		15.6588888
3 Year Average (2000-2002)		15.5

TIPPECANOE COUNTY Monitor 18-157-0008

	% Valid	Average A
1Q 2002	0%	
2Q 2002	0%	
3Q 2002	0%	MONITOR BEGAN OPERATION ON 10/8/2002
4Q 2002	90%	14.0678571
Year 2002 Average		14.0678571
1Q 2003	97%	15.962069
2Q 2003	97%	11.3827586
3Q 2003	94%	17.0241379
4Q 2003	100%	11.51
Year 2003 Average		13.9697414
3 Year Average (2001-2003)		14.0

TIPPECANOE COUNTY Monitor 18-157-0007 and 18-157-0008 Combined

	% Valid	Average A	Average B	Average C	Average D	Average E
1Q 2000	90%	15.5928571				
2Q 2000	93%	13.535714				
3Q 2000	97%	15.356666				
4Q 2000	90%	18.0259259				
Year 2000 Average		15.5822553	15.5822553	15.5822553	15.5822553	15.5822553
1Q 2001	100%	19.4				
2Q 2001	97%	13.59				
3Q 2001	87%	13.8846154				
4Q 2001	97%	12.74				
Year 2001 Average		14.9036538	14.9036538	14.9036538	14.9036538	14.9036538
1Q 2002	100%	12.8	12.8	12.8	12.8	12.8
2Q 2002	100%	14.31	14.31	14.31	14.31	14.31
3Q 2002	19%	19.866666	14.6206407	15.45437665	15.42180643	13.7259524
4Q 2002	90%	14.0678571	14.0678571	14.0678571	14.0678571	14.0678571
Year 2002 Average		15.261131	13.94962445	14.15805844	14.14991588	13.7259524
1Q 2003	97%	15.962069				
2Q 2003	97%	11.3827586				
3Q 2003	94%	17.0241379				
4Q 2003	100%	11.51				
Year 2003 Average		13.9697414	13.9697414	13.9697414	13.9697414	13.9697414
3 Year Average (2000-2002)		15.2	14.8	14.9	14.9	14.7
3 Year Average (2001-2003)		14.7	14.3	14.3	14.3	14.2

A: Averages based on no substitution

B: Average based on substituting the average of 3rd quarter values from years 2000 and 2001 (14.6206407)

C: Average based on substituting the average of 3rd quarter value from years 2001 and 2003 (15.4543767)

D: Average based on substituting the average of 3rd quarter value from years 2000, 2001 and 2003 (15.4218064)

E: Average based on substituting the average of the 1st, 2nd and 4th quaters from 2002 (13.7259524)

**Critical Average Value for 3Q 2002 would have to be 22.44 or higher to result in a 2001-2003 average above the standard.