



JENNIFER M. GRANHOLM  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING



STEVEN E. CHESTER  
DIRECTOR

September 1, 2004

Mr. Bharat Mathur, Acting Regional Administrator  
U.S. Environmental Protection Agency  
Region 5  
77 West Jackson Boulevard (R-19J)  
Chicago, Illinois 60604-3507

Dear Mr. Mathur:

This letter is in response to your June 29, 2004, letter to Governor Jennifer M. Granholm regarding nonattainment designations for particulate matter 2.5 microns or less in diameter (PM-2.5) in Michigan. The Michigan Department of Environmental Quality (MDEQ) believes that its recommendations for PM-2.5 nonattainment designations, submitted on February 13, 2004, should be followed in lieu of the U.S. Environmental Protection Agency (EPA) proposal of June 29, 2004.

As stated in the MDEQ's February 13th submittal to the EPA, the MDEQ recommends that only Wayne and Monroe Counties be designated as nonattainment for PM-2.5, and that each county be designated as a separate nonattainment area. In light of the June 29 EPA proposal for seven PM-2.5 nonattainment counties, the MDEQ provides additional comments, addressing each of EPA's reasons given for its proposal, in the attached comments to this letter.

In summary, the attached comments support our position for the following reasons:

1. The EPA's proposal for a seven-county PM-2.5 nonattainment area in Southeast Michigan is arbitrary as it applies to PM-2.5, which is clearly evident after reviewing current PM-2.5 monitoring data and historical monitoring data for particulate matter.
2. The monitoring data is conclusive. Most monitors intended to gauge attainment status are measuring attainment, making a widespread nonattainment designation inappropriate from a regulatory perspective and misleading from a public health perspective.
3. The EPA proposed the Clean Air Interstate Rule (CAIR) with the stated purpose of reducing transport of PM-2.5 and precursors from widespread areas that would include all of the Consolidated Metropolitan Statistical Area (CMSA); i.e., addressing regional controls outside of, but influencing, nonattainment counties. Most of the transported particulate sources that may be impacting the nonattainment area will be covered by CAIR and the nitrogen oxides State Implementation Plan (SIP) Call regulations. These rules negate the need for widespread nonattainment designations to secure reductions in transport.

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4. Even though the prevailing winds are from the south and southwest, the downwind monitors in other urban counties in the CMSA still measure attainment, further evidence that the presumptive CMSA boundary is inappropriate as the nonattainment boundary.
5. Michigan has authority to adopt controls beyond the nonattainment boundary if needed for reaching attainment. Also, the EPA is required to reject a SIP if it does not meet the attainment demonstration test. Nothing is gained by lumping in counties where monitors record attainment.

We look forward to working with the EPA as final designations are developed. If you have questions regarding our recommendations or comments, please contact Mr. G. Vinson Hellwig, Chief, Air Quality Division (AQD), at 517-373-7069; Mr. Robert Irvine, AQD, at 517-373-7042; or you may contact me.

Sincerely,



Steven E. Chester  
Director  
517-373-7917

Attachment

cc/att: Governor Jennifer M. Granholm  
Ms. Cheryl L. Newton, EPA  
Ms. Dana Debel, Governor's Office  
Mr. Chuck Hersey, Southeast Michigan  
Council of Governments  
Mr. Jim Sygo, Deputy Director, MDEQ  
Mr. G. Vinson Hellwig, MDEQ  
Mr. Robert Irvine, MDEQ



Michigan Department of Environmental Quality

**Comments on the U.S. Environmental Protection Agency's  
Proposed Designations in Michigan  
For the Particulate Matter Air Quality Standard**

Steven E. Chester  
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The Michigan Department of Environmental Quality (MDEQ) believes that its recommendations for particulate matter 2.5 microns or less in diameter (PM-2.5) nonattainment designations, submitted on February 13, 2004, should be followed in lieu of the U.S. Environmental Protection Agency (EPA) proposal of June 29, 2004. As stated in MDEQ's February 13th submittal to the EPA, the MDEQ recommends that only Wayne and Monroe Counties be designated as nonattainment for PM-2.5, and that each county be designated as a separate nonattainment area for each of the following reasons:

1. The EPA's proposal for a seven-county PM-2.5 nonattainment area in Southeast Michigan is arbitrary as it applies to PM-2.5, which is clearly evident after reviewing current PM-2.5 monitoring data and historical monitoring data for particulate matter.
2. The monitoring data is conclusive. Most monitors intended to gauge attainment status are measuring attainment, making a widespread nonattainment designation inappropriate from a regulatory perspective and misleading from a public health perspective.
3. The EPA proposed the Clean Air Interstate Rule with the stated purpose of reducing transport of PM-2.5 and precursors from widespread areas that would include all of the Consolidated Metropolitan Statistical Area (CMSA); i.e., addressing regional controls outside of, but influencing, nonattainment counties. Most of the transported particulate sources that may be impacting the non-attainment area will be covered by CAIR and the NOx SIP call regulations. These rules negate the need for widespread nonattainment designations to secure reductions in transport.
4. Even though the prevailing winds are from the south and southwest, the downwind monitors in other urban counties in the CMSA still measure attainment, further evidence that the presumptive CMSA boundary is inappropriate as the nonattainment boundary.
5. Michigan is not prohibited from adopting controls beyond the nonattainment boundary if needed for reaching attainment. Also, the EPA is required to reject a State Implementation Plan (SIP) if it does not meet the attainment demonstration test. Nothing is gained by lumping in counties where monitors record attainment.

In light of the June 29 EPA proposal of seven PM-2.5 nonattainment counties, the MDEQ makes the following additional comments, addressing each of EPA's reasons given for its proposal.

**(1) EPA's Argument**

The EPA stated that directives from EPA Administrator Michael Leavitt indicate that all nonattainment areas should be expanded so that they include major emission sources.

**MDEQ Response**

Major emission sources that impact areas of nonattainment must be accounted for as possible control targets in the SIP for the area. However, reducing emissions from major sources that are downwind from the nonattainment area is not likely to be effective. The five counties that EPA has added to MDEQ's recommended nonattainment counties are

downwind from Wayne and Monroe Counties. Thus, controls in those counties would not address PM-2.5 nonattainment in Wayne and Monroe.

Of particular concern to EPA are electric generating units (EGUs) and their contribution to nonattainment. There are no EGUs in four of the five new counties added by EPA. (See Map 1 of Attachment C). Large EGUs (and non-EGUs) in the Southeast Michigan counties already must comply with the oxides of nitrogen (NOx) SIP Call and are therefore reducing NOx emissions by about 85 percent between 2000 and 2007. (See Table 7 of Attachment A). Further, MDEQ has the authority to control significant sources in the region that are shown through the SIP process to contribute to nonattainment, whether or not they are located in a nonattainment area.

## **(2) EPA's Argument**

Livingston should be included because it is experiencing such large population growth (a 36 percent increase between 1990 and 2000). And where there is such large growth, industry is soon to follow and PM-2.5 problems are likely.

### **MDEQ Response**

Population growth is NOT a surrogate for growth in PM-2.5 emissions. There is no basis for such an assertion. In fact, the EPA has documented the decreasing trend in emissions over the past 20 to 30 years, despite growth in both the economy and population.<sup>1</sup>

Further, as previously mentioned, EPA has promulgated several major emission reduction rules that have either already taken effect or will take effect over the next several years. These rules assure the decreasing trend will continue and include the following:

- NOx SIP Call (with a compliance date of May 31, 2004);
- Tier 2 emission standards (to be phased in starting with the 2004 model year);
- Heavy-duty diesel emission standards (to be phased in starting with the 2007 model year);
- Low sulfur fuels (to be phased in starting at the end of 2006); and
- The Clean Air Interstate Rule (not yet final, but the first emissions cap is in 2010, the likely attainment year for PM-2.5).

All of these rulemakings are projected to bring about major reductions in both direct PM-2.5 emissions and PM-2.5 precursor emissions even as population growth occurs. In fact, EPA's own Mobile 6.2 model predicts significant emission reductions of PM-2.5, volatile organic compounds (VOC), and NOx even with increasing projections of vehicle miles traveled (See Table 6 of Attachment A.)

Parenthetically, we note that PM-2.5 concentrations are highest in the urban core of Wayne County, where the population is decreasing. The county's population decreased from 1990 to 2000, and the most recent Census data shows that this trend continues through July 1, 2003. (See Table 5 of Attachment A). This data supports the fact that population change is not a surrogate for emissions or PM-2.5 concentrations that are above the standard.

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<sup>1</sup> Latest Findings on National Air Quality: 2002 Status and Trends. Environmental Protection Agency, August 2003. EPA 454/K-03-001.

A trend in PM-2.5 data also needs to be highlighted. PM-2.5 concentrations are highest in the urban core of Detroit in Wayne County. These concentrations decrease further from the Detroit urban core. In fact, Wayne County monitors outside the urban core, such as Livonia and East 7 Mile, are attaining the standard. With the exception of the Luna Pier monitor in Monroe County, all the surrounding counties are also attaining the standard. While there are no monitors in Livingston County, there is no reason to believe that violations are occurring there, given its distance from the urban core, its low emissions, and the PM-2.5 concentrations that are below the standard in other surrounding counties.

**(3) EPA's Argument**

Oakland County is "too close" to the level of the standard so it should be included. (The design value for the Oak Park monitor is 14.8 micrograms per cubic meter [ $\mu\text{g}/\text{m}^3$ ].)

**MDEQ Response**

The Oak Park monitor likely represents the worst air quality in Oakland County because of its location between of three major highways. Because it is attaining the standard, the remainder of Oakland County would be expected to have lower PM-2.5 values than Oak Park.

Emissions are declining in Oakland County. Further, according to the federal Clean Air Act, the level of the standard is set at a level "requisite to protect the public health with a margin of safety." Thus, levels below the standard are considered safe. PM-10 has been declining in these areas over a number of years and it can be considered as a surrogate to PM-2.5 because recent emission reduction rulemakings are aimed at reducing the PM-2.5 component of PM.

The MDEQ believes that it should be Michigan's call on whether a monitor that is attaining, even though there are recorded values close to the standard, should result in the county being designated nonattainment or not. If the monitor does exceed in the future, the state must designate the area at that time to address the problem.

**(4) EPA Argument**

The EPA says there needs to be a demonstration that a local problem exists in Wayne County. EPA did not adequately respond to MDEQ's trajectory analyses showing a bias towards a southwest wind when daily PM-2.5 levels are in the higher categories of the air quality index (AQI.)

**MDEQ Response**

Historically, PM levels in Southeast Michigan have been highest in the industrial corridor that contains all of the Wayne County monitors that are violating the PM-2.5 standard. This is clearly the result of localized impacts. Prior particulate matter problems in this area have been successfully addressed through control programs in the area resulting in attainment, and this will likely be the control approach for addressing the high PM-2.5 levels. Attached is a map (Map 3 of Attachment C) of this industrial corridor, which depicts the number and variety of potential sources of PM-2.5 near the Dearborn monitor. In addition, the MDEQ has included preliminary data of sources within a 10 kilometer radius of the monitor (Map 5 of Attachment C, with corresponding data on Table 8 of Attachment A).

The MDEQ included trajectory analyses in its February submittal showing that the violating monitors are not impacted by downwind county emissions. The MDEQ is now including

PM-2.5 concentration roses. (See Attachment B). These show that PM-2.5 concentrations are highest when winds are from the south and southwest. The downwind counties are not impacting Wayne County's PM-2.5 concentrations.

**(5) EPA Argument**

Michigan has not justified its conclusion that Monroe and Wayne Counties should be separate nonattainment areas.

**MDEQ Response**

The MDEQ showed in Figures 9 through 12 in the February PM-2.5 designation document that Luna Pier's PM-2.5 levels track closely with Toledo's. This monitor is only two miles from Toledo and is likely impacted by Toledo emissions. The yearly PM-2.5 levels at Luna Pier are decreasing so the monitor may show attainment of the standard by year's end. (See Table 1 of Attachment A). The area is clearly not an industrialized area, as is the portion of Wayne County with violating monitors. Monroe County, although upwind of Wayne County, is basically a rural county and not a contributor to Wayne County's PM-2.5 issues. (See Map 3 of Attachment C).

**(6) EPA Argument**

A significant fraction of the Detroit area's emissions occur in Livingston, Macomb, Oakland, St. Clair, and Washtenaw Counties; therefore, these counties contribute to nonattainment in Wayne and Monroe Counties. Furthermore, "emissions data indicate the potential for a county to contribute to observed violations, often making the emissions data the most important factor in assessing boundaries of nonattainment areas."

**MDEQ Response**

As stated in a previous response, emissions in downwind counties are NOT important factors in assessing nonattainment boundaries. These emissions as shown by the pollution concentration roses (in Attachment B) do not impact Wayne County. For the reasons previously described, the emissions impacting the Wayne County industrialized corridor and resulting in the PM-2.5 violations are located in that corridor.

In any case, if the area remains a single nonattainment area, it is likely that separate control strategies for each county will be submitted.

**(7) EPA Argument**

"When winds are from the south, Monroe County contributes to violations in Wayne County. The Detroit area also contributes to violations in Monroe County."

**MDEQ Response**

Emissions in Monroe are low and do not impact Wayne County to any significant degree. As pointed out previously, the violations experienced in Monroe County are the result of high background levels and localized contributions from Toledo, not from sources in the county. An aerial map (Map 3 of Attachment C) of the area surrounding the Luna Pier monitor shows the rural characteristics of the site.

Luna Pier PM-2.5 levels are decreasing and may reach attainment by the end of this year. Monroe County, as discussed previously, should be treated as a separate nonattainment area for this reason and not be connected to Wayne County. Other aerial maps (Maps 2

and 4 of Attachment C) highlight sources located in close proximity to the violating monitors in Wayne County.

The one large NO<sub>x</sub> emission source in Monroe County is the Detroit Edison Monroe Power Plant. However, the emissions are being significantly reduced with the adoption of selective catalytic reduction units to comply with the requirements of the NO<sub>x</sub> SIP Call.

**(8) EPA Argument**

There is a significant amount of commuting into Wayne County. And, Michigan does not address the contribution from these mobile sources that originate in surrounding counties.

**MDEQ Response**

Southeast Michigan's on-road mobile emissions inventory already accounts for all the commuting into Wayne County. Furthermore, Southeast Michigan has one of the newest fleets in the country, resulting in lower emissions when compared to national averages.

Using local travel data and EPA's Mobile 6.2 model, the Southeast Michigan Council of Governments estimates that VOC and NO<sub>x</sub> emissions will decrease by approximately 54 percent between 2002 and 2010 (the likely attainment year for PM-2.5) under base conditions. These reductions are due to the Tier 2 and heavy-duty emission standards, low sulfur fuel, new assumptions about the durability of emission control equipment on vehicles, and supplemental federal test procedures, among others. Furthermore, on-road mobile sources contribute very little to total ammonia or sulfur dioxide emissions.

In order to identify mobile source impacts, PM-2.5 speciation data from the Detroit area is being studied by the MDEQ. The information learned from this study will assist the MDEQ in developing the PM-2.5 SIP for the nonattainment area.

**(9) EPA Argument**

In the June 29, 2004 letter, EPA stated that "the design value in Macomb County is at 15.0 micrograms per cubic meter, just barely attaining the standard."

**MDEQ Response**

The MDEQ contends the information, as stated, is incorrect. The three-year annual average for the New Haven monitor in Macomb County is 13.1, as indicated in Table 1 of Attachment A. Additionally, EPA's own table (Table 2 of Attachment A) of 2001 through 2003 design values does not support the statement made above.

**More reasons for limiting the size of the nonattainment area in Southeast Michigan**

The designation of areas as nonattainment must be done with great care and with a sound basis in science. The MDEQ believes that the current science of PM-2.5 does not support an approach of designating large portions of Southeast Michigan as nonattainment when PM-2.5 levels in only two counties are violating the PM-2.5 standard. The impacts on a county or larger metropolitan area are significant and far-reaching, and must be weighed against the potential benefit to the environment achieved as a result of the nonattainment designation, particularly when the county is measuring attainment. Following are some of the significant impacts of a nonattainment designation.

The effect on land use in a state is directly affected by the size of nonattainment areas. Companies seeking to locate in the state of Michigan will be directly affected by new source



review offset requirements if they are a large emission source. The choice may be made to locate in a rural area (greenfield site) in order to avoid the cost of acquiring offsets or because offsets are not available. This contributes to urban sprawl.

There are additional planning costs incurred by those state and local agencies that need to plan for attaining an air standard. For those counties that are not in violation, these planning costs are being wasted. Other costs to local planners and state departments are incurred via the conformity planning requirements that must be instituted in nonattainment areas and that must be continued indefinitely in the areas even after the areas are redesignated to attainment. All such costs are a tremendous waste of local and state monies that are in very short supply already.

It is very difficult to redesignate an area to attainment once the nonattainment designation exists. The EPA is proposing to designate many counties as nonattainment without monitoring data or modeling to support its action. It is unfair that the attaining counties will be unable to escape their nonattainment designation until all of the monitors in the nonattainment show attainment.

Michigan's recommendations for nonattainment designation (submitted on February 13, 2004) were and continue to be based on quality-assured monitoring data from 2001-2003, the most recent three consecutive calendar years of data available. Only data collected from federal reference or equivalent method monitors that meet siting requirements of Title 40 of the Code of Federal Regulations, Part 58, Ambient Air Quality Surveillance, should be considered appropriate for designations. The use of a weighted emissions score is arbitrary and by design can lead to differing interpretations by everyone.

Table 1 of Attachment A shows the annual average National Ambient Air Quality Standard (NAAQS) is violated at the Luna Pier site in Monroe County and the Allen Park, Southwest High School; Linwood; Dearborn; and Wyandotte sites in Wayne County. The monitors in adjacent counties to the north and west are not violating the NAAQS and should not be included in the nonattainment area.

The EPA believes that in addition to Monroe and Wayne Counties, the Detroit nonattainment area should include the counties of Livingston, Macomb, Oakland, St. Clair, and Washtenaw as one contiguous area. (See Table 3 of Attachment A). Michigan contends that the most effective controls should be required in the counties with the violating monitors, not in areas where such reductions will be of little or no benefit to the violating PM-2.5 areas. Further, due to the lack of implementation requirements, local source culpability determinations, and quantification of impact of national and regional measures, Michigan does not believe that EPA can justify the inclusion of these attainment counties in the nonattainment area.

The EPA conceded in their response that Monroe County "may sometimes be considered part of the Toledo area (along with Lucas and Wood Counties, Ohio)." The MDEQ continues to request that Monroe County be a separate nonattainment area due to the unique emission qualities (as discussed further in the section about speciation), as compared to Wayne County. This will allow the MDEQ to address local impacts from sources suspected of contributing to the nonattainment in the area.

The EPA contends that their approach is consistent with the national approach of capturing the majority of emissions and population in a metropolitan area. As discussed previously,

emissions must be upwind of the violating monitors to have an impact, which is not the case for EPA's additional counties. Further, population is not an accurate indicator of high PM-2.5 levels.

### **Weighted Emission Scores**

Regarding emissions data and weighted emissions scores, the MDEQ believes that the M.K. Goddard site was inappropriate to use as a rural monitoring site. Weighted emission scores should not take precedence over monitoring data. The Quaker City, Ohio site is from a more representative upwind site than Goddard and therefore is preferred by the MDEQ. The MDEQ has included the original values from EPA's June 29, 2004, letter and additional information regarding changes in values calculated if Quaker City is used. Table 4 of Attachment A incorporates the data from EPA and modifies it to use a different rural monitoring site.

The EPA stated that the composite emissions score for Genesee County is somewhat higher than that of Washtenaw County, but that Washtenaw County contributes to violations in Wayne and Monroe Counties and Genesee County does not. This same logic can be used for excluding Livingston, Oakland, Macomb and St. Clair Counties.

### **Urbanization and Growth**

As stated in a previous response, population growth is not an indicator of PM-2.5 levels. Urbanization and growth information should not take precedence over monitoring data. Regarding the degree of urbanization and expected growth, the EPA indicates that the expected growth analysis looks at the percent growth for counties in each metropolitan area. During the years 1990 through 2000, Michigan, along with several other highly industrialized states, underwent exponential growth due to a robust and booming economy. Since 2000, these same areas have fallen on economic hard times, experiencing dramatic decreases in growth and actual losses to the local industry. These losses have occurred through shutdowns of operations, consolidation of services, and relocation of sources outside the state and even the United States. The MDEQ believes this down turn is reflected in the area and has added percentages from 2000-2003, which indicates that the growth patterns do not continue the upward spiral and may even decrease in certain areas. The MDEQ contends that to include the counties based on population and older growth patterns is inappropriate. It is based purely on a spike in the economic growth that does not continue today. Table 5 of Attachment A displays the EPA's analysis for 1990 through 2000, with additions from the MDEQ for 2000 through 2003 based on data from the Michigan Economic Development Corporation.

### **Meteorology**

Regarding meteorology, EPA stated that even though the wind blows from the southwest quadrant more frequently than other quadrants, the wind blows from the northwest or northeast quadrants about 40 percent of the time. The EPA continued to state that a significant fraction of the Detroit area's emissions occur in Livingston, Macomb, Oakland, St. Clair, and Washtenaw Counties, and EPA believes that these contribute to nonattainment in Wayne and Monroe Counties.

As EPA indicated, the wind does come from every compass direction; however, the MDEQ has created pollution roses (see Attachment B) similar in design to a wind rose that displays the amount of pollution occurring from different wind directions. The pollution roses were created by comparing the particulate measurements to the wind direction, for the same time period. The MDEQ used a cut-point of 15  $\mu\text{g}/\text{m}^3$ , as read from each monitor. The 15  $\mu\text{g}/\text{m}^3$  is the NAAQS standard. The pollution roses show that when the PM-2.5 measures higher than the standard,

specific wind directions are dominant. To further the case for localized pollution, the MDEQ constructed the wind roses from several different time spans and locations.

As examples, MDEQ included Allen Park and Dearborn values. We believe these roses support the original determination that the highest PM-2.5 days in the Detroit area are when winds are from the south and southwest, and further reinforces our conclusion that the counties to the north are not significantly contributing to violations within Wayne County. Based on these roses, the MDEQ contends that the meteorology supports a strong southwest influence for the formation of particulate matter at the violating monitors. When fine particulate emissions measure higher than 15 µg/m<sup>3</sup>, the winds are predominately from the south to southwest.

Additionally, MDEQ contends that to implement controls in the violating counties will reduce the amount of "transported" PM-2.5 to the downwind counties of Oakland, Livingston, Macomb and St. Clair.

It is MDEQ's belief that the high values shown at the Wayne County monitors are due to the influence from local sources within Wayne County.

#### **Speciation**

Speciation of PM-2.5 is being collected and studied. It will be critical to understand the local source impacts as the SIP is being prepared. The MDEQ has included several pollution roses from preliminary speciated PM-2.5 data. As these roses show, the contributions of specific precursors to PM-2.5 are also predominantly from the south to southwest.

#### **Levels of Control**

Regarding level of control of emission sources, the EPA stated that "the state provided no information about the level of control of emission sources for this area." As stated in previous responses, control of local sources will likely be key to attainment. Analysis of local contributors is still being conducted.