



# INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

*We Protect Hoosiers and Our Environment.*

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*Thomas W. Easterly*  
**Commissioner**

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Mr. Bharat Mathur  
Acting Regional Administrator  
U.S. Environmental Protection Agency  
Region V  
77 West Jackson Boulevard  
Chicago, IL 60604-3950

October 7, 2009

Re: Recommendations Concerning Air  
Quality Designations for the 2008  
Lead National Ambient Air Quality  
Standard

Dear Mr. Mathur:

This letter is in response to the United States Environmental Protection Agency's (U.S. EPA's) August 21, 2009, guidance memorandum concerning air quality designations for the 2008 revised lead National Ambient Air Quality Standard (NAAQS). The guidance indicates U.S. EPA's intention to propose designations in June 2010, and finalize them by October 15, 2010, and requests that states submit recommendations by October 15, 2009.

Enclosed are quality assured ambient air quality monitoring data for the years 2006 through 2008 for Indiana's lead monitoring network. Indiana's monitored lead concentrations have declined over time, resulting in just one county (Delaware County) with a design value above the revised lead standard.

Indiana firmly believes that the nonattainment boundaries for the new lead standard should be limited to the area that actually possesses a three-month rolling average ambient monitor-based design value above the standard. Only two monitors in Indiana (both in Delaware County) have monitor values above the lead standard; this is strictly due to the fact that the monitors are highly influenced by emissions from a single local source. All other lead monitors in Indiana are well below the revised lead standard. Indiana recommends a small portion of the City of Muncie, Indiana (bounded by West 26<sup>th</sup> Street/Hines Road to the north, Cowan Road to the east, West Fuson Road to the south and South Hoyt Avenue to the west) be designated as Nonattainment. This is the only area Indiana is recommending as Nonattainment. Limiting the designated nonattainment area in Delaware County to only the area that encompasses the two monitors measuring concentrations above the lead standard and the local source impacting those monitors would be consistent with the manner in which areas in Indiana were designated under the 1978 lead standard. Limiting the designated nonattainment area is further supported by the fact that

lead emissions in the air do not travel long distances and the surrounding areas in Delaware County and other adjacent counties do not contribute or have an impact upon the exceeding monitors. Indiana expects the monitor values in Delaware County to trend downward since the local source of lead emissions has implemented a number of improvement projects to decrease lead emissions at the facility and ensure future compliance with the 2008 lead NAAQS.

Included with this letter is a Technical Support Document for Indiana's Designation Recommendations including a table containing a 2006-2008 lead monitor data summary for Indiana.

I appreciate the opportunity to provide comments and recommendations to U.S. EPA concerning the designations for the revised 2008 lead standard. Likewise, I look forward to working with your staff as U.S. EPA moves forward with the designation process. If you have any questions regarding IDEM's analysis and recommendations, please feel free to contact me at (317) 232-8611 or Dan Murray, Assistant Commissioner, Office of Air Quality, at (317) 232-8222.

Sincerely,



Thomas W. Easterly  
Commissioner

TWE/sad/skr

Enclosures

Indiana's Assessment of the 2008 Revised Lead Standard and Technical Support Documents

cc: Cheryl L. Newton, U.S. EPA Region 5  
John Mooney, U.S. EPA Region 5  
Dan Murray, IDEM-OAQ  
Scott Deloney, IDEM-OAQ  
Christine Pedersen, IDEM-OAQ  
Sarah Raymond, IDEM-OAQ

# Indiana's Assessment of the 2008 Revised Lead Standard and Technical Support Documents

**October 2009**

On October 15, 2008, the United States Environmental Protection Agency (U.S. EPA) significantly strengthened the National Ambient Air Quality Standard (NAAQS) for lead to increase protection of public health and the environment. U.S. EPA revised the lead standard to a level of 0.15 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ). The previous standard, established in 1978, was set at a level of 1.5  $\mu\text{g}/\text{m}^3$ . Section 107(d) of the Clean Air Act (CAA) lays out the process for area designations following the establishment of a new or revised NAAQS. States are required to submit designation recommendations to U.S. EPA no later than one year after the promulgation of a new or revised standard. Therefore, state designation recommendations are due by October 15, 2009. The Indiana Department of Environmental Management (IDEM) has developed the following evaluation of nonattainment area boundaries for designating areas under the 2008 revised lead NAAQS.

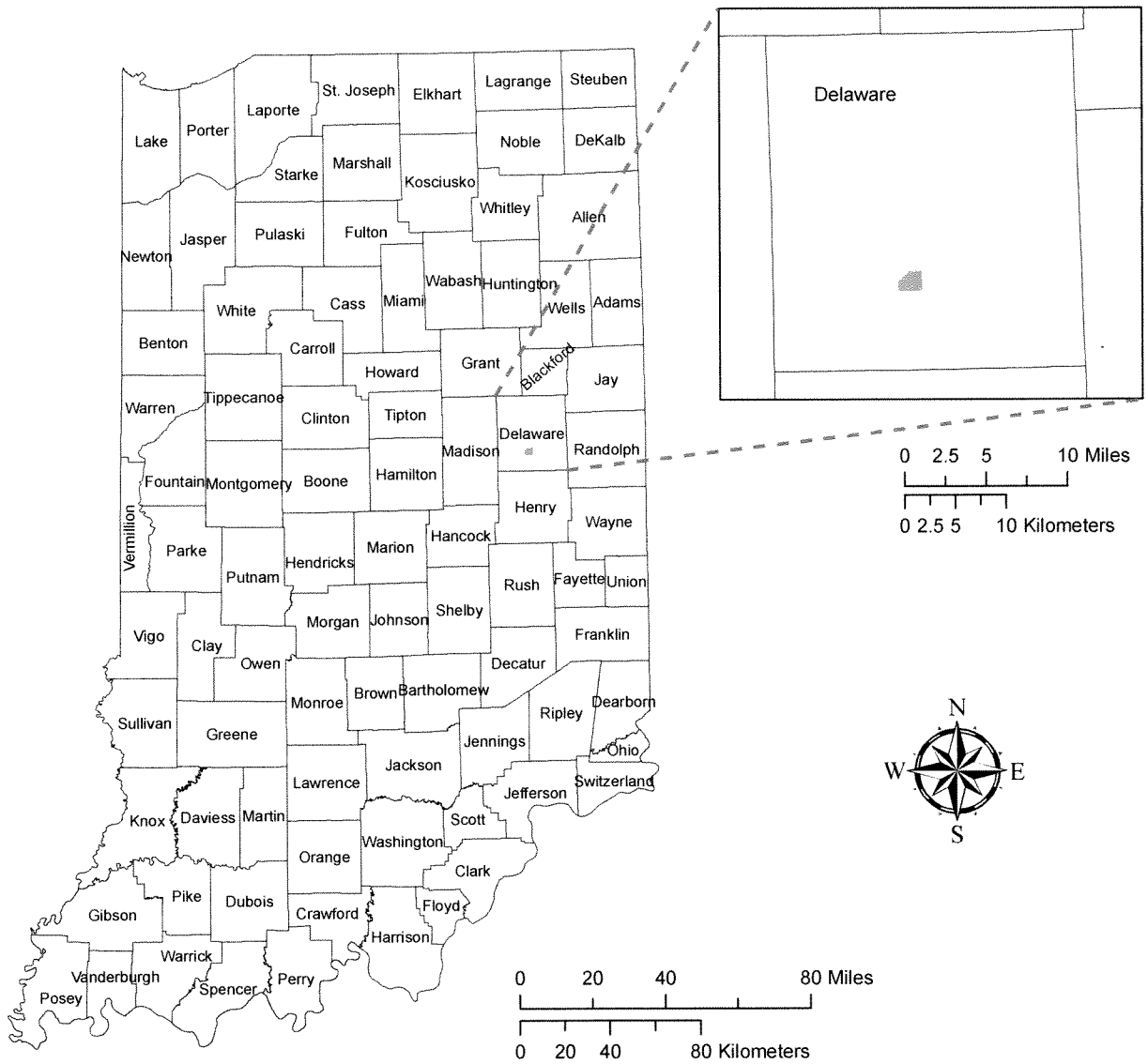
**Table 1  
List of Indiana Counties with Lead Monitors and Associated  
Proposed Designation**

County (Monitor ID)	Highest Three-Month Average from 2006-2008	Indiana Proposed Designation Recommendation for 2008 Lead NAAQS	Reason For Proposed Designation Recommendation for 2008 Lead NAAQS
Delaware (180350008)	0.521	Partial County Nonattainment	Monitor Values Above Standard
Delaware (180350009)	2.162		
Lake (180890023)	0.056	Attainment	Monitor Values Below Standard
Lake (180892008)	0.031		
Lake (180892011)	0.112		
Marion (180970063)	0.042	Attainment	Monitor Values Below Standard
Marion (180970076)	0.026		
Marion (180970078)	0.018		
Vanderburgh (180630006)	0.008	Attainment	Monitor Value Below Standard

*Red text indicates value above 0.15  $\mu\text{g}/\text{m}^3$*

**Note:** Indiana is recommending the remainder of the state as Attainment/Unclassifiable

**Figure 1**  
**Map of Indiana Proposed Designation Recommendations for the**  
**2008 Revised Lead Standard**



**Legend**

- Location of Indiana's Proposed Nonattainment Area**
- Attainment/Unclassifiable**
- Attainment-Based on Monitoring Data**

10/05/09

## Boundary Recommendation for Delaware County, Indiana

### Background

Delaware County was designated as attainment under the 1978 lead NAAQS. There are two lead monitors located in Delaware County, Indiana, both located near a source of lead emissions in the City of Muncie. Due to emissions from the lead source, these two monitors have violated the 1978 lead standard at various times over the past several years, most recently in the second quarter of 2008. IDEM has worked closely with the lead source to bring the facility into compliance with the 1978 lead standard. However, despite the large reduction in emissions at the facility, elevated concentrations at the monitors have been recorded over the past several years and the two monitors do not meet the new 2008 revised lead standard.

### Monitoring Data

**Table 2**  
**Delaware County Lead Monitoring Data**

County	Site #	Site Name	Highest Three-Month Average from 2006-2008 ( $\mu\text{g}/\text{m}^3$ )
Delaware	180350008	Muncie-West Site	0.521
Delaware	180350009	Muncie-East Site	2.162

*Red text indicates three-month average greater than or equal to  $0.15 \mu\text{g}/\text{m}^3$*

Under the 2008 revised lead NAAQS, U.S. EPA revised the averaging time used to calculate and determine whether an area meets the standard. U.S. EPA now requires states to use a rolling three-month average evaluated over a three-year period to determine compliance with the 2008 revised lead standard. Any three-month average exceeding  $0.15 \mu\text{g}/\text{m}^3$  within a three-year period will be considered a violation of the 2008 revised lead NAAQS. Quality-assured ambient air quality data for the years 2006 through 2008 for the two lead monitors located in Delaware County shows that both monitors in Muncie, Indiana are above the 2008 revised lead standard. Table 3 below contains detailed quality-assured ambient air quality data for the years 2006-2008 for the two monitors located in Delaware County, as well as the rest of the state. Quality assured ambient air quality data for 2009 is not yet available. Indiana will supplement these designation recommendations when 2009 data becomes available.

The elevated monitoring values in Delaware County are from the two source oriented monitors located in Muncie, Indiana at the Exide Technologies facility. Exide Technologies is one of the world's largest producers and recyclers of lead-acid batteries. Lead concentrations at the two source oriented monitors in Delaware County have been in and out of compliance with the 1978 lead standard for the past several years. Additionally, lead concentrations at these two monitors have been consistently higher than lead concentrations recorded at other monitors across Indiana, and the two monitors in Delaware County do not currently meet the 2008 revised lead standard. At the end of the 2<sup>nd</sup> quarter (June) of 2008, an acute incident occurred at the

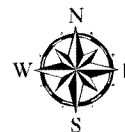
facility's rotary dryer. This incident caused a significant increase in lead emissions resulting in a large spike in the three-month average monitored concentration. Exide Technologies has taken corrective action related to that incident and has implemented steps to prevent recurrence. Exide Technologies has also implemented a number of improvement projects to further reduce lead emissions at the facility to help ensure future compliance with the 2008 revised lead standard.

**Figure 2**  
**Map of Delaware County Lead Monitors**



**Legend**

- Lead Monitor
- Location of Indiana's Proposed Nonattainment Area
- County Border



10/05/09

## Delaware County, Indiana Proposed Nonattainment Boundary

U.S. EPA defines the boundary for designating a nonattainment area as the perimeter of the county associated with the air quality monitor(s) which records a violation of the standard. The state and U.S. EPA may conduct additional area-specific analyses that could lead U.S. EPA to depart from the presumptive county boundary. Indiana is recommending a nonattainment boundary in conjunction with the violating monitors in Delaware County that is smaller than the presumptive county boundary. Indiana is recommending that a small portion of the City of Muncie, Indiana (bounded by West 26<sup>th</sup> Street/Hines Road to the north, Cowan Road to the east, West Fuson Road to the south and South Hoyt Avenue to the west) be designated as “Nonattainment” under the 2008 revised lead NAAQS. The smaller nonattainment area that Indiana is proposing encompasses the two monitors in Delaware County, the largest lead source in the county (Exide Technologies), and all the emissions from the largest lead source in the county.

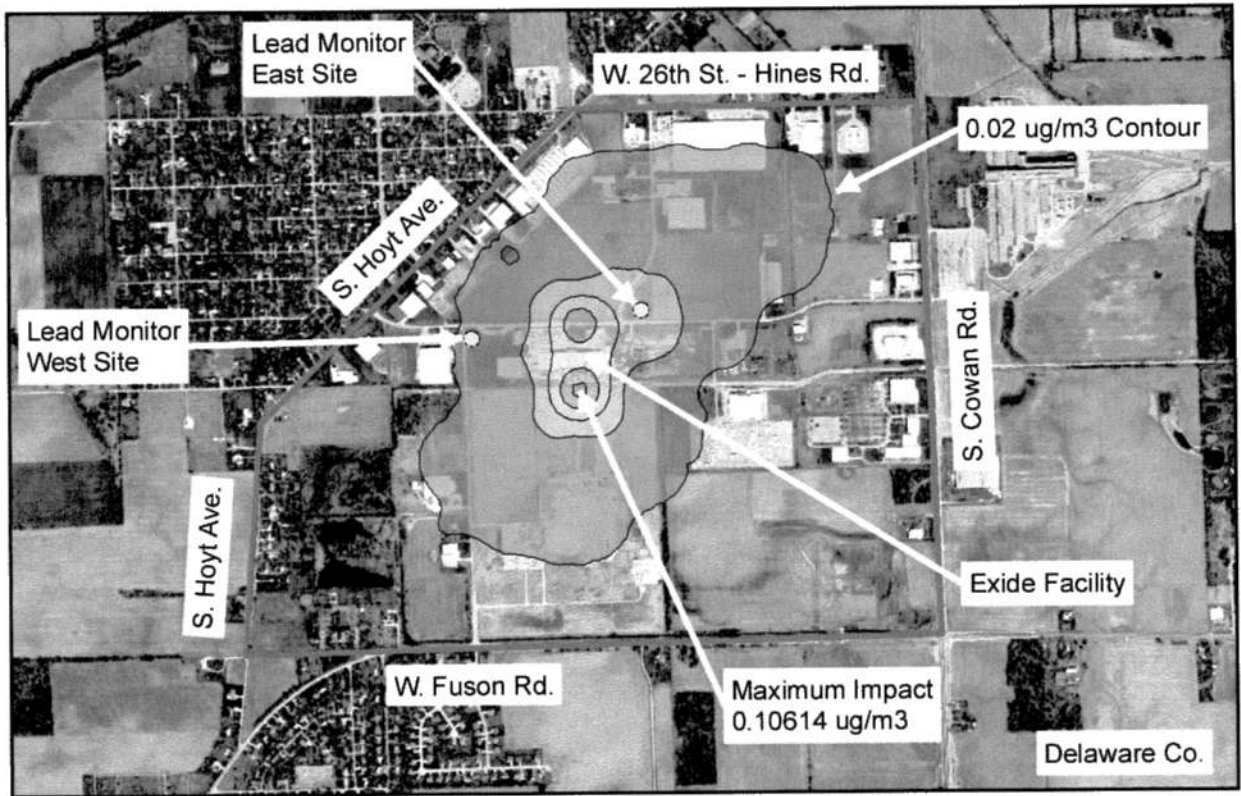
### Emissions Data

**Table 4**  
**Emissions Summary Delaware County, Indiana**  
**2007 Point Source Emissions**

Facility	Lead Emissions (Tons per Year)
Ball State University	0.03
Exide Technologies	0.81
<b>TOTAL</b>	<b>0.84</b>

Ball State University accounts for 3.57% of the total lead emissions and Exide Technologies accounts for 96.42% of the total lead emissions in Delaware County. Exide Technologies accounts for all the lead emissions within Indiana’s proposed smaller nonattainment area. As can be seen from the modeling below, the impact of the lead emissions from Exide Technologies affects only the area within Indiana’s proposed smaller nonattainment area.

**Figure 3  
Exide Modeling Results**



**Legend**

○ Lead Monitor

— Contour of Equal Concentration

▬ Indiana Proposed Nonattainment Boundary

**Lead Impact**

ug/m<sup>3</sup>

0.10 - 0.12

0.08 - 0.10

0.06 - 0.08

0.04 - 0.06

0.02 - 0.04

0 0.2 0.4 Mi

0 0.2 0.4 Km



09/21/2009

Exide Technologies is located southwest of Muncie, Indiana in an area which is mostly farmland to the west, south and east with considerable industry immediately to the north. Exide Technologies' largest sources of lead emissions are a reverb and blast furnace stack (which is over 100 feet tall) and a battery crusher and breaker stack (which is nearly 70 feet tall.) According to the recent figures, these two stacks account for approximately 98% of the facility's total lead emissions. The modeling results identify that the maximum impact and contour of lead emissions from Exide Technologies affects only a limited area of the City of Muncie, Indiana. The Muncie-East Site lead monitor is located in a high impact area for the facility and has recorded exceedances of the previous 1978 lead NAAQS ( $1.5 \mu\text{g}/\text{m}^3$  for a quarterly average), as recently as the 2<sup>nd</sup> quarter of 2008 and has also recorded exceedances of the 2008 lead NAAQS. The Muncie-West Site lead monitor is an upwind site and has also recorded exceedances of the 2008 lead NAAQS.



**Table 3: 2006-2008 Indiana Lead Monitor Data Summary**

Note: Prior to 2008 the lead standard was 1.5 micrograms per cubic meter (ug/m3). Beginning in October 2006, the new lead standard is 0.15 ug/m3. Any three-month average exceeding 0.15 ug/m3 within a three-year period is considered a violation of the standard.

County	Site #	Site Name	Three-Month Averages (2006-2008)																
			01/06-03/06	02/06-04/06	03/06-05/06	04/06-06/06	05/06-07/06	06/06-08/06	07/06-09/06	08/06-10/06	09/06-11/06	10/06-12/06	11/06-01/07	12/06-02/07	01/07-03/07	02/07-04/07	03/07-05/07	04/07-06/07	05/07-07/07
Delaware	180350008	Muncie-West Site	0.228	0.521	0.517	0.430	0.148	0.252	0.240	0.248	0.169	0.163	0.127	0.154	0.177	0.235	0.214	0.210	0.197
Delaware	180350009	Muncie-East Site	0.600	0.796	0.603	0.707	0.837	0.891	0.826	0.584	0.498	0.698	0.630	0.600	0.433	0.427	0.475	0.468	0.573
Lake	180890023	East Chicago	0.046	0.050	0.043	0.037	0.039	0.038	0.035	0.032	0.030	0.038	0.043	0.040	0.029	0.036	0.045	0.045	0.044
Lake	180892008	Hammond-141st St	0.014	0.019	0.016	0.018	0.017	0.019	0.021	0.021	0.019	0.014	0.010	0.010	0.010	0.019	0.018	0.022	0.028
Lake	180892011	Hammond-167th St	0.042	0.055	0.053	0.044	0.037	0.035	0.025	0.019	0.017	0.014	0.024	0.022	0.027	0.076	0.104	0.112	0.068
Lawrence	180930004	Purdue Ag Center	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	Monitor shut down						
Marion	180970063	Indianapolis-Rockville Rd	0.024	0.021	0.017	0.023	0.025	0.024	0.031	0.037	0.041	0.034	0.032	0.025	0.028	0.023	0.036	0.031	0.032
Marion	180970076	Indianapolis-Quemetco	0.015	0.018	0.018	0.023	0.018	0.018	0.017	0.021	0.016	0.014	0.013	0.012	0.020	0.026	0.026	0.019	0.012
Marion	180970078	Indianapolis-Washington Park	0.006	0.007	0.005	0.006	0.006	0.006	0.006	0.010	0.010	0.009	0.005	0.004	0.007	0.007	0.008	0.007	0.016
Martin	181010001	Rockeye	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	Monitor shut down							
Vanderburgh	181630006	Evansville-Civic Center	0.005	0.007	0.008	0.008	0.007	0.006	0.005	0.004	0.004	0.003	0.003	Monitor temporarily shut down					

Three-Month Average greater than or equal to 0.15 ug/m3

Highest Three-Month Average from 2006-2008

County	Site #	Site Name	Three-Month Averages (2006-2008) cont.																		
			06/07-08/07	07/07-09/07	08/07-10/07	09/07-11/07	10/07-12/07	11/07-01/08	12/07-02/08	01/08-03/08	02/08-04/08	03/08-05/08	04/08-06/08	05/08-07/08	06/08-08/08	07/08-09/08	08/08-10/08	09/08-11/08	10/08-12/08		
Delaware	180350008	Muncie-West Site	0.209	0.208	0.214	0.163	0.143	0.089	0.079	0.107	0.325	0.335	0.284	0.072	0.082	0.132	0.148	0.128	0.067		
Delaware	180350009	Muncie-East Site	0.734	0.705	0.926	0.869	0.838	0.522	0.347	0.403	0.425	0.684	1.960	2.162	1.866	0.485	0.238	0.230	0.190		
Lake	180890023	East Chicago	0.041	0.056	0.041	0.046	0.037	0.038	0.028	0.031	0.030	0.029	0.030	0.036	0.045	0.040	0.036	0.024	0.016		
Lake	180892008	Hammond-141st St	0.031	0.031	0.016	0.013	0.009	0.009	0.012	0.014	0.018	0.014	0.018	0.016	0.019	0.018	0.023	0.019	0.015		
Lake	180892011	Hammond-167th St	0.056	0.057	0.042	0.026	0.015	Monitor shut down													
Lawrence	180930004	Purdue Ag Center	Monitor shut down																		
Marion	180970063	Indianapolis-Rockville Rd	0.025	0.028	0.029	0.027	0.020	0.027	0.021	0.033	0.027	0.041	0.033	0.042	0.036	0.030	0.016	0.014	0.014		
Marion	180970076	Indianapolis-Quemetco	0.015	0.015	0.014	0.012	0.010	0.011	0.012	0.021	0.025	0.024	0.014	0.014	0.014	0.013	0.009	0.012	0.013		
Marion	180970078	Indianapolis-Washington Park	0.017	0.018	0.009	0.007	0.005	0.005	0.005	0.005	0.007	0.011	0.012	0.012	0.009	0.010	0.007	0.007	0.005		
Martin	181010001	Rockeye	Monitor shut down																		
Vanderburgh	181630006	Evansville-Civic Center	Monitor temporarily shut down			0.005	0.003	0.003	0.003	0.003	0.003	0.004	0.005	0.004	0.005	0.004	0.005	0.004	0.004	0.005	

Three-Month Average greater than or equal to 0.15 ug/m3

Highest Three-Month Average from 2006-2008

## **New Monitoring Requirements for Delaware County, Indiana**

As part of the revision to the lead standard, U.S. EPA is expanding the monitoring network for lead to ensure public health and the environment is protected. Section 4.5 of 40 CFR Part 58 Appendix D specifies that lead monitoring must be conducted to take into account lead sources which are expected to, or have been shown to, contribute a maximum lead concentration in ambient air in excess of the NAAQS, the potential for population exposure, and logistics. At a minimum there must be one source-oriented State or Local Air Monitoring Stations (SLAMS) site located to measure the maximum lead concentration in ambient air resulting from each lead source which emits 1.0 or more tons per year. In addition, one non-source oriented SLAMS site is required in each Core Based Statistical Area (CBSA) with a population equal to or greater than 500,000 people.

As part of the 2010 Annual Ambient Air Monitoring Network Plan, Indiana submitted a lead monitoring plan to U.S. EPA in July 2009. With the implementation of the new lead source monitoring requirements, Indiana will be adding four new monitors to the monitoring network in Indiana, three in Northwest Indiana and one in Delaware County, Indiana. The new source oriented monitoring site in Delaware County, Indiana will be co-located in Muncie, Indiana at the current site of the Muncie-East Site lead monitor at Exide Technologies. Exide Technologies will continue to operate their two lead monitors and the new IDEM monitor at the Muncie-East Site will be operational by no later than January 1, 2010.

Indiana addressed the monitoring requirements for the remainder of Indiana in the Annual Ambient Air Monitoring Network Plan at: [www.in.gov/idem/5342.htm](http://www.in.gov/idem/5342.htm). U.S. EPA is considering lowering the modeling threshold from 1.0 ton to 0.5 ton, but based on Indiana's analysis, it would not change the recommendations or result in the need to add monitors to the Annual Ambient Air Monitoring Network Plan.

Based on modeling results and the impact of lead emissions from Exide Technologies, Indiana is recommending that a small portion of the City of Muncie, Indiana (bounded by West 26<sup>th</sup> Street/Hines Road to the north, Cowan Road to the east, West Fuson Road to the south and South Hoyt Avenue to the west) be designated as “Nonattainment” under the 2008 lead NAAQS. This proposed boundary fully encompasses the anticipated impact of lead emissions from the primary source affecting monitored concentrations.

## **Summary Evaluation for Delaware County, Indiana**

Indiana’s designation recommendation for Delaware County is based on quality assured ambient air quality data from 2006 through 2008. Indiana reserves the right to revise the recommendations based on monitoring data from 2009, when available. Both of the monitors in Delaware County measure violations of the 2008 revised lead NAAQS due to operational complications at Exide Technologies. The facility has made corrections and expects to be in compliance in the future. Indiana feels the smaller area for the proposed nonattainment designation takes into consideration the violating monitors, the vast majority of the lead emissions and all of the impact from the major source of lead emissions in the county.

October 15, 2009 Designation Recommendations for Delaware County, Indiana:

Delaware County - Indiana recommends a small portion of the City of Muncie, Indiana (bounded by West 26<sup>th</sup> Street/Hines Road to the north, Cowan Road to the east, West Fuson Road to the south and South Hoyt Avenue to the west) be designated as Nonattainment

## **Remainder of Indiana**

Lake, Marion and Vanderburgh counties possess monitors measuring concentrations well below the 2008 revised lead standard. Indiana is proposing these three counties be classified as attainment based on quality-assured ambient air quality data.

The lead monitors located in Lawrence and Martin counties in accordance with U.S. EPA guidance were both shut down at the end of 2006. Quality assured ambient air quality monitoring data results for these two monitors had been very low and air quality trends would have remained well below the 2008 revised lead standard had the monitors continued operating. The rest of the counties in Indiana have never had lead monitors located within them. Lawrence and Martin counties and the rest of the unmonitored Indiana counties are being recommended as Attainment/Unclassifiable.

