REDESIGNATION REQUEST AND MAINTENANCE PLAN FOR THE PARTIAL CUYAHOGA COUNTY, OH ANNUAL LEAD NONATTAINMENT AREA

Cuyahoga County,
Ohio

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CHAPTER ONE

Introduction

The Clean Air Act (CAA), as amended, requires each State with areas failing to meet the annual lead National Ambient Air Quality Standards (NAAQS) to develop State Implementation Plans (SIPs) to expeditiously attain and maintain the standards. The United States Environmental Protection Agency (U.S. EPA) revised the NAAQS for lead on November 12, 2008 (73 FR 66964). It replaced the existing annual lead standard of 1.5 micrograms per cubic meter ($\mu g/m^3$) with a lower annual standard set at 0.15 $\mu g/m^3$. The new lead standard is measured as a rolling three-month average (not to be exceeded) of the monthly mean concentrations, which is evaluated over a three-year period.

On November 22, 2010 (75 FR 71033), U.S. EPA promulgated the initial lead nonattainment areas designations for the lead standard, which became effective on December 31, 2010. Section 191 of the CAA Amendments require states with lead nonattainment areas to submit a plan within eighteen months of the effective date of the designations (June 30, 2012) detailing how the lead standard will be attained by December 31, 2015. Ohio EPA submitted its attainment demonstration on June 25, 2012 and a subsequent revision on July 17, 2014. However, based on 2012 to 2014 air quality data, Ohio attained the standard before the deadline and submitted a clean data request on February 20, 2015. On May 26, 2015 (80 FR 29964), U.S. EPA approved Ohio EPA's clean data request with an effective date of July 27, 2015. As a result of attaining the standard, Ohio EPA withdrew the attainment demonstration on July 27, 2015 as U.S. EPA had not taken any formal action and the need for U.S. EPA to approve Ohio's attainment demonstration was no longer necessary. In order to formally redesignate the area to attainment, States must submit redesignation requests and maintenance plans. This submittal satisfies that requirement.

Section 107(d)(3)(E) of the CAA allows states to request nonattainment areas to be redesignated to attainment provided certain criteria are met. The following are the criteria that must be met in order for an area to be redesignated from nonattainment to attainment:

i) A determination that the area has attained the lead standard.
ii) An approved State Implementation Plan (SIP) for the area under Section 110(k).

iii) A determination that the improvement in air quality is due to permanent and enforceable reductions in emissions resulting from implementation of the SIP and other federal requirements.
iv) A fully approved maintenance plan under Section 175(A).
v) A determination that all Section 110 and Part D requirements have been met.

This document addresses each of these requirements, and provides additional information to support continued compliance with the annual lead standard.

Geographical Description and Background

The current partial Cuyahoga County nonattainment area is enclosed by the following boundaries: west by Washington Park Boulevard/Crete Avenue/ East 49th Street, on the east by East 71st Street, on the north by Fleet Avenue, and on the south by Grant Avenue. This area is shown in Figure 1 under Chapter Three.

This partial nonattainment area encompasses emissions from the Ferro Corporation Cleveland Frit Plant (herein referred to as "Ferro"). Ferro (Ohio EPA facility identification # 1318170235) is located at 4150 East 56th Street, Cleveland, Ohio, 44101.

This document is intended to support Ohio's request that the partial Cuyahoga County nonattainment area be redesignated from nonattainment to attainment for the annual lead standard.

Status of Air Quality

Lead complete quality-assured ambient air quality monitoring data for the most recent three (3) years, 2012 through 2014, demonstrate that the air quality has met the NAAQS for the annual lead standard in this nonattainment area. The NAAQS attainment, accompanied by decreases in emission levels discussed in Chapter Four, supports a redesignation to attainment for the partial Cuyahoga County area based on the requirements in Section 107(d)(3)(E) of the CAA as amended.

CHAPTER TWO

Requirements for Redesignation

U.S. EPA has published detailed guidance in a document entitled *Procedures for Processing Requests to Redesignate Areas to Attainment* (redesignation guidance), issued September 4, 1992, to Regional Air Directors. The redesignation request and maintenance plan are based on the redesignation guidance, supplemented with additional guidance received from staff of U.S. EPA Region 5.

Below is a summary of each redesignation criterion as it applies to the partial Cuyahoga County area.

i.) Attainment of the standard (CAA Section 107(d)(3)(E)(i))

There are two components involved in making this demonstration. The first component relies on ambient air quality data. The data that are used to demonstrate attainment should be the product of ambient monitoring that is representative of the area of highest concentration. The data should be collected and quality-assured in accordance with 40 CFR 58 and recorded in the Air Quality System (AQS) in order for it to be available to the public for review.

The second component relies upon supplemental U.S. EPA-approved air quality modeling. While no modeling is required for redesignating nonattainment areas, the redesignation guidance states it is "generally necessary" for lead redesignations in order to evaluate comprehensively sources' impacts and to determine the areas of expected high concentrations based upon current conditions. Ohio EPA did not find it necessary to perform additional modeling for this submittal. Ohio EPA performed modeling of the only source of lead emissions, Ferro, in this nonattainment area as part of Ohio's 2012 attainment demonstration SIP. The full analysis of issues resulting in nonattainment and Ferro modeling is included as Appendix A. Using a highly conservative approach[1] accounting for *allowable* emissions, Ohio EPA determined the maximum 3-month averaged

[1] The modeling analysis assumed that all 220 lbs product/cycle electric glass melters are running at full capacity simultaneously. A particulate emissions limit of 0.01 lb/hr was used as a surrogate based upon FIRE 6.22 emissions factors for frit smelting with a fabric filter (0.02 lb/ton) at 90% production rate for the emissions unit. In reality all six units have never, and would never, run at maximum capacity simultaneously. The analysis assumed that 90% of the particulate emissions are in the form of lead. In reality this could never occur. Ferro's raw lead containing ingredient is only 90% lead in the form of lead oxide. In addition, no single product made by Ferro requires a chemistry of 100% lead oxide. All products require the addition of other raw materials that contribute to the particulate emissions.

concentration calculated by the post processor was 0.15 ug/m3. An additional modeling analysis was conducted as part of Ohio EPA's 2010 monitoring plan (Appendix B). In that analysis, the overall maximum 3-month averaged concentration calculated by the post processor was 0.00 ug/m3 based upon *actual* emissions of 0.028 tons per year (tpy) (the highest between 2004 and 2006). Since 2006, annual emissions have not exceeded this level and it remains conservative modeling. Under either conservative modeling scenario of allowable or actual emissions, the standard of 0.15 ug/m3 is met.

ii.) Permanent and enforceable improvement in air quality (CAA Section 107(d)(3)(E)(iii))

The state must be able to reasonably attribute the improvement in air quality to emission reductions which are permanent and enforceable. The state should estimate the percent reduction achieved from federal measures as well as control measures that have been adopted and implemented by the state.

Ohio's 2012 attainment demonstration analysis showed the cause of the exceedances were due to faulty control equipment. Ferro is now required to implement an approved preventative maintenance plan (PMP) to prevent equipment malfunctions that were occurring at the facility and causing extra lead emissions to be released. Ferro's current federally enforceable emissions limitations provide for attainment as also demonstrated in the 2012 attainment demonstration analysis. Both the PMP requirements and modeled emissions limitations are incorporated into a permanent and federally enforceable permit-to-install. (Appendix C)

Chapters Four and Five discuss this requirement in more detail.

iii.) Section 110 and Part D requirements (CAA Section 107(d)(3)(E)(v))

For purposes of redesignation, a state must meet all requirements of Section 110 and Part D that were applicable prior to submittal of the complete redesignation request.

Subpart 1 of Part D consists of general requirements applicable to all areas which are designated nonattainment based on a violation of the NAAQS. Subpart 5 of Part D consists of more specific requirements applicable to lead.

i.) Section 110(a) requirements

Section 110(a) of Title I of the CAA contains the general requirements for a SIP. Section 110(a)(1) generally directs states to submit a SIP that provides for implementation,

maintenance, and enforcement of the air quality standards to the U.S. EPA after reasonable notice and public hearing. Section 110(a)(2) provides that the infrastructure SIP submitted by a state must have been adopted by the state after reasonable public notice and hearing, and that, among other things, it must include enforceable emission limitations and other control measures[2], means or techniques necessary to meet the requirements of the CAA; provide for establishment and operation of appropriate devices, methods, systems and procedures necessary to monitor ambient air quality; provide for implementation of a source permit program to regulate the modification and construction of any stationary source within the areas covered by the plan; include provisions for the implementation of Part C, prevention of significant deterioration (PSD) and Part D, NSR permit programs; include criteria for stationary source emission control measures, monitoring, and reporting; include provisions for air quality modeling; and provide for public and local agency participation in planning and emission control rule development. In Ohio's October 12, 2011 infrastructure SIP submission, Ohio verified that the State fulfills the requirements of Section 110(a)(2) of the Act.

Section 110(a)(2)(D) also requires State plans to prohibit emissions from within the State which contribute significantly to nonattainment or maintenance areas in any other State, or which interfere with programs under Part C to prevent significant deterioration of air quality or to achieve reasonable progress toward the national visibility goal for Federal class I areas (national parks and wilderness areas). In order to assist States in addressing their obligations regarding regionally transported pollution, Ohio EPA has adopted and implemented the various major programs related to the interstate transport of pollution. OAC Chapters 3745-16 (Stack Height Requirements), 3745-103 (Acid Rain Permits and Compliance), 3745-14 (Nitrogen Oxides – Budget Trading Program), and 3745-109 (Clean Air Interstate Rule) all address Congressional and U.S.EPA concerns over the transport of emissions of regulated pollutants beyond our State borders. Additionally, all new major sources and major modifications in the state are subject to PSD and NNSR program to help

[2] Other than nonattainment emission limitations and measures which are a part of nonattainment area plans and subject to the timing requirements of Section 172 of the CAA.

achieve the lead standard.

Based upon U.S. EPA's "Guidance on SIP Elements Required Under Sections 110(a)(1) and (2) for the 2008 Lead (Pb) National Ambient Air Quality Standards (NAAQS)" (October 14, 2011), the physical properties of lead prevent lead emissions from experiencing the same travel or formation phenomena as PM2.5 or ozone. Lead concentrations sharply decrease with the distance from a lead source. Only large sources in close proximity to state boundaries could contribute significantly to nonattainment in, or interfere with maintenance by, any other state.

This nonattainment area is not in close proximity to Ohio's border and the only source of lead emissions are from Ferro, whom has implemented a maintenance program to prevent excesses lead emissions. Ohio EPA did perform an analysis of potential lead emissions impacts on Ohio's borders as a part of Ohio's October 12, 2011 infrastructure SIP submission and found no sources to impact Ohio's borders. Therefore, lead sources in this area do not contribute significantly to nonattainment, or interfere with maintenance, of the NAAQS in another state, or interfere with measures required to prevent significant deterioration of air quality.

ii.) Section 172(c) requirements

This Section contains general requirements for nonattainment plans. To meet the requirements of Section 172(c)(1), Ohio is asking that the control measures identified in Chapter 5 be approved as reasonably available control technology/reasonably available control measures. Ohio is asking that the emission inventory discussed in Chapters Four and Five be approved as meeting the requirements of Section 172(c)(3). The remaining requirements, reasonable further progress, identification of certain emissions increases, and other measures needed for attainment, were waived by the clean data determination issued for this area because they only have meaning for areas not attaining the standard.

iii.) Conformity

The state must work with U.S. EPA to show that its SIP provisions are consistent with the Section 176(c)(4) conformity requirements. The redesignation request should include conformity procedures, if the state already has

these procedures in place. If a state does not have conformity procedures in place at the time that it submits a redesignation request, the state must commit to follow U.S. EPA's conformity regulation upon issuance, as applicable. Furthermore, in U.S. EPA's final rule it was stated that In light of the elimination of lead additives from gasoline, transportation conformity does not apply to the lead NAAQS [73 FR 67043].

iv.) Maintenance plans (CAA Section 107(d)(3)(E)(iv))

Section 107(d)(3)(E) stipulates that for an area to be redesignated, U.S. EPA must fully approve a maintenance plan that meets the requirements of Section 175(A). The maintenance plan will constitute a SIP revision and must provide for maintenance of the relevant NAAQS in the area for at least 10 years after redesignation. Section 175(A) further states that the plan shall contain such additional measures, if any, as may be necessary to ensure such maintenance.

In addition, the maintenance plan shall contain such contingency measures as the Administrator deems necessary to ensure prompt correction of any violation of the NAAQS. At a minimum, the contingency measures must include a requirement that the state will implement all measures contained in the nonattainment SIP prior to redesignation.

States seeking redesignation of a nonattainment area should consider the following provisions:

a) attainment inventory;
b) maintenance demonstration;
c) monitoring network;
d) verification of continued attainment; and
e) contingency plan.

Chapter Six discusses this requirement in more detail.

CHAPTER THREE

LEAD MONITORING

CAA Section 107(d)(3)(E)(i)

Requirement 1 of 4

A demonstration that the NAAQS for annual lead, as published in 40 CFR 50.12, has been attained.

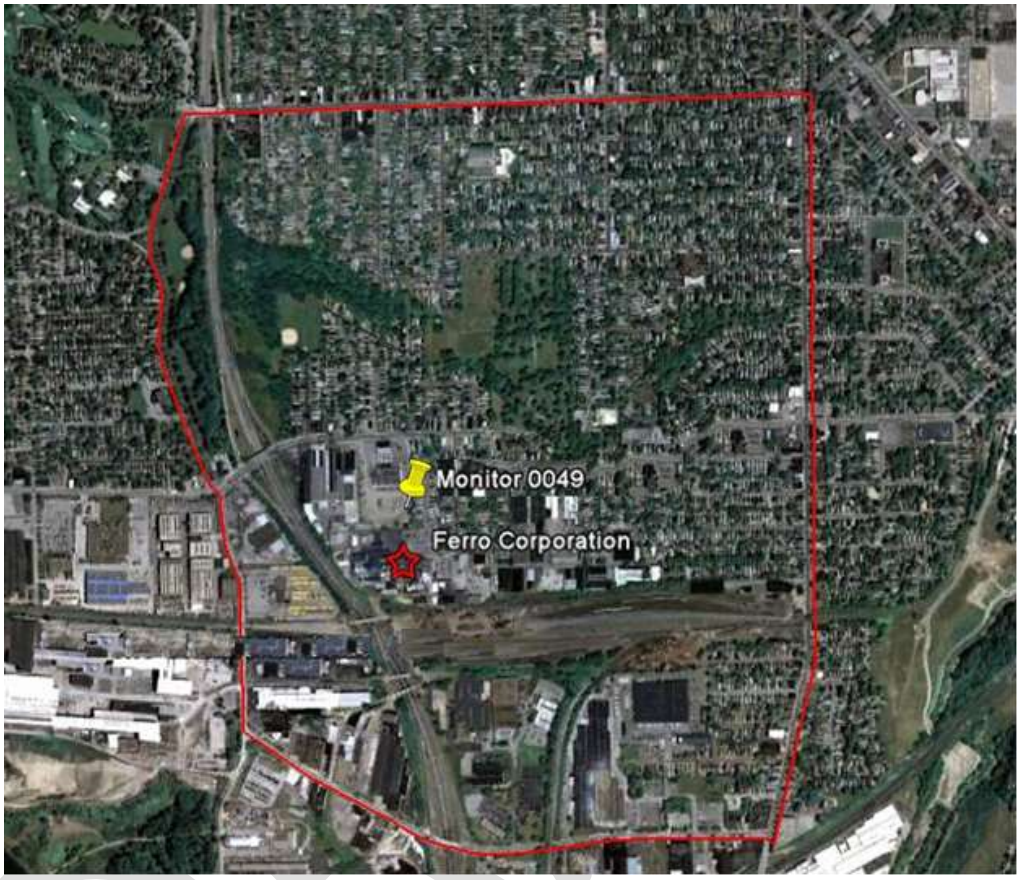
Background

There is one monitor measuring lead concentrations in this nonattainment area. The monitor is operated by Ohio EPA Division of Air Pollution Control, Northeast District Office. A listing of the certified design values from 2012 through 2014, and preliminary 2015[3] design values, are shown in Table 1. The location of the monitoring site for this nonattainment area is shown on Figure 1.

[3] Will be certified by May 1, 2016.

Demonstration

Figure 1 - Map of the partial Cuyahoga County, OH- nonattainment area and monitor location



Requirement 2 of 4

Ambient monitoring data quality assured in accordance with 40 CFR 58.10, recorded in the U.S. EPA air quality system (AQS) database, and available for public view.

Demonstration

Ohio EPA has quality assured all 2013 through 2014 data shown in Appendix D in accordance with 40 CFR 58.10 and all other federal requirements. Ohio EPA has recorded the data in the AQS database and, therefore, the data are available to the public. 2015 data will be fully quality assured and certified by May 1, 2016.

Requirement 3 of 4

In accordance with 40 CFR Part 50, Appendix R, the lead NAAQS is met at a monitoring site when the identified design value is valid and less than or equal to 0.15 µg/m^3. A lead design value that meets the NAAQS (*i.e.*, 0.15 µg/m^3 or less), is considered valid if it encompasses 36 consecutive valid 3-month site means (specifically for a 3-year calendar period and the two previous months).

For sites that begin monitoring lead after this rule is effective but before January 15, 2010, lead design values that meets the NAAQS will be considered valid if it encompasses at least 34 consecutive valid 3-month means (specifically encompassing only the 3-year calendar period). This is the case for this monitoring site as demonstrated, and discussed in detail, in Ohio EPA's February 20, 2015 clean data request.

Background

Table 1 shows the monitoring data for the 4-year calendar period of 2012-2015 that were retrieved from the U.S. EPA AQS.

Demonstration

Table 1 - Monitoring data for the partial Cuyahoga County, OH Area for 2012 – 2015

Site Location City	3-month period (unless noted)	2012	2013	2014	2015
39-035-0049	Nov-Jan	0.015	0.012	0.009	0.007
	Dec-Feb	0.013	0.010	0.009	0.010
Ferro Facility	Jan-Mar	0.021	0.011	0.009	0.012
	Feb-Apr	0.024	0.010	0.011	0.014
E. 56th St. Cleveland	Mar-May	0.029	0.023	0.011	0.012
	Apr-Jun	0.027	0.025	0.014	0.014
	May-July	0.026	0.022	0.014	0.017
	Jun-Aug	0.024	0.017	0.016	0.018
	July-Sept	0.019	0.015	0.014	0.016
	Aug-Oct	0.016	0.014	0.014	0.013
	Sept-Nov	0.012	0.011	0.013	0.013
	Oct-Dec	0.010	0.010	0.010	0.014

<75% capture

Source: U.S. EPA Air Quality System (AQS); http://www.epa.gov/ttn/airs/airsaqs/index.htm

A design value is considered valid only when minimum data-completeness requirements are met.

The design values calculated for the partial Cuyahoga County area demonstrate that the annual lead NAAQS has been attained. The area's design values have remained consistently low since Ferro repaired faulty control equipment and implemented their PMP at the facility.

Requirement 4 of 4

A commitment that once redesignated, the state will continue to operate an appropriate monitoring network to verify the maintenance of the attainment status.

Demonstration

Ohio EPA commits to continue monitoring lead levels at this site indicated in Figure 1 and Table 1. Ohio EPA will consult with U.S. EPA Region 5 prior to making changes to the existing monitoring network, should changes become necessary in the future. Ohio EPA will continue to quality assure the monitoring data to meet the requirements of 40 CFR Part 58 and all other federal requirements. Ohio EPA will enter all data into AQS on a timely basis in accordance with federal guidelines.

CHAPTER FOUR

EMISSION INVENTORY

CAA Section 107(d)(3)(E)(iii)

U.S. EPA's redesignation guidance requires the submittal of a comprehensive inventory of lead emissions representative of the year when the area achieves attainment of the annual lead air quality standard. Ohio also must demonstrate that the improvement in air quality between the year that violations occurred and the year that attainment was achieved is based on permanent and enforceable emission reductions. Other emission inventory related requirements include a projection of the emission inventory to a year at least 10 years following redesignation; a demonstration that the projected level of emissions is sufficient to maintain the annual lead standard; and a commitment to provide future updates of the inventory to enable tracking of emission levels during the 10-year maintenance period.

The comprehensive inventory includes emissions of lead from point sources. Ohio does not have area, mobile, non-road, or marine/air/rail sources of lead emissions that contribute to nonattainment. The only point source of emissions in this nonattainment area is the Ferro facility.

Requirement 1 of 5

A comprehensive emission inventory of lead sources completed for the base year.

Background

The point source data are taken from U.S. EPA National Emissions Inventory (NEI) reporting program or the Toxic Release Inventory (TRI). The period coincides with nonattainment air quality in the partial Cuyahoga County nonattainment area.

Demonstration

Data from the 2010 TRI (Appendix E) is used as the base year for Ferro emissions and coincides with the period of nonattainment and the period of time before Ferro corrected faulty control equipment and implemented their PMP. The detailed lead emission inventory information for the partial Cuyahoga County area is provided in Table 2 under Requirement Three of this Chapter.

Requirement 2 of 5

A projection of the emission inventory to a year at least 10 years following redesignation.

Demonstration

Ohio EPA prepared a comprehensive future year inventory for the partial Cuyahoga County area. See Requirement 3 of 5 under Requirement Three of this Chapter.

Requirement 3 of 5

A demonstration that the projected level of emissions is sufficient to maintain the lead standard.

Background

In consultation with U.S. EPA, Ohio EPA selected the year 2030 as the maintenance year for this redesignation request. This document contains projected emissions inventories for 2021 and 2030. Actual emissions for 2010 and 2013 were obtained from U.S. EPA's TRI.

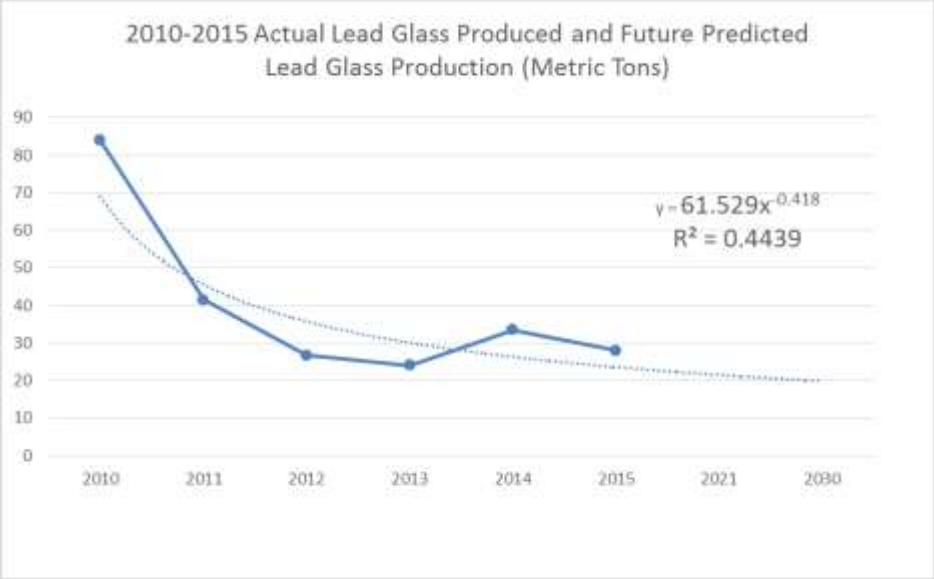
In general, maintenance is demonstrated when the future-year (2030) projected emission totals are below the 2013 attainment year totals or through modeling to show the future emissions rates will not cause a violation of the NAAQS

Future years 2021 and 2030 emissions were projected in consultation with Ferro.

Demonstration

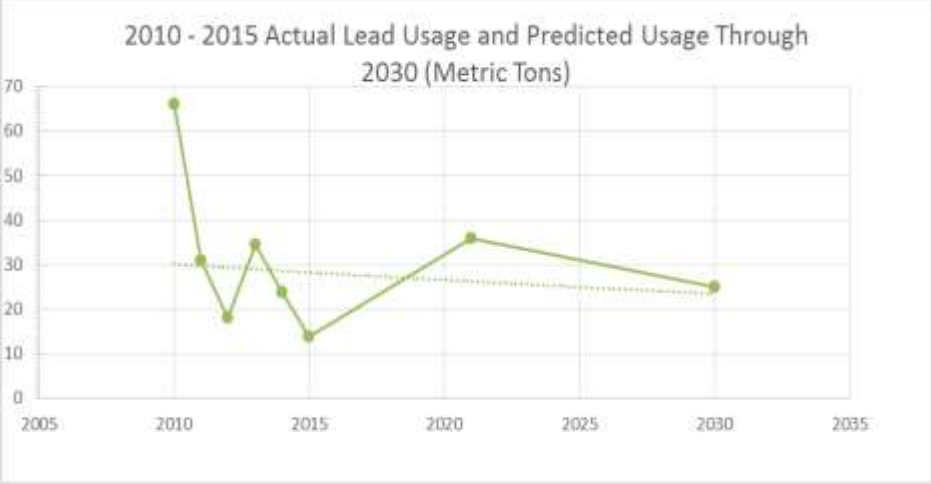
In consultation with Ferro, Ohio EPA is providing predicted future lead emissions. Ferro has seen an overall drop in actual lead glass production as can be seen by Figure 2. Ferro predicts that lead glass production will continue to decline slightly into the future.

Figure 2 – Actual and Predicted Lead Glass Production at Ferro



As a result, the usage of actual lead oxide has also declined and is predicted to continue declining into the future as seen in Figure 3.

Figure 3 – Actual and Predicted Lead Oxide Usage at Ferro



Ohio EPA has used this information to estimate future emissions based upon historical emissions and lead oxide usage and actual reported emissions of lead. It was assumed the percent change in lead oxide usage would result in the same percent change in lead emissions. This is represented in Table 2 below.

Table 2 – Partial Cuyahoga County, OH Lead Emission Inventory Totals for Base Year 2010, Attainment Year 2013, and Projected 2021 and 2030 (tpy)

Source	2010 Base	2013 Attainment	2021 Interim	2030 Maintenance	Safety Margin
Lead Usage (Metric Tons Lead Oxide)	65.9	34.5	35.8	25.0	
% Change in Lead Usage From Previous Analysis Year	n/a	-48%	4%	-30%	
Emissions (TPY)	0.006050	0.000705	0.000732	0.000511	0.000194

*2010 and 2013 actual, 2021 and 2030 projected based upon change in lead usage

As shown in Table 2, lead emissions in the nonattainment area are projected to decrease by 2030. The production of lead glass has been declining since 2010 and is predicted by Ferro to continue to decline. As a result, the usage of lead oxide has also declined which has resulted in reduced emissions and is predicted to further decline into the future. 2010 represented a year when certain products containing high lead glasses were manufactured. Ferro divested that business and only produces very limited toll manufacturing for these materials. Also, because lead is expensive to handle and has the added increased difficulty of environmental, safety and legal restrictions, industries similar to Ferro, and including Ferro, are evaluating more critically the cost to expend capital to use lead versus the higher cost of the non-lead equivalent. Meaning, in the future it may be more profitable to buy the higher cost non-lead product needed to manufacture glass than to continue using lead oxide. As a result, Ohio EPA believes lead emissions will continue to decline into the future.

As discussed elsewhere, Ohio EPA performed modeling of Ferro as part of Ohio's 2010 monitoring plan. (Appendix B) In that analysis, the overall maximum 3-month averaged concentration calculated by the post processor was 0.00 ug/m3 based upon modeling 0.028 tpy of emissions.

Considering the projected decline in lead emissions from the base year and the maintenance year, the level of conservative modeling conducted, and the permanent and enforceable requirement that Ferro continues to implement its PMP to ensure the control

equipment operates as intended in the future, maintenance will be achieved in this area.

Requirement 4 of 5

A demonstration that improvement in air quality between the year violations occurred and the year attainment was achieved is based on permanent and enforceable emission reductions and not on temporary adverse economic conditions or unusually favorable meteorology.

Background

Ambient air quality data from all monitoring sites indicate that air quality met the NAAQS for lead in 2012-2014. U.S. EPA's redesignation guidance (p 9) states: "A state may generally demonstrate maintenance of the NAAQS by either showing that future emissions of a pollutant or its precursors will not exceed the level of the attainment inventory, or by modeling to show that the future mix of sources and emissions rates will not cause a violation of the NAAQS."

Demonstration

As can be seen in Table 1 of Ohio EPA's 2012 attainment demonstration analysis (Appendix A), the majority of exceedance occurred in the 2010 and early 2011 timeframe. As discussed at length in the Appendix A document, these exceedances were determined to be caused by control equipment degradation that would not have been captured in the annual TRI emissions reporting. In 2011, Ferro found a failed retaining clamp on a filter and a repair was immediately made and the unit was placed back into service. As a result of this discovery, Ferro commenced a program to evaluate the condition of all baghouses. This occurred throughout the last half of April and early half of May 2011. Several small cracks in the canisters and damage to hopper dump slide gates on several baghouses were identified and operations were immediately shutdown until repairs were completed. Additionally, all air pulse jets, solenoids and timer boards were evaluated and replaced as necessary. During this time, Ferro also changed all filter cartridges and all pulse air supply regulators. Full production resumed on May 9, 2011 and full lead-based glass production resumed on May 20, 2011. In addition to these activities, Ferro identified four baghouses they deemed ready for replacement and upgraded those baghouses, including the addition of new secondary control technologies.

It is Ohio EPA's belief that Ferro's equipment degradation and maintenance issues contributed to the periodic exceedances through 2010 and the early months of 2011. Since repairs have been made, the 3-month rolling averages have sharply declined and been well below the standard.

In Ohio's 2012 attainment demonstration analysis, a series of modeling runs were performed including (1) a modeling run to attempt to replicate the emissions that would have occurred during the equipment malfunctions that caused the historical exceedances and (2) modeling runs to show federally enforceable allowable emission rates provide for attainment. (Appendix A) This analysis further assists in demonstrating the improvement in air quality between the year violations occurred and the year attainment was achieved is based on permanent and enforceable emission reductions and not on temporary adverse economic conditions or unusually favorable meteorology.

Ferro's permanent and federally enforceable PMP will ensure equipment degradation does not lead to exceedance in the future. Modeling of both actual and federally enforceable allowable emissions indicates the standard will be maintained in the future.

No additional sources of lead are expected in the future. In the event a future source of lead may install in the area in the future, all relevant requirements at that time would be required, including new source review permitting. This also ensures maintenance of the lead standard into the future.

Requirement 5 of 5

Provisions for future annual updates of the inventory to enable tracking of the emission levels, including an annual emission statement from major sources.

Demonstration

In Ohio, major point sources in all counties are required to submit air emissions information annually, in accordance with U.S. EPA's Consolidated Emissions Reporting Rule (CERR). Ohio EPA prepares a new periodic inventory for all lead sources every three years. This lead inventories will be prepared for future years as necessary to comply with the inventory reporting requirements established in the CFR.

Ferro is not a major point source and therefore, is not required to report under this program. However, Ferro is required to report under U.S. EPA's TRI program. Ohio EPA will continue to monitor Ferro emissions through the TRI reporting program.

Emissions information will be compared to the 2010 base year and the 2030 projected maintenance year inventory to assess emission trends, as necessary, and to assure continued compliance with the annual lead standard.

CHAPTER FIVE

CONTROL MEASURES AND REGULATIONS

CAA Section107 (d)(3)(E)(ii), 107(d)(3)(iv), and 107(d)(3)(E)(v)

Requirement 1 of 6

Section 172(c)(1) of the 1990 Clean Air Act Amendments requires states with nonattainment areas to implement RACM and RACT.

Background

Section 172(c)(1) of the 1990 Clean Air Act Amendments requires states with nonattainment areas to submit a SIP providing for implementation of all reasonably available control measures (RACM) as expeditiously as practicable (including such reductions in emissions from existing sources in the area as may be obtained through the adoption, at a minimum, of reasonable available control technology (RACT)).

U.S. EPA's final rule stated it is appropriate to set a threshold for RACT analysis at 0.5 tpy.

Demonstration

The Ferro facility emissions have never exceeded the threshold of 0.5 tpy, necessitating a RACT analysis. Thus, the Ferro facility does not need to complete a RACT analysis to comply with Section 172(c)(1). However, as a part of Ohio EPA's 2012 attainment demonstration SIP, Ohio EPA did perform a RACM analysis for the only lead point source of emissions in the nonattainment area, Ferro. Ohio EPA determined that existing controls and practices constitutes RACM. (Appendix A)

Requirement 2 of 6

Section 172(c)(2) of the 1990 CAA Amendments requires attainment demonstration SIPs for nonattainment areas to show reasonable further progress (RFP).

Background

U.S. EPA's final rule expected that RFP for lead nonattainment areas should be met by strict adherence to an ambitious compliance schedule which should periodically yield significant emissions reductions, and to the extent appropriate, linear progress.

Per U.S. EPA guidance (2008 Lead (Pb) National Ambient Air Quality Standards (NAAQS) Implementation Questions and

Answers, July 8, 2011):

> *Control measures for the 2008 NAAQS need to be in place as expeditiously as practicable. In order for control measures to result in three years of monitored clean data by the attainment date, areas designated in the first round of designations (effective December 31, 2010, and requiring attainment demonstrations that show that the area will attain the standard as expeditiously as practicable, but no later than December 31, 2015) would need to have all necessary controls in place no later than November 1, 2012…..*
>
> And…
>
> *Demonstrating reasonable further progress requires adherence to an ambitious compliance schedule. The schedule is expected to provide for periodic yields in significant emissions reductions or linear progress when appropriate. The U. S. Environmental Protection Agency (EPA) recommends that SIPs for Lead nonattainment areas provide a detailed schedule for compliance of reasonably available control measures (RACM), including reasonably available control technology (RACT), and accurately indicate the corresponding annual emission reductions to be achieved. Expeditious implementation of RACM and RACT by the sources in the nonattainment areas helps to ensure attainment of the standard by the attainment date.*

Demonstration

Ferro's repair of degraded equipment, voluntary equipment upgrades, and implementation of the PMP were completed by November 1, 2012.

Requirement 3 of 6

Section 172(c)(3) requires states to submit a comprehensive inventory of actual emissions.

Background

Section 172(c)(3) requires states to submit a comprehensive inventory of actual emissions in the area, including the requirement for periodic revisions as determined necessary. 40 CFR 51.1008 requires such inventory to be submitted within three years of designation and requires a baseline emission inventory

for calendar year 2002 or other suitable year to be used for attainment planning.

Demonstration

The 2005 comprehensive inventory was submitted to U.S. EPA with Ohio's lead recommended designations document submitted on October 5, 2009. In addition, in Ohio's 2012 attainment demonstration SIP, the 2005 inventory was updated to the 2008 inventory[4]. Emissions for this area were taken from U.S. EPA's NEI. This inventory is required only for sources at or above the 0.5 tpy threshold. There are no sources, including Ferro, within this nonattainment area reporting emissions at this level. As noted above, Ferro is only required to report via U.S. EPA's TRI.

Ohio also updates its inventory in accordance with U.S. EPA's CERR rule (i.e. emissions statements). Ohio EPA submitted its emissions statement SIP on March 18, 1994 which was approved by U.S. EPA on October 13, 1995 (59 FR 51863). As discussed in Chapter 4 (Requirement 4), Ohio EPA submits, and commits to submit, emission inventories (statements) every three years. In addition, Ohio EPA will continue to review TRI inventories for Ferro.

Requirement 4 of 6

Evidence that control measures required in past lead SIP revisions have been fully implemented.

Demonstration

There are no past control measures required in Ohio's SIP for this area.

Requirement 5 of 6

Acceptable provisions to provide for new source review.

Background

Ohio has a longstanding and fully implemented New Source Review (NSR) program. This is addressed in OAC Chapter 3745-31[5]. The Chapter includes provisions for the Prevention of Significant Deterioration (PSD) permitting program in OAC rules 3745-31-01 to 3745-31-20. Ohio's PSD program was conditionally approved on October 10, 2001 (66 FR 51570) and received final approval on January 22, 2003 (68FR 2909) by U.S. EPA as part of the SIP.

4 http://www.epa.ohio.gov/portals/27/SIP/Lead/B1_2008_Ohio_Lead_Emissions_Inventory.pdf
5 http://www.epa.ohio.gov/dapc/regs/3745_31.aspx

Demonstration

Any facility that is not listed in the 2010 emission inventory, or for the closing of which credit was taken in demonstrating attainment, will not be allowed to construct, reopen, modify, or reconstruct without meeting all applicable NSR requirements. Once the area is redesignated, Ohio EPA will implement NSR through the PSD program.

Requirement 6 of 6

Assure that all existing control measures will remain in effect after redesignation unless the State demonstrates through modeling that the standard can be maintained without one or more control measures.

Demonstration

Ohio commits to maintaining the existing control measures after redesignation. All lead processes (melting and milling) at Ferro are contained operations that are controlled by a series of dust collectors (bag houses) with design efficiencies of 99.97%. Because of equipment degradation and maintenance issues, Ferro made several repairs (as discussed above). Table 3 below provides a summary of the control device upgrades while Appendix A contains a detailed summary of the repairs and voluntary upgrades.

Table 3 – Ferro Sources of Lead, Base Case Control Devices, Control Device Upgrades and Federally Enforceable Permit Limits

Emission Unit	Description of Source Emissions	Base Case Control Device	Voluntary Control Device Upgrade	Permit Limits	
				pound/ hour	ton/year
P065	220 lbs product/cycle electric, glass melter (large melter K or MELTER 2)	FEM 8	Replace existing dust collector with new 304 stainless steel dust collector and 316 stainless steel blower. New HEPA filter and broken bag detection device.	n/a[6]	0.30 combined limit
P064	220 lbs product/cycle electric, glass melter (large melter J or MELTER 1)				
P066	220 lbs product/cycle electric, glass melter (large melter G or MELTER 3)	FEM 9	New carbon steel blower, secondary HEPA filter and broken bag detection device		
P067	220 lbs product/cycle electric, glass melter (large melter L or MELTER 5)				
P068	220 lbs product/cycle electric, glass melter (small melter C or MELTER 9)	FEM 10	New carbon steel blower, secondary HEPA filter and broken bag detection device		
P069	220 lbs product/cycle electric, glass melter (small melter D or MELTER 10)				

[6] Compliance with Ferro's 0.01 pounds per hour particulate emissions limitation for each of these emissions units ensures compliance with the combined ton per year lead limitation and ensures attainment of the standard.

Emission Unit	Description of Source Emissions	Base Case Control Device	Voluntary Control Device Upgrade	Permit Limits	
				pound/ hour	ton/year
P071	Twelve (12) Mills (eleven wet mills and one dry mill) and seven (7) Friction Dryers for drying methyl and isopropyl alcohol from fine particle specialty glass equipped with a packed bed scrubber for control of VOC emissions and a baghouse for control of particulate emissions.	FEM 12, Scrubber	New carbon steel blower, secondary HEPA filter and broken bag detection device	0.002	0.009
P915	EMS gas/O2 continuous melter, 1 electric batch melter with a maximum process weight rate of 220 lbs/hr	CERC 4		0	0
P101	22 lb/cycle melters (drop bottom melters 1, 2, 3, 4, 5 & 6)	FEM 10 (#4), FEM 11 (#1,5), and FEM 14 (#2,3,6)	FEM 14: New carbon steel blower, secondary HEPA filter and broken bag detection device	de mimimus	
P001	8 Ball Mills, 2 Screeners, 1 Cone Blender, 2 Scales	FEM1	New carbon steel blower, secondary HEPA filter and broken bag detection device	de mimimus	
P100	Packaging for Shipment (per process flow)	FEM 5	New carbon steel blower, secondary HEPA filter and broken bag detection device	de mimimus	

**FEM's are all dust collectors with HEPA filters*

In addition, Ferro implemented a comprehensive PMP (Appendix A) to ensure adequate operation of all dust collectors. Required elements of the PMP were issued in a permanent and federally enforceable permit-to-install[7]. (Appendix C) The following are specific required elements of the PMP:

[7] The entire permit-to-install in Appendix C and PMP included in Appendix A are not being requested as elements of Ohio's SIP. Only those emissions limitations identified in Table 3 above and the PMP requirements outlined below, all of which are specified as required under the permit-to-install, are considered SIP required.

The following are specific SIP required elements of the PMP:

1. The PMP shall require the following inspections:
   a. A visual inspection of the interior of all lead dust collectors on a semi-annual basis, at a minimum.
   b. An inspection of all lead dust collector mechanical elements on a quarterly basis, at a minimum.
   c. An annual inspection of all lead dust collector electronic controls on an annual basis, at a minimum.
2. The PMP shall require all lead dust collector cartridges be replaced on annual basis, at a minimum.
3. Ferro shall maintain records of all inspections and maintenance performed on the lead dust collectors. Records shall include the date and time of each inspection or maintenance activity; the activities performed; and the results.
   a. If any of the above inspections identifies an issue warranting shutdown of lead activities for the relevant emissions unit(s), Ferro will shutdown lead production for the relevant emissions unit(s) until the issue is addressed. Ferro shall maintain records of the following information for each issue leading to shutdown: the date and time the issue began and the emissions unit(s) that was shutdown; the date the investigation was conducted; the name(s) of the personnel who conducted the investigation; the recommended corrective action(s), the corrective action taken, the name(s) of the personnel who performed the corrective action, and the date and time the emissions unit(s) resumed operation.
   b. Issues warranting a shutdown of the lead activities for the relevant emissions unit(s) including, but not limited to:
      i. A fabric filter bag leak detection system alarm.
      ii. A deviation of the permitted pressure drop range recorded at the fabric filter.
      iii. Observation of any visible particulate emissions from a lead dust collector.

iv. Any other conditions resulting in excessive fugitive emissions from lead activities.

4. Ferro shall continuously monitor the pressure drop across all dust collectors. Ferro shall record the pressure drop across the dust collectors on a weekly basis.
   a. Whenever the monitored value for the pressure drop deviates from the limit or range established in accordance with the permit, Ferro shall promptly investigate the cause of the deviation. Ferro shall maintain records of the following information for each investigation: the date and time the deviation began; the date the investigation was conducted; the name(s) of the personnel who conducted the investigation; and the findings and recommendations. In response to each required investigation to determine the cause of a deviation, Ferro shall take prompt corrective action to bring the operation of the control equipment within the acceptable range specified in the permit, unless Ferro determines that corrective action is not necessary and documents the reasons for that determination and the date and time the deviation ended. Ferro shall maintain records of the following information for each corrective action taken: a description of the corrective action; the date corrective action was completed; the date and time the deviation ended; the total period of time (in minutes) during which there was a deviation; the pressure drop readings immediately after the corrective action was implemented; and the name(s) of the personnel who performed the work.
5. Each record shall be retained for a period of five years from the date the record was created.

Ohio, through Ohio EPA's Legal office and the Ohio Attorney General's office, has the legal authority and necessary resources to actively enforce any violations of its rules or permit provisions. After redesignation, it intends to continue enforcing all SIP elements, rules and permit provisions that relate to the emission of lead in the partial Cuyahoga County area.

CHAPTER SIX

CONTINGENCY MEASURES

CAA Section 107(d)(3)(E)(v)

Requirement 1 of 4

A commitment to submit a revised plan eight years after redesignation.

Demonstration

Ohio hereby commits to review its maintenance plan eight years after redesignation, as required by Section 175(A) of the CAA.

Requirement 2 of 4

A commitment to expeditiously enact and implement additional contingency control measures in response to exceeding specified predetermined levels (triggers) or in the event that future violations of the ambient standard occur.

Demonstration

Ohio hereby commits to adopt and expeditiously implement necessary corrective actions in the following circumstances:

Warning Level Response:

A warning level response shall be prompted whenever a lead 3-month rolling average concentration of 0.135 µg/m^3 occurs within the maintenance area. A warning level response will consist of a study to determine whether the lead value indicates a trend toward higher lead values. The study will evaluate whether the trend, if any, is likely to continue and, if so, the control measures necessary to reverse the trend taking into consideration ease and timing for implementation as well as economic and social considerations. Implementation of necessary controls in response to a warning level response trigger will take place as expeditiously as possible, but in no event later than 12 months from the conclusion of the most recent calendar year.

Should it be determined through the warning level study that action is necessary to reverse the noted trend, the procedures for control selection and implementation outlined under “action level response” shall be followed.

Action Level Response:

An action level response shall be prompted whenever a two-year average of the 3-month rolling average concentration of 0.143 µg/m^3 or greater occurs within the maintenance area. A violation of the standard (any 3-month rolling average over a 36-month

rolling average period (3-calendar years plus the preceding 2 months) exceeds 0.15 µg/m^3) shall also prompt an action level response. In the event that the action level is triggered and is not found to be due to an exceptional event, malfunction, or noncompliance with a permit condition or rule requirement, Ohio EPA in conjunction with the entity(ies) believed to be responsible for the exceedance will evaluate additional control measures needed to assure future attainment of the NAAQS for annual lead. In this case, measures that can be implemented in a short time will be selected in order to be in place within 18 months from the close of the calendar year that prompted the action level. Ohio EPA will also consider the timing of an action level trigger and determine if additional, significant new regulations not currently included as part of the maintenance provisions will be implemented in a timely manner and will constitute our response.

Control Measure Selection and Implementation

Adoption of any additional control measures is subject to the necessary administrative and legal process. This process will include publication of notices, an opportunity for public hearing, and other measures required by Ohio law for rulemaking or permitting.

If a new measure/control is already promulgated and scheduled to be implemented at the federal or State level, and that measure/control is determined to be sufficient to address the upward trend in air quality, additional local measures may be unnecessary. Furthermore, Ohio will submit to U.S. EPA an analysis to demonstrate the proposed measures are adequate to return the area to attainment.

Requirement 3 of 4

A list of potential contingency measures that would be implemented in such an event.

Demonstration

Contingency measures to be considered will be based on an analysis of the suspected cause of the elevated lead levels from the entity(ies) suspected to be contributing to the elevated levels. Measures may include improvements in existing control devices, addition of secondary control devices or improvements in housekeeping and maintenance, among other measures. It is not possible to fully develop an appropriate list of contingency measures until the cause of the elevated levels is known. Any contingency measures implemented will require a compliance plan and expeditious compliance timeline from the entity(ies) involved.

No contingency measure shall be implemented without providing the opportunity for full public participation during which the relative costs and benefits of individual measures, at the time they are under consideration, can be fully evaluated.

Requirement 4 of 4

A list of lead sources potentially subject to future additional control requirements.

Demonstration

Ohio EPA does not expect any future lead sources in this area other than Ferro. As discussed elsewhere in this document, any new source planning to locate in this area would be a point source that would be subject to the new source review program.

CHAPTER SEVEN

PUBLIC PARTICIPATION

Ohio published notification for a public hearing and solicitation for public comment concerning the draft redesignation petition and maintenance plan in the widely distributed county publication on_____.

The public hearing to receive comments on the redesignation request was held on _____ in _____, Ohio. The public comment period closed on _____. Appendix F includes a copy of the public notice, and the transcript from the public hearing.

CHAPTER EIGHT

CONCLUSIONS

The partial Cuyahoga County annual lead nonattainment area has attained the 2008 annual NAAQS for lead and complied with the applicable provisions of the 1990 Amendments to the CAA regarding redesignations of lead nonattainment areas. Documentation to that effect is contained herein. Ohio EPA has prepared a redesignation request and maintenance plan that meet the requirements of Section 110 (a)(1) of the 1990 CAA.

Based on this presentation, the partial Cuyahoga County annual lead nonattainment area meets the requirements for redesignation under the CAA and U.S. EPA guidance. Ohio has performed an analysis that shows the air quality improvements are due to permanent and enforceable measures.

The State of Ohio hereby requests that the partial Cuyahoga County annual lead nonattainment area be redesignated to attainment simultaneously with U.S. EPA approval of the maintenance plan provisions contained herein.

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