



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

MAY 25 2012

REPLY TO THE ATTENTION OF:

Robert Hodanbosi, Chief
Division of Air Pollution Control
Ohio Environmental Protection Agency
50 West Town Street
Suite 700
P.O. Box 1049
Columbus, Ohio 43216

Dear Mr. Hodanbosi

This letter responds to your April 7, 2011 letter requesting guidance on issues related to making New Source Review (NSR) State Implementation Plan (SIP) revisions. I apologize for the amount of time it has taken to respond to your letter.

Your letter requested guidance on seven specific topics to assist Ohio to move forward on necessary revisions to Ohio's NSR SIP. The U.S. Environmental Protection Agency has addressed these questions in a letter to the Indiana Department of Environmental Management (IDEM) dated September 1, 2011. The responses in your letter are summarized below. The enclosed letter to IDEM contains further discussion.

1. Can offset ratios be seasonal or only annual?

If the Particulate Matter (PM_{2.5}) standards are annual, then the offset ratios should also be annual. However, another consideration is that the ratios should reflect or be consistent with the seasonal nature of PM_{2.5} formation in the area of interest.

2. Can offset ratios vary among portions of the state, or must one ratio apply to the entire state?

If the state makes a sound technical demonstration to support the ratios it devises, the ratios can vary among geographic regions within the state. The boundaries of such regions need to be clearly defined.

3. If data supports it, can precursor pollutants addressed in Ohio's program vary among portions of the state?

For NSR purposes, pursuant to 40 CFR 51.165(a)(1)(xxxvii)(C), Sulfur Dioxide (SO₂) is always considered a precursor, while states may "opt out" of treating Nitrogen Oxides (NO_x) as a precursor in certain regions of the state based on a technical demonstration.

An analysis is only necessary if a state wants to “opt out” NO_x as a PM_{2.5} precursor for portions or all of the state.

4. How consistent must the ratios and precursor pollutants selected by Ohio be in comparison to other states?

Approval of a state’s ratios and precursor pollutants will be based on an adequate technical demonstration that analyzes the air quality within that state. However, if more than one state is pursuing the development of ratios, consistency, and possibly multi-state collaboration, would be desirable for border regions.

5. Can Ohio’s demonstration rely on speciated monitoring data or must it rely solely on dispersion modeling?

We see a limited role for monitoring data, and expect existing air quality models and techniques to be necessary for states to conduct local demonstrations leading to the development of area-specific ratios for PM_{2.5} nonattainment areas. For the geographic areas of interest, we expect the state will need to conduct a series of sensitivity runs with appropriate air quality models to develop a database of modeled PM_{2.5} concentration changes associated with reductions of direct PM_{2.5} emissions and PM_{2.5} precursor emissions (i.e., SO₂ and NO_x) from anthropogenic point sources within the area of interest. For precursor emissions, a photochemical model such as CMAQ or CAMx at grid resolution of 12 kilometers (km) or less is recommended to predict changes in PM_{2.5} concentrations. For direct PM_{2.5} emissions, a dispersion model such as AERMOD or photochemical model at grid resolution of 4 km or less is recommended to predict changes in PM_{2.5} concentrations. The offset ratios for PM_{2.5} between direct PM_{2.5} emissions and precursor emissions can then be calculated in a manner similar to the ratio of impact metrics from EPA’s 2007 technical assessment.

6. If speciated monitoring data is used to support a demonstration, how could EPA expect Ohio to treat the precursor pollutants that account for a more significant portion of the mass than SO₂ and NO_x?

PM_{2.5} species composition and treatment in the state’s technical demonstration, direct PM_{2.5} emissions include organic and elemental carbon that is directly emitted from sources. Please refer to the response to #5, above, in terms of the focus on air quality modeling as the technical basis for an offset ratio demonstration.

7. Can states utilize their own modeling protocol for PM_{2.5} since secondary formation is essential for such a demonstration?

EPA views the use of a photochemical model like CMAQ or CAMx to be necessary to properly evaluate and provide the technical support for offset ratios.

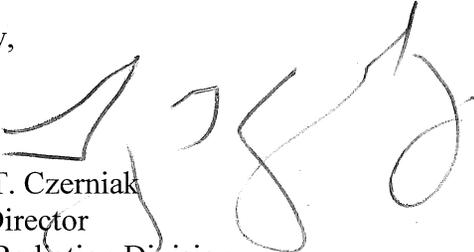
In addition to these specific questions, your letter also states that in order to initiate an appropriate and meaningful revision to Ohio’s NSR SIP, you need sufficient guidance from

EPA, and that a NSR SIP revision could be submitted within one year of receiving guidance. While EPA understands that state development of interpollutant NSR offset ratios for PM_{2.5} may be technically complex, as stated in the July 21, 2011 McCarthy memorandum, these ratios are not a mandatory element for implementing PM_{2.5} as a pollutant under NSR.

We are available to provide assistance to you in developing appropriate offset ratios for Ohio. This issue should not require a delay in the SIP submittal to address PM_{2.5} NSR requirements. The May 16, 2011, SIP submittal deadline provided in the May 16, 2008 PM_{2.5} NSR Implementation rule (73 FR 28341) remains applicable.

If you have any further questions, please contact Charmagne Ackerman, of my staff. She can be reached by telephone at (312) 886-0448, and by e-mail at ackerman.charmagne@epa.gov.

Sincerely,



George T. Czerniak
Acting Director
Air and Radiation Division

Enclosure



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

SEP 01 2011

REPLY TO THE ATTENTION OF:

Keith Baugues
Assistant Commissioner
Office of Air Quality
Indiana Department of Environmental Management
100 North Senate Avenue
Indianapolis, Indiana 46204

Dear Mr. Baugues:

This letter is in response to your May 26, 2011, letter regarding new source review (NSR) interpollutant offset and precursor requirements for particulate matter with an aerodynamic diameter of 2.5 microns or less (PM_{2.5}). Your letter summarized your understanding of the May 19, 2011, conference call between the U. S. Environmental Protection Agency and the Indiana Department of Environmental Management (IDEM) which, in turn, was in response to IDEM's March 23, 2011, letter to EPA. The March 23, 2011, letter raised the following seven questions regarding PM_{2.5} NSR offset and precursor requirements. While we generally agree with your characterization of our discussion of these issues, we have the following comments and clarifications.

1. Can offset ratios be seasonal or only annual?

IDEM's summary: *"Due to the fact that the standard is annual, offset ratios would need to be annual as well, with the same ratio applying year round."*

Since all current PM_{2.5} nonattainment areas in Indiana are for the annual PM_{2.5} standard, we agree that offset ratios must be for annual emissions. That said, the ratios should reflect or be consistent with the seasonal nature of PM_{2.5} formation in the area of interest.

2. Can offset ratios vary among portions of the state, or must one ratio apply to the entire state?

IDEM's summary: *"If the state makes a sound technical demonstration to support the ratios it devises, the ratios can vary among geographic regions within the state. The boundaries of the regions do need to be clearly defined."*

EPA agrees with IDEM's summary of our May 19, 2011, discussion of this question.

3. If data supports it, can precursor pollutants addressed in Indiana's rule vary among portions of the state?

IDEM's summary: *"Not for sulfates. The state must conduct an analysis to determine if nitrates should be treated as a regulated precursor for portions or all of the state."*

For NSR purposes, pursuant to 40 CFR 51.165(a)(1)(xxxvii)(C), sulfur dioxide (SO₂) is always considered a precursor while states may "opt out" of treating nitrogen oxides (NO_x) as a precursor in certain regions of the state based on a technical demonstration. An analysis is only necessary if a state wants to "opt out" NO_x as a PM_{2.5} precursor for portions or all of the state.

4. How consistent must the ratios and precursor pollutants Indiana selects be in comparison to neighboring states?

IDEM's summary: *"EPA is not concerned about inconsistency among state submittals. Indiana simply must ensure that its submittal adequately addresses the minimum requirements and consists of technically sound justification."*

EPA agrees that approval of a state's ratios and precursor pollutants will be based on an adequate technical demonstration that analyzes the air quality within that state. However, if more than one state is pursuing the development of ratios, multi-state collaboration would be desirable for border regions.

5. Can Indiana's demonstration rely on speciated ambient monitoring data or must it rely solely on dispersion modeling?

IDEM's summary: *"Monitoring data can be used to supplement an evaluation, as can dispersion modeling output. However, EPA views photochemical modeling to serve as the core to the technical demonstration."*

We see a limited role for monitoring data, and expect existing air quality models and techniques to be necessary for states to conduct local demonstrations leading to the development of area-specific ratios for PM_{2.5} nonattainment areas. For the geographic areas of interest, we expect the state will need to conduct a series of sensitivity runs with appropriate air quality models to develop a database of modeled PM_{2.5} concentration changes associated with reductions of direct PM_{2.5} emissions and PM_{2.5} precursor emissions (i.e., SO₂ and NO_x) from anthropogenic point sources within the area of interest. For precursor emissions, a photochemical model such as CMAQ or CAMx at grid resolution of 12 kilometers (km) or less is recommended to predict changes in PM_{2.5} concentrations. For direct PM_{2.5} emissions, a dispersion model such as AERMOD or photochemical model at grid resolution of 4 km or less is recommended to predict changes in PM_{2.5} concentrations. The offset ratios for PM_{2.5} between direct PM_{2.5} emissions and precursor emissions can then be calculated in a manner similar to the ratio of impact metrics from EPA's 2007 technical assessment.

6. If speciated ambient monitoring data is used to support a demonstration, how would U.S. EPA expect Indiana to treat the precursor pollutants that account for a more significant portion of the mass than sulfur dioxide and nitrogen oxides?

IDEM's summary: *"EPA's review will be limited to the precursor pollutants identified within the federal rule. Contributing pollutants like organic carbon, ammonia, and elemental carbon are assumed to be excluded unless the state opts to regulate them as a precursor."*

To clarify, regarding PM_{2.5} species composition and treatment in the state's technical demonstration, direct PM_{2.5} emissions include organic and elemental carbon that is directly emitted from sources. Please refer to EPA response to #5 above in terms of the focus on air quality modeling as the technical basis for an offset ratio demonstration.

7. If modeling is required, what model is acceptable since secondary formation of precursor pollutants is essential to such a demonstration?

IDEM's summary: *"EPA views the use of a photochemical model like CMAQ or CAMx to be necessary to properly evaluate and provide the technical support for offset ratios."*

EPA agrees with IDEM's summary of our May 19, 2011, discussion of this question.

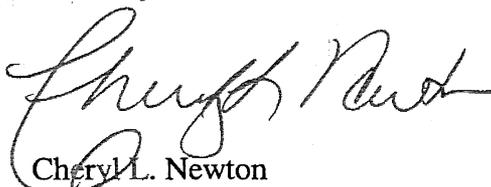
In addition to the summary of our discussion on these questions, IDEM states in its May 26, 2011, letter that it must receive written guidance concerning photochemical modeling procedures in order to establish offset ratios. It is also IDEM's understanding that EPA is working on such guidance and that this guidance is scheduled to be completed in December 2011. While such guidance is not currently under development, we will be available to provide technical assistance to you as requested. As stated in the July 21, 2011, EPA memorandum from Gina McCarthy titled "Revised Policy to Address Reconsideration of Interpollutant Trading Provisions for Fine Particles (PM_{2.5})," EPA encourages states to work with the Regional Office modeling contacts for technical consultation. This would include our review and comment on modeling protocols, review and interpretation of modeling results, and derivation of offset ratios.

The May 26, 2011, letter concludes by saying that "in the absence of documented and detailed modeling guidance, it is impossible for states to prepare a rule-supported state implementation plan (SIP) that meets a series of criteria that are yet to be defined. Therefore, Indiana is unable to proceed with its rulemaking and SIP submittal to address NSR for fine particles until it receives the necessary guidance from EPA to conduct the necessary photochemical modeling and supplemental technical analysis to ensure SIP approval. Upon receipt of this written guidance, Indiana commits to provide EPA with a SIP within one year." While EPA understands that state development of interpollutant NSR offset ratios for PM_{2.5} may be technically complex, as stated in the July 21, 2011, McCarthy memorandum, these ratios are not a mandatory element for implementing PM_{2.5} as a pollutant under NSR.

We are available to provide assistance to you in developing appropriate offset ratios for Indiana. We thus disagree that this issue requires a delay in the SIP submittal to address PM_{2.5} NSR requirements, and affirm that the May 16, 2011, SIP submittal deadline provided in the May 16, 2008, PM_{2.5} NSR Implementation rule (73 FR 28341) remains applicable.

If you have any further questions, please contact me, or Sam Portanova, of my staff, at (312) 886-3189.

Sincerely,

A handwritten signature in cursive script, appearing to read "Cheryl L. Newton".

Cheryl L. Newton
Director
Air and Radiation Division