
Technical Support Document (TSD)

**Indiana
Area Designations For the
2010 SO₂ Primary National Ambient Air Quality Standard**

Summary

Pursuant to section 107(d) of the Clean Air Act (CAA), EPA must designate areas as either “nonattainment,” “attainment,” or “unclassifiable” for the 2010 one-hour sulfur dioxide (SO₂) primary national ambient air quality standard (NAAQS). The CAA defines a nonattainment area as one that does not meet the NAAQS or that contributes to poor air quality in a nearby area that does not meet the NAAQS. Table 1 below identifies the counties or portions of counties (or tribal areas) in Indiana that EPA intends to designate “nonattainment” for the primary 2010 SO₂ NAAQS.

Indiana submitted designation recommendations on May 11, 2011 with supplemental recommendations on January 6, 2012 and April 26, 2012. On February 6, 2013, EPA sent a letter with intended designations for Indiana. Indiana responded with March 11, 2013 and March 28, 2013 recommendations. Table 1 below lists Indiana’s final recommendations and identifies the counties or portions of counties in Indiana that EPA is initially designating “nonattainment” based on monitored violations. EPA is not yet prepared to designate other areas in Indiana, and will address such areas and their sources in a subsequent round of final designations.

Table 1. Nonattainment Area Designations for Indiana

Area	Indiana’s Recommended Designation of Areas/Counties	EPA’s Nonattainment Designation of Areas/Counties
Indianapolis, IN Marion County (partial) -Wayne, Center and Perry Townships	Nonattainment	Nonattainment
Morgan County, IN Morgan County (partial) -Clay and Washington Townships	Nonattainment	Nonattainment
Southwest Indiana, IN Daviss County (partial) -Veale Township Pike County (partial) -Washington Township	Nonattainment Nonattainment	Nonattainment Nonattainment
Terre Haute, IN Vigo County (partial) -Fayette and Harrison Township	Nonattainment	Nonattainment

Background

On June 3, 2010, EPA revised the primary SO₂ NAAQS (75 FR 35520, June 22, 2010) by establishing a new 1-hour standard at a level of 75 parts per billion (ppb), which is met at an ambient air quality monitoring site when the 3-year average of the annual 99th percentile of the daily maximum 1-hour average concentration at each monitor in an area does not exceed 75 ppb, as determined in accordance with Appendix T of 40 CFR part 50. 40 CFR 50.17(a)-(b). EPA has determined that this is the level necessary to provide protection of public health with an adequate margin of safety, especially for

children, the elderly and those with asthma. These groups are particularly susceptible to the health effects associated with breathing SO₂. The Agency is revoking the two prior primary standards of 140 ppb evaluated over 24-hours, and 30 ppb evaluated over an entire year because the standards will not add additional public health protection given a 1-hour standard at 75 ppb. Accordingly, EPA is not designating areas in this process on the basis of either of these two prior primary standards. Similarly, the secondary standard for SO₂ has not been revised, so EPA is not designating areas in this process on the basis of the secondary standard.

EPA's SO₂ Designation Approach

Section 107(d) of the CAA provides that not later than 1 year after promulgation of a new or revised NAAQS, state Governors may submit their recommendations for designations and boundaries to EPA. For the 2010 SO₂ NAAQS, this deadline was June 3, 2011. Section 107(d) also requires EPA to provide a notification to states of no less than 120-days prior to promulgating an initial area designation that is a modification of a state's recommendation. EPA has reviewed the State's recommendations and has notified the State Commissioner through letter signed by the Regional Administrator of any intended modifications. [While language in section 107 specifically addresses states, we intend to follow the same process for tribes, pursuant to section 301(d) of the CAA and Tribal Authority Rule (40 CFR Part 49). Therefore, we intend to designate tribal areas, in consultation with the tribes, on the same schedule as state designations.] If a State or Tribe did not submit designation recommendations, EPA is to promulgate the designations that it deems appropriate. If a state or tribal government disagrees with EPA's intended area designations, it had an opportunity to demonstrate why any proposed modification is inappropriate.

Designations guidance was issued by EPA through a March 24, 2011, memorandum from Stephen D. Page, Director, U.S. EPA, Office of Air Quality Planning and Standards, to Air Division Directors, U.S. EPA Regions I-X. This memorandum identifies factors EPA intends to evaluate in determining boundaries for areas designated nonattainment. These 5 factors include: 1) Air quality data; 2) Emissions and emissions-related data (location of sources and potential contribution to ambient SO₂ concentrations); 3) Meteorology (weather/transport patterns); 4) Geography/topography (mountain ranges or other air basin boundaries); and 5) Jurisdictional boundaries (e.g., counties, air districts, pre-existing nonattainment areas, reservations, metropolitan planning organization), among any other information deemed relevant to establishing appropriate area designations and boundaries for the 1-hour SO₂ NAAQS.

The March 24, 2011, designations guidance memo recommended that area boundaries be defaulted to the county boundary unless additional provided information justifies a larger or smaller boundary than that of the county. EPA believes it is appropriate to evaluate each potential area on a case-by-case basis, and to recognize that area-specific analyses conducted by states, tribes and/or EPA may support a different boundary than a default county boundary.

In this TSD, EPA discusses its review and technical analysis of the recommendations submitted by Indiana for designations of the 1-hour SO₂ standard and any modifications from these recommendations.

Definition of important terms used in this document:

- 1) **Designated nonattainment area** – an area which EPA has determined, based on a state recommendation and/or on the technical analysis included in this document, has violated the 2010 SO₂ NAAQS, based on the most recent three years of air quality monitoring data from 2009-2011, or contributes to a violation in a nearby area.
- 2) **Recommended nonattainment area** – an area that a state or tribal government has recommended to EPA to be designated as nonattainment.
- 3) **Violating monitor** – an ambient air monitor meeting all methods, quality assurance and citing criteria and requirements whose valid design value exceeds 75 ppb, as described in Appendix T of 40 CFR part 50.
- 4) **2010 SO₂ NAAQS** - 75 ppb, national ambient air quality standard for SO₂ promulgated in 2010. Based on the 3-year average of the 99th percentile of the annual distribution of daily maximum 1-hour average concentrations
- 5) **Design Value** – a statistic computed according to the data handling procedures of the NAAQS (in 40 CFR 50 Appendix T) that, by comparison to the level of the NAAQS, indicates whether the area is violating the NAAQS.

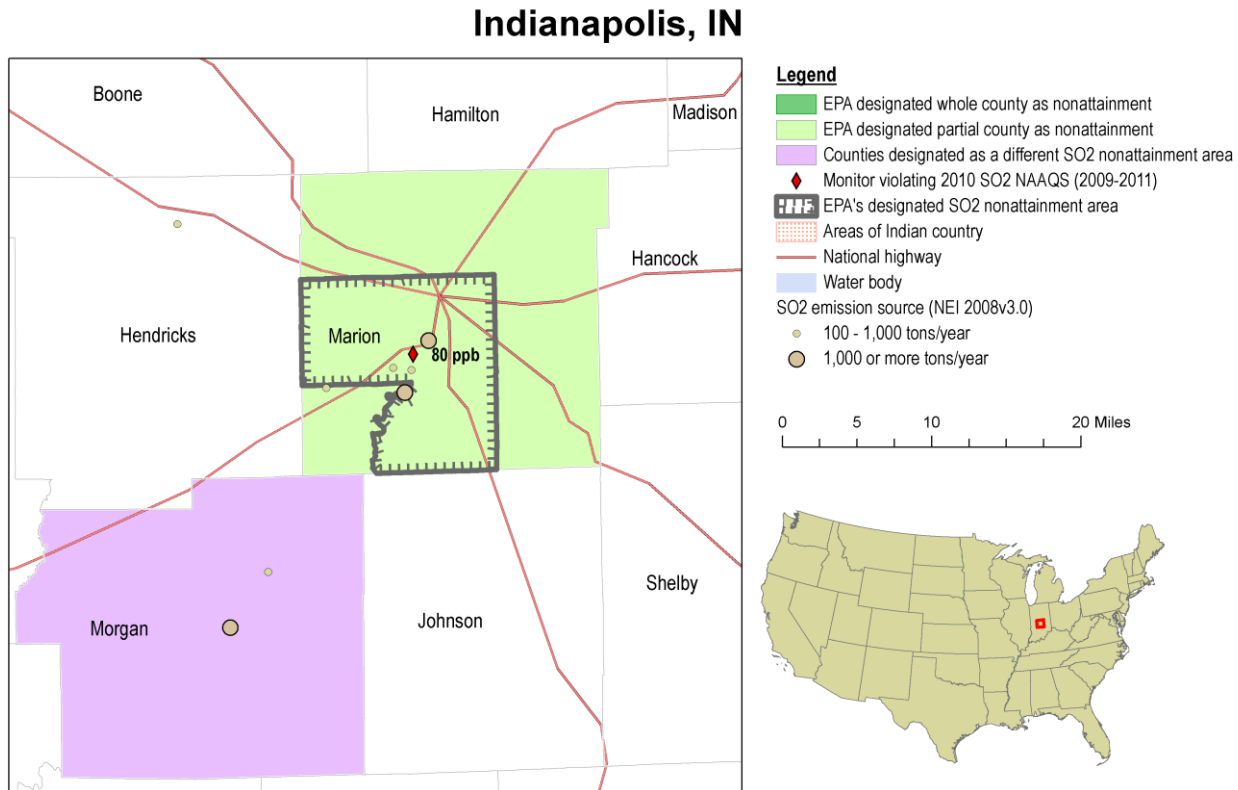
Technical analysis for the Indianapolis, IN Area

Introduction

This technical analysis for the Indianapolis, IN Area identifies Marion County with a monitor that violates the 2010 SO₂ NAAQS, and evaluates nearby counties for contributions to SO₂ concentrations in the area. EPA has evaluated this county and nearby counties based on a review of the evidence for the factors recommended in the March 24, 2011 EPA designations guidance.

Figure 1 is a map of the area showing the locations and design values of air quality monitors in the area, and the counties surrounding any violating air quality monitors.

Figure 1. Map of Indianapolis, IN area sources and monitors



For the Indianapolis, IN area, Indiana recommended that a portion of Marion County consisting of Center, Perry, and Wayne Townships be designated nonattainment.

Based on EPA's technical analysis described below, EPA agrees with the State's recommendation. Thus, EPA is initially designating the three recommended townships in Marion County in Indiana as nonattainment for the 2010 SO₂ NAAQS to define the Indianapolis nonattainment area. Areas and sources that we are not prepared to conclude are contributing to the monitored violations or to possible other violations are not included in this initial nonattainment area. Such areas and sources will be further addressed in a subsequent round of final designations.

Detailed Assessment

Air Quality Data

This factor considers the SO₂ air quality monitoring data, including the design values (in ppb) calculated for all air quality monitors in Marion County in the Indianapolis area and the surrounding area based on data for the 2009 to 2011 period.

The 2010 SO₂ NAAQS design values for Marion County, Indiana in the Indianapolis, IN area is shown in Table 2.

Table 2. Air Quality Data for Monitors in Marion County

County	State Recommended Nonattainment?	Monitor Air Quality System ID	Monitor Location	SO ₂ Design Value, 2009-2011 (ppb)
Marion	Yes	18-097-0057	39.749, -86.1836	80
Marion	No	18-097-0073	39.7895, -86.0608	56
Marion	No	18-097-0078	39.8111, -86.1145	40*

* Data are incomplete.

Monitor in Bold has the highest 2009-2011 design value in the respective county.

Center Township in Marion County shows a monitored violation of the 2010 SO₂ NAAQS. Therefore, some area in this county and possibly additional areas in surrounding counties must be designated nonattainment. The absence of a violating monitor alone is not a sufficient reason to eliminate nearby counties as candidates for nonattainment status. Each area has been evaluated based on the evidence for the five factors and other relevant information.

Emissions and Emissions-Related Data

Evidence of SO₂ emissions sources in the vicinity of a violating monitor is an important factor for determining whether a nearby area is contributing to a monitored violation. For this factor, EPA evaluated county level emission data for SO₂ and any growth in SO₂ emitting activities since the date represented by those emissions data.

Emissions

EPA recognizes that there might be no new information on any changes in emissions that may have occurred after 2008, but would consider more recent years if available. Indiana did not provide updated emissions information, therefore EPA relied on the 2008 National Emissions Inventory (NEI) emissions data (NEI08V3).

Table 3 shows total emissions of SO₂ (given in tons per year) for violating and potentially contributing counties in and around the Indianapolis area and sources emitting greater than 100 tons per year of SO₂ according to the 2008 NEI.

Table 3. SO₂ Emissions (NEI08V3)

County	Facility Located in State Recommended Nonattainment Area?	Facility – Total SO ₂ Air Emissions NEI08V3 (tons per year)	Facility Location	Total County SO ₂ Emissions (tons per year)
Marion, IN	Yes	IPL Harding Street Station-19,578	39.7119, -86.1975	26,544
	Yes	C C Perry K Steam Plant-4,493	39.7622, -86.1667	
	Yes	Rolls-Royce Corporation Plant 5 & 8- 142	39.7245, -86.2696	
	Yes	Covanta Indianapolis Inc-110	39.7337, -86.1888	
	Partial	Indianapolis Intl Airport-102	39.7066, -86.321	

The four sources that are fully in the nonattainment area recommended by the state are relatively near the violating monitor. The Indianapolis International Airport has relatively low emissions and is

located approximately 13 kilometers from the violating monitor. However, Indiana recommended boundaries for administrative convenience that include some but not all of this airport.

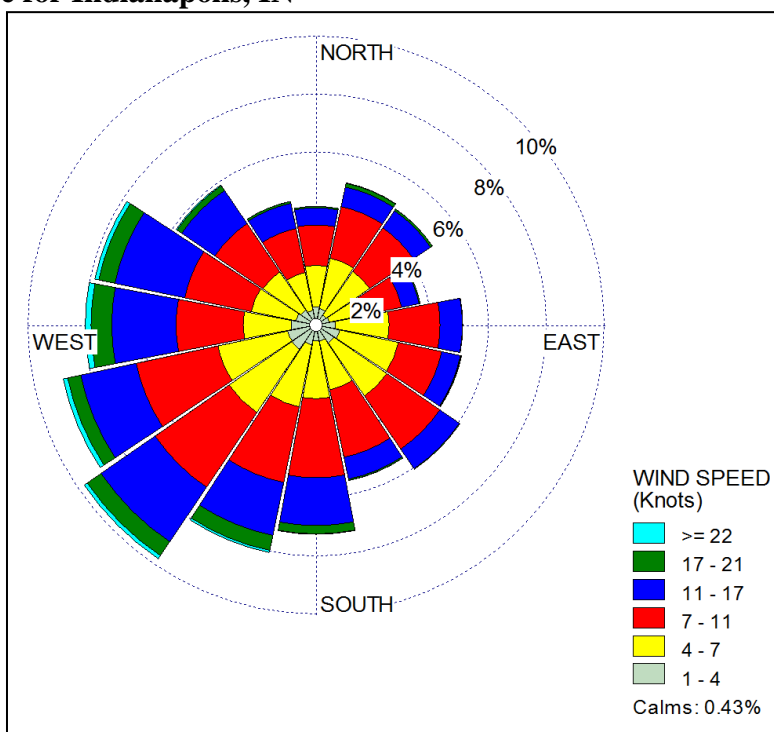
Emissions Controls

The emissions data used by EPA in this technical analysis and provided in Table 3 represent emissions levels taking into account any control strategies implemented on stationary sources in the Indianapolis area up to and including 2008. EPA has not received any additional information on emissions reductions resulting from controls put into place after 2008.

Meteorology (weather/transport patterns)

Evidence of source-receptor relationships between specific emissions sources and high SO₂ values at violating monitors is another important factor in determining the appropriate contributing areas and the appropriate extent of the nonattainment area. Figure 2 shows the prevalent wind direction for the Indianapolis area.

Figure 2: Wind Rose for Indianapolis, IN



Source: IDNR Software: WRPLOT-Lakes Environmental Software

The wind rose above shows that winds are most likely to come from the southwest but occasionally come from the northeast and other directions. This shows that a source from any direction could contribute to the violation at the monitor. The wind blows more frequently from the IPL Harding Street Station southwest of the monitor, but also blows past the C C Perry K Steam Plant to the northeast.

Geography/topography (mountain ranges or other air basin boundaries)

The Indianapolis area does not have any geographical or topographical barriers significantly limiting air-pollution transport within its airshed. Therefore, this factor did not play a significant role in determining the nonattainment boundary.

Jurisdictional boundaries

Once the geographic area associated with the area violating the SO₂ standard and the nearby areas contributing to the violations are determined, we considered existing jurisdictional boundaries for the purpose of providing a clearly defined legal boundary for carrying out the air quality planning and enforcement functions of the area. Indiana did not have any nonattainment areas under the prior SO₂ NAAQS. EPA finds that county or township boundaries in Indiana provide a suitable administrative basis for formulating nonattainment area boundaries.

Other Relevant Information

EPA did not receive additional information relevant to establishing a nonattainment area boundary for this area.

Conclusion

After considering the factors described above, EPA is initially designating, based on monitored violations, Wayne, Center, and Perry Townships in Marion County as the Indianapolis, IN nonattainment area for the 2010 SO₂ NAAQS. An air quality monitor in Center Township within Marion County shows a violation of the 2010 SO₂ NAAQS, based on 2009 to 2011 air quality data. EPA finds these three townships include the sources that contribute to this monitored violation. Based on the consideration of all the relevant and available information, as described above, EPA believes that the boundaries described herein encompass the appropriate initial nonattainment area addressing the monitored violation. EPA is not ready to conclude that the emissions from sources located outside the boundary recommended by Indiana contribute to the monitored violation or to other possible violations. In a subsequent round of designations, we will make final initial designation decisions for areas in Indiana not included in the nonattainment area designations addressed in this TSD.

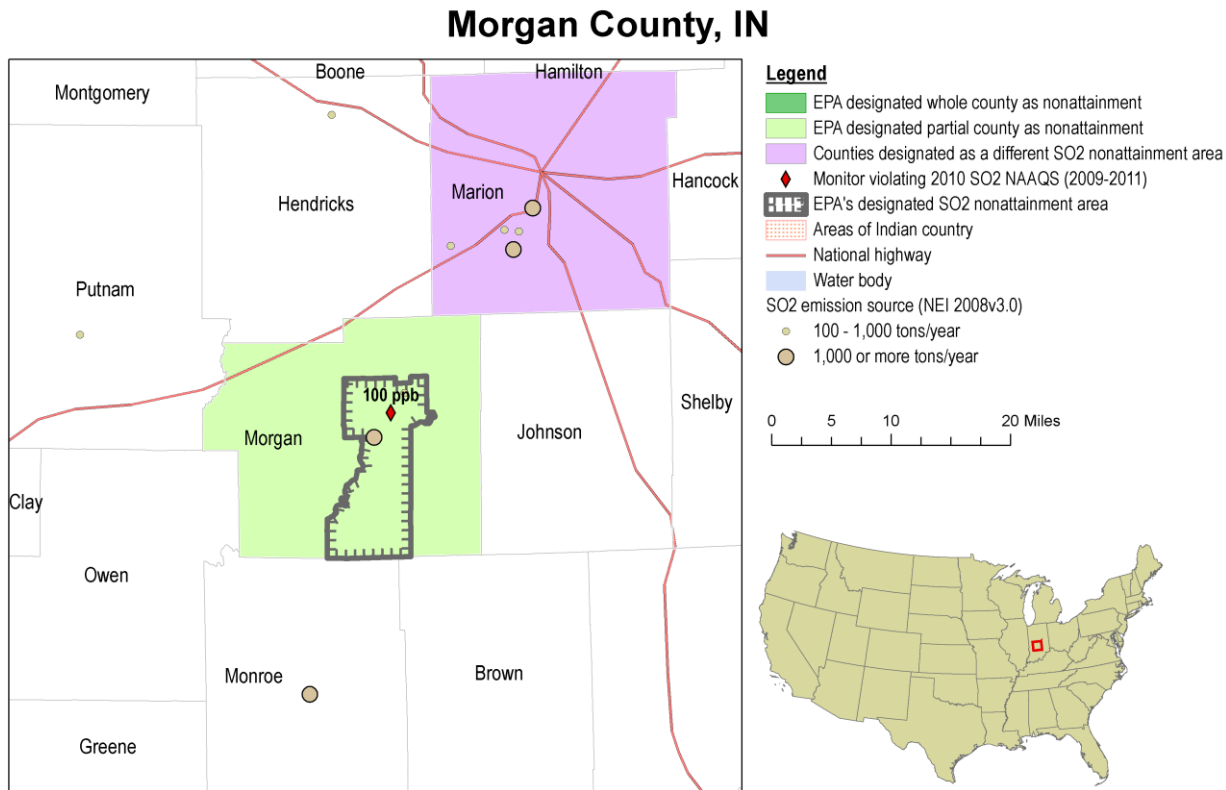
Technical analysis for Morgan County, IN

Introduction

This technical analysis for Morgan County, IN identifies Morgan County with a monitor that violates the 2010 SO₂ NAAQS, and evaluates nearby counties for contributions to SO₂ concentrations in the area. EPA has evaluated this county and nearby counties based on the evidence for the factors recommended in the March 24, 2011 EPA designations guidance.

Figure 3 is a map of the area showing the locations and design values of air quality monitors in the area, and the counties surrounding any violating air quality monitors.

Figure 3. Map of Morgan County, IN area sources and monitors



For the Morgan County, IN area, Indiana recommended that a portion of Morgan County consisting of Clay and Washington Townships be designated nonattainment.

Based on EPA's technical analysis described below, EPA agrees with the State's recommendation for the Morgan County nonattainment area, based upon currently available information. Thus, EPA is initially designating the recommended townships as nonattainment for the 2010 SO₂ NAAQS as the Morgan County, IN area. These townships are listed above in Table 1. Areas and sources that we are not prepared to conclude are contributing to the monitored violations are not included in this initial nonattainment area, and will be addressed in a subsequent round of final designations.

Detailed Assessment

Air Quality Data

This factor considers the SO₂ air quality monitoring data, including the design values (in ppb) calculated for all air quality monitors in Morgan County in the Morgan County area and the surrounding area based on data for the 2009 to 2011 period.

The 2010 SO₂ NAAQS design values for Morgan County, Indiana in the Morgan County area are shown in Table 4.

Table 4. Air Quality Data for Nonattainment Designations in Morgan County

County	State Recommended Nonattainment?	Monitor Air Quality System ID	Monitor Location	SO ₂ Design Value, 2009-2011 (ppb)
Morgan	Yes	18-109-1001	39.515, -86.3917	100

Monitors in Bold have the highest 2009 to 2011 design value in the respective county.

Clay Township in Morgan County shows a violation of the 2010 SO₂ NAAQS. Therefore, some area in this county and possibly additional areas in surrounding counties must be designated nonattainment. The absence of a violating monitor alone is not a sufficient reason to eliminate nearby counties as candidates for nonattainment status.

Emissions and Emissions-Related Data

Evidence of SO₂ emissions sources in the vicinity of a violating monitor is an important factor for determining whether a nearby area is contributing to a monitored violation. For this factor, EPA evaluated county level emission data for SO₂ and any growth in SO₂ emitting activities since the date represented by those emissions data.

Emissions

EPA recognizes that there might be no new information on any changes in emissions that may have occurred after 2008, but would consider more recent years if available. Indiana did not provide updated emissions information, therefore EPA relied on the 2008 National Emissions Inventory (NEI) emissions data (NEI08V3).

Table 5 shows total emissions of SO₂ (given in tons per year) for violating and potentially contributing counties in and around the Morgan County area and sources emitting greater than 100 tons per year of SO₂ according to the 2008 NEI.

Table 5. SO₂ Emissions (NEI08V3)

County	Facility Located in State Recommended Nonattainment Area?	Facility – Total SO ₂ Air Emissions NEI08V3 (tons per year)	Facility Location	Total County SO ₂ Emissions (tons per year)
Morgan, IN	Yes	IPALCO- Pritchard Station- 13,102	39.4867, -86.4165	13,819
	Yes	Hydraulic Press Brick Co.- 515	39.538744, -86.370648	

Emissions Controls

The emissions data used by EPA in this technical analysis and provided in Table 5 represent emissions levels taking into account any control strategies implemented on stationary sources in the Morgan County area up to and including 2008. EPA has not received any additional information on emissions reductions resulting from controls put into place after 2008.

Meteorology (weather/transport patterns)

Evidence of source-receptor relationships between specific emissions sources and high SO₂ values at violating monitors is another important factor in determining the appropriate contributing areas and the appropriate extent of the nonattainment area. Due to the proximity of the areas, the wind rose in Figure 2 for the Indianapolis Area is still an appropriate representation of the wind patterns for the Morgan County Area. Therefore, given that the wind is likely from any direction, the wind is most frequently from the southwest near the IPALCO- Pritchard Station, but is still possible from the northeast past the Hydraulic Press Brick Company.

Geography/topography (mountain ranges or other air basin boundaries)

The Morgan County area does not have any geographical or topographical barriers significantly limiting air-pollution transport within its airshed. Therefore, this factor did not play a significant role in determining the nonattainment boundary.

Jurisdictional boundaries

Once the geographic area associated with the area violating the SO₂ standard and the nearby areas contributing to the violations are determined, we considered existing jurisdictional boundaries for the purpose of providing a clearly defined legal boundary for carrying out the air quality planning and enforcement functions of the area. Indiana did not have any nonattainment areas under the prior SO₂ NAAQS standard. EPA finds that county and township boundaries are a suitable administrative basis for defining a nonattainment area.

Other Relevant Information

EPA did not receive additional information relevant to establishing a nonattainment area boundary for this area.

Conclusion

After considering the factors described above, EPA is initially designating Clay and Washington Townships within Morgan County (as listed in Table 1) to comprise the Morgan County, IN nonattainment area for the 2010 SO₂ NAAQS, based on a monitored violation in the county.

The air quality monitor in Morgan County shows a violation of the 2010 SO₂ NAAQS, based on 2009 to 2011 air quality data. EPA finds these two townships include the sources that contribute to this monitored violation. Based on the consideration of all the relevant and available information, as described above, EPA believes that the boundaries described herein encompass the appropriate initial nonattainment area for the 2010 SO₂ NAAQS. EPA is not ready to conclude that the emissions from sources located outside this boundary contribute to the monitored violation or to other possible violations. In a subsequent round of designations, we will make final initial designation decisions for areas in Indiana not included in the nonattainment area designations addressed in this TSD.

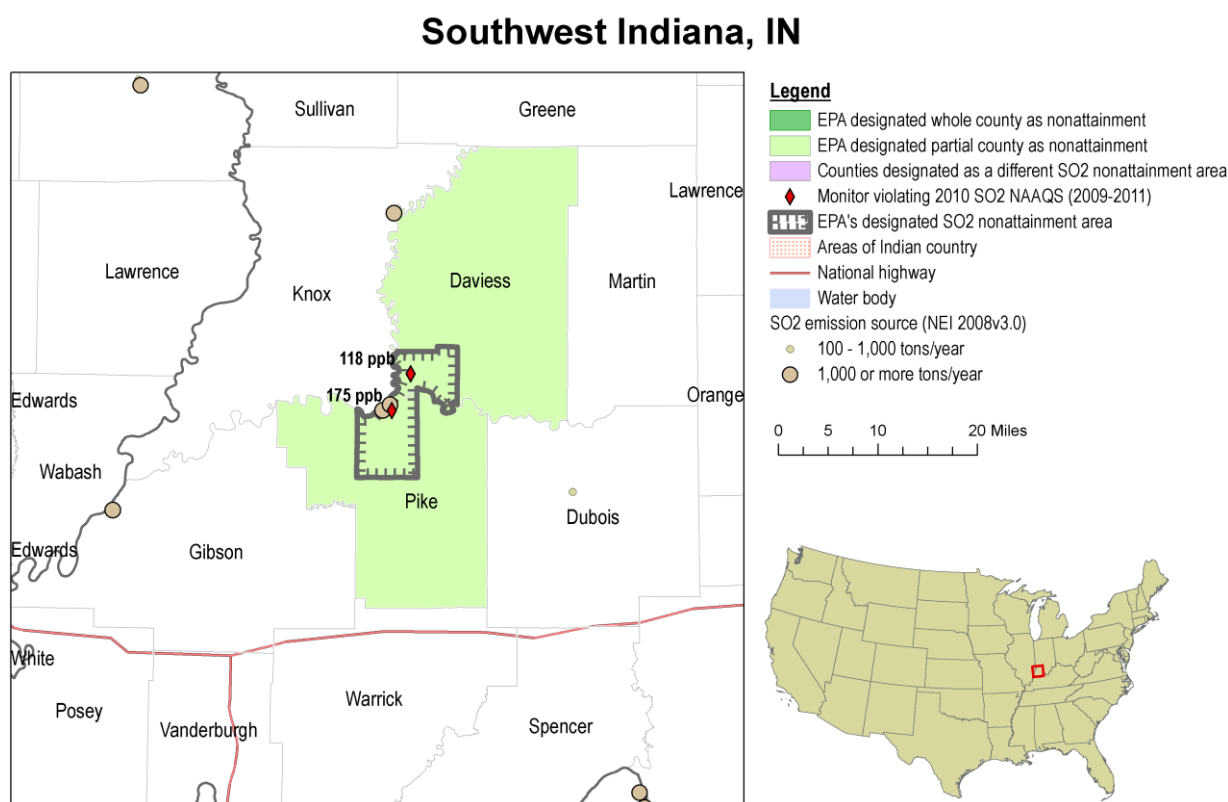
Technical analysis for Southwest Indiana, IN

Introduction

This technical analysis for Southwest Indiana, IN identifies Daviess and Pike Counties with monitors that violate the 2010 SO₂ NAAQS, and evaluates nearby counties for contributions to SO₂ concentrations in the area. EPA has evaluated this county and nearby counties based on the evidence for the factors recommended in the March 24, 2011 EPA designations guidance.

Figure 4 is a map of the area analyzed showing the locations and design values of air quality monitors in the area, and the counties surrounding any violating air quality monitors.

Figure 4. Map of Southwest Indiana area sources and monitors



For the Southwest Indiana, IN area, Indiana recommended that Veale Township within Daviess County and Washington Township within Pike County be designated nonattainment.

Based on EPA's technical analysis described below, EPA agrees with the state's recommendation for the boundaries of the Morgan County nonattainment area for the 2010 SO₂ NAAQS. Thus, EPA is initially designating the two recommended townships in Morgan County as nonattainment for the 2010 SO₂ NAAQS to define the Morgan County, IN nonattainment area. The townships included in the nonattainment area are listed above in Table 1. Areas and sources that we are not yet prepared to conclude are contributing to the monitored violations are not included in this initial nonattainment area, and will be addressed in a subsequent round of final designations.

Detailed Assessment

Air Quality Data

This factor considers the SO₂ air quality monitoring data, including the design values (in ppb) calculated for all air quality monitors in Daviess and Pike counties in the Southwest Indiana area and the surrounding area based on data for the 2009 to 2011 period.

The 2010 SO₂ NAAQS design values for Daviess and Pike Counties, Indiana in the Southwest Indiana area are shown in Table 6.

Table 6. Air Quality Data for Nonattainment Designations in Southwest Indiana

County	State Recommended Nonattainment?	Monitor Air Quality System ID	Monitor Location	SO ₂ Design Value, 2009-2011 (ppb)
Daviess	Yes	180270002	38.5728, -87.2147	118
Pike	Yes	181250005	38.5192, -87.2497	175

Monitors in Bold have the highest 2009 to 2011 design value in the respective county.

Veale Township within Daviess County and Washington Township within Pike County show monitored violations of the 2010 SO₂ NAAQS. Therefore, some area in these counties and possibly additional areas in surrounding counties must be designated nonattainment. The absence of a violating monitor alone is not a sufficient reason to eliminate nearby counties as candidates for nonattainment status.

Emissions and Emissions-Related Data

Evidence of SO₂ emissions sources in the vicinity of a violating monitor is an important factor for determining whether a nearby area is contributing to a monitored violation. For this factor, EPA evaluated county level emission data for SO₂ and any growth in SO₂ emitting activities since the date represented by those emissions data.

Emissions

EPA recognizes that there might be no new information on any changes in emissions that may have occurred after 2008, but would consider more recent years if available. Indiana did not provide updated emissions information, therefore EPA relied on the 2008 National Emissions Inventory (NEI) emissions data (NEI08V3).

Table 7 shows total emissions of SO₂ (given in tons per year) for violating and potentially contributing counties in and around the Southwest Indiana area and sources emitting greater than 100 tons per year of SO₂ according to the 2008 NEI. The counties that contain the Southwest Indiana nonattainment area for the 2010 SO₂ NAAQS are shown in **bold**. Both sources in Pike County are located in Washington Township.

Table 7. SO2 Emissions (NEI08V3)

County	Facility Located in State Recommended Nonattainment Area?	Facility – Total SO ₂ Air Emissions NEI08V3 (tons per year)	Facility Location	Total County SO ₂ Emissions (tons per year)
Pike	Yes	Hoosier Energy - Ratts Station- 27,334	38.5183, -87.2722	49,846
	Yes	IPL Petersburg Generating Station - 22,494	38.5267, -87.2525	
Daviess		None		142

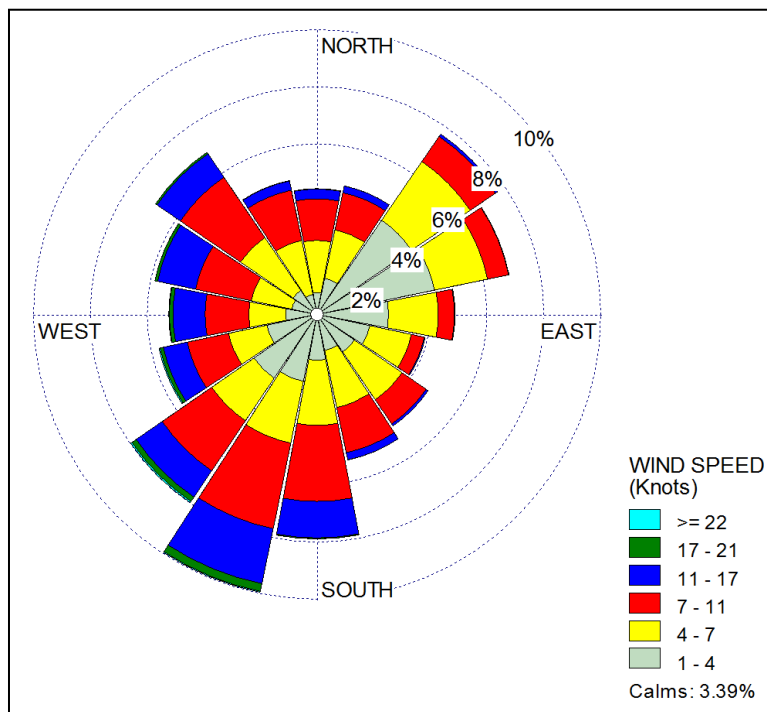
Emissions Controls

The emissions data used by EPA in this technical analysis and provided in Table 7 represent emissions levels taking into account any control strategies implemented on stationary sources in the Southwest Indiana area up to and including 2008. EPA has not received any additional information on emissions reductions resulting from controls put into place after 2008.

Meteorology (weather/transport patterns)

Evidence of source-receptor relationships between specific emissions sources and high SO₂ values at violating monitors is another important factor in determining the appropriate contributing areas and the appropriate extent of the nonattainment area. Below, in Figure 5, is a wind rose depicting the wind patterns for Southwest Indiana. The wind data is based out of Evansville, Indiana, which is not in the nonattainment area, but has close enough proximity to show representative data for the southwest Indiana Area.

Figure 5: Wind Rose for Southwest Indiana



Source: IDNR Software: WRPLOT-Lakes Environmental Software

Figure 5 shows that winds are most prevalent from the south to southwest, northwest, and northeast. However, wind appears likely from any direction. Therefore, both sources are likely to contribute to both violating monitors despite varied proximity.

Geography/topography (mountain ranges or other air basin boundaries)

The Southwest Indiana area does not have any geographical or topographical barriers significantly limiting air-pollution transport within its airshed. Therefore, this factor did not play a significant role in determining the nonattainment boundary.

Jurisdictional boundaries

Once the geographic area associated with the area violating the SO₂ standard and the nearby areas contributing to the violations are determined, we considered existing jurisdictional boundaries for the purpose of providing a clearly defined legal boundary for carrying out the air quality planning and enforcement functions of the area. Indiana did not have any nonattainment areas under the prior SO₂ NAAQS. EPA finds that township and county boundaries provide a suitable administrative basis for defining a nonattainment area.

Other Relevant Information

EPA did not receive additional information relevant to establishing a nonattainment area boundary for this area.

Conclusion

After considering the factors described above, EPA is initially designating Veale Township within Daviess County and Washington Township within Pike County as the Southwest Indiana, IN nonattainment area for the 2010 SO₂ NAAQS.

The air quality monitors in Veale Township within Daviess County and Washington Township within Pike County show violations of the 2010 SO₂ NAAQS, based on 2009 to 2011 air quality data. EPA finds Washington Township in Pike County include the sources that contribute to this monitored violation. Based on the consideration of all the relevant and available information, as described above, EPA is initially designating these two townships nonattainment for the 2010 SO₂ NAAQS. EPA is not ready to conclude that the emissions from sources located outside the boundary recommended by Indiana contribute to the monitored violation or to other possible violations. In a subsequent round of designations, we will make final initial designation decisions for areas in Indiana not included in the nonattainment area designations addressed in this TSD.

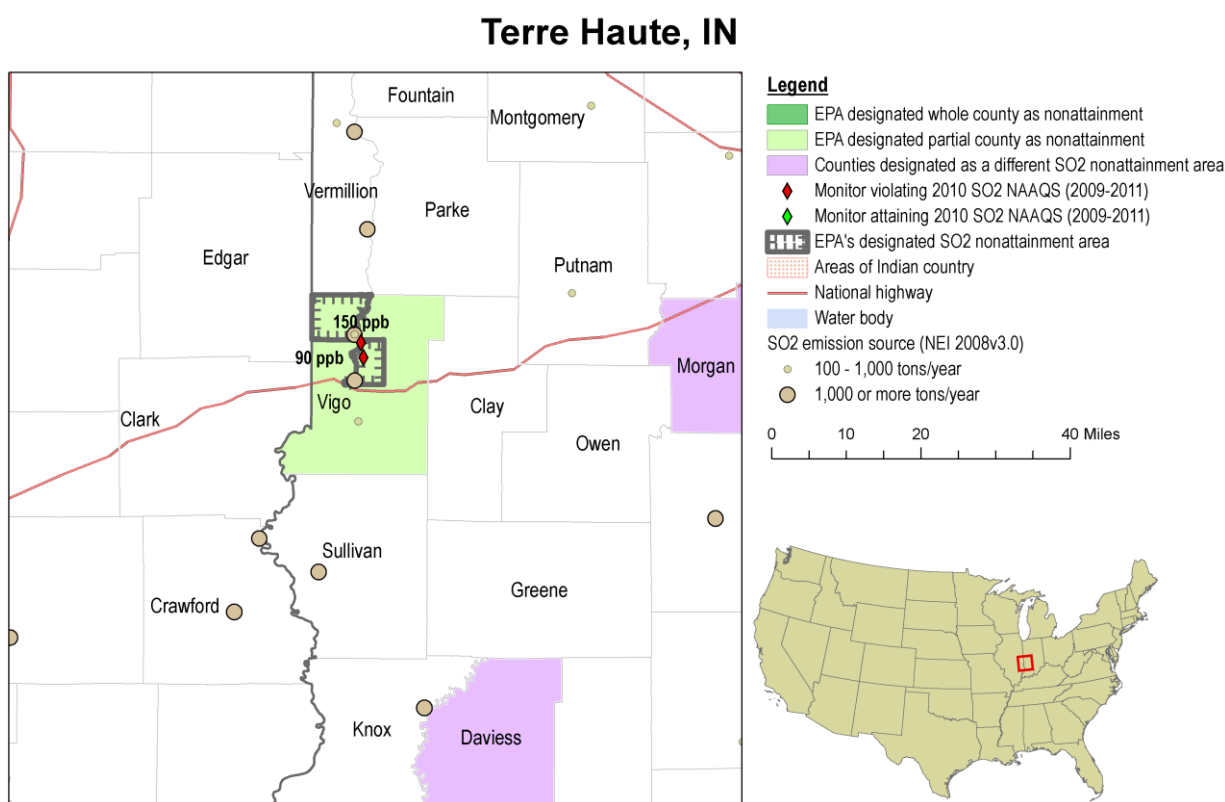
Technical analysis for Terre Haute, IN

Introduction

This technical analysis for Terre Haute, IN identifies Vigo County with monitors that violate the 2010 SO₂ NAAQS and evaluates nearby counties for contributions to SO₂ concentrations in the area. EPA has evaluated this county and nearby counties based on the evidence for the factors recommended in the March 24, 2011 EPA designations guidance.

Figure 6 is a map of the area showing the locations and design values of air quality monitors in the area, and the counties surrounding any violating air quality monitors.

Figure 6. Map of Terre Haute, IN area sources and monitors



For the Terre Haute, IN area, Indiana initially recommended that a portion of Vigo County consisting of Harrison Township be designated nonattainment. In EPA's February 6, 2013 letter, EPA stated the intention to designate Fayette and Otter Creek Townships in addition to Harrison Township. Indiana responded in a March 11, 2013 letter stating that Indiana agrees with the inclusion of Fayette Township to encompass the PSI Energy's Wabash River plant, but does not agree with the inclusion of Otter Creek Township for continuity purposes because there are no sources and low population. EPA agrees with the assessment of Otter Creek Township and is not including that township in the area initially being designated nonattainment.

Based on EPA's technical analysis described below, EPA is initially designating Harrison and Fayette townships in Vigo County in Indiana as nonattainment for the 2010 SO₂ NAAQS as the Terre Haute nonattainment area, based upon currently available information. These townships are listed above in

Table 1. Areas and sources that we are not prepared to conclude are contributing to the monitored violations are not included in this initial nonattainment area, and will be addressed in a subsequent round of final designations.

Detailed Assessment

Air Quality Data

This factor considers the SO₂ air quality monitoring data, including the design values (in ppb) calculated for all air quality monitors in Vigo County in the Terre Haute, IN Area and the surrounding area based on data for the 2009 to 2011 period.

The 2010 SO₂ NAAQS design values for county in the Terre Haute area is shown in Table 8.

Table 8. Air Quality Data for Nonattainment Designations in Vigo County, Indiana

County	State Recommended Nonattainment?	Monitor Air Quality System ID	Monitor Location	SO ₂ Design Value, 2009-2011 (ppb)
Vigo, IN	Yes	181671014	39.5147, -87.4078	150
	Yes	181670018	39.4861, -87.4014	90

Monitor in Bold has the highest 2009-2011 design value in the county.

Fayette Township in Vigo County shows monitored violations of the 2010 SO₂ NAAQS. Therefore, some area in this county and possibly additional areas in surrounding counties must be designated nonattainment. The absence of a violating monitor alone is not a sufficient reason to eliminate nearby counties as candidates for nonattainment status.

Emissions and Emissions-Related Data

Evidence of SO₂ emissions sources in the vicinity of a violating monitor is an important factor for determining whether a nearby area is contributing to a monitored violation. For this factor, EPA evaluated county level emission data for SO₂ and any growth in SO₂ emitting activities since the date represented by those emissions data.

Emissions

EPA recognizes that there might be no new information on any changes in emissions that may have occurred after 2008, but would consider more recent years if available. Indiana did not provide updated emissions information, therefore EPA relied on the 2008 National Emissions Inventory (NEI) emissions data (NEI08V3).

Table 9 shows total emissions of SO₂ (given in tons per year) for the violating and contributing county in and around the Terre Haute Area and sources emitting greater than 100 tons per year of SO₂ according to the 2008 NEI. The county that contains all of the Terre Haute nonattainment area for the 2010 SO₂ NAAQS is shown in **bold**.

Table 9. SO2 Emissions NEI08V3

County	Facility Located in State Recommended NA Area?	Facility – Total SO ₂ Air Emissions NEI08V3 (tons per year)	Facility Location	Total County SO ₂ Emissions (tons per year)
Vigo, IN	Yes	PSI Energy - Wabash River- 75,823	39.53, -87.4247	78,287
	Yes	International Paper Co- 1,215	39.4408, -87.42295	
	Yes	Wabash River Combined Cycle Plant- 414	39.530785, -87.424787	
	No	Danisco Sweeteners- 370	39.361448, -87.413742	

The most significant source in the area, the PSI Energy – Wabash River facility, is located in Fayette Township, just northwest of Harrison Township. Considering the meteorology of the area, discussed below, this facility clearly contributes to the violation in Vigo County and must be included in the nonattainment area.

Emissions Controls

The emissions data used by EPA in this technical analysis and provided in Table 9 represent emissions levels taking into account any control strategies implemented on stationary sources in the Terre Haute area up to and including 2008. EPA has not received any additional information on emissions reductions resulting from controls put into place after 2008.

Meteorology (weather/transport patterns)

Evidence of source-receptor relationships between specific emissions sources and high SO₂ values at violating monitors is another important factor in determining the appropriate contributing areas and the appropriate extent of the nonattainment area. Due to the proximity of the areas, the wind rose in Figure 2 for the Indianapolis Area is also an appropriate representation of the wind patterns for the Terre Haute, IN Area. Therefore, given that the wind is likely from any direction, the wind is most frequently from the southwest near the International Paper Co, but is still possible from the northwest past the larger emitter, PSI Energy - Wabash River.

Geography/topography (mountain ranges or other air basin boundaries)

The Terre Haute Area does not have any geographical or topographical barriers significantly limiting air-pollution transport within its airshed. Therefore, this factor did not play a significant role in determining the nonattainment boundary.

Jurisdictional boundaries

Once the geographic area associated with the area violating the SO₂ standard and the nearby areas contributing to the violations are determined, we considered existing jurisdictional boundaries for the purpose of providing a clearly defined legal boundary for carrying out the air quality planning and enforcement functions of the area. Indiana did not have any nonattainment areas under the prior SO₂ NAAQS. EPA finds that township and county boundaries provide a suitable administrative basis for defining a nonattainment area.

Conclusion

After considering the factors described above, EPA is initially designating Harrison and Fayette Townships within Vigo County as the Terre Haute, IN nonattainment area for the 2010 SO₂ NAAQS. The air quality monitors in Harrison Township within Vigo County show violations of the 2010 SO₂ NAAQS, based on 2009 to 2011 air quality data. EPA finds these two townships include the sources that contribute to this monitored violation. Based on the consideration of all the relevant and available information, as described above, EPA believes that the boundaries described herein encompass the appropriate initial nonattainment area for the 2010 SO₂ NAAQS. EPA is not ready to conclude that the emissions from sources located outside the boundary recommended by Indiana contribute to the monitored violation or to other possible violations. In a subsequent round of designations, we will make final initial designation decisions for areas in Indiana not included in the nonattainment area designations addressed in this TSD.