



## Indiana Department of Environmental Management

*We Protect Hoosiers and Our Environment.*

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Michael R. Pence  
Governor

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Commissioner

September 26, 2016

Mr. Robert A. Kaplan  
Acting Regional Administrator  
U.S. Environmental Protection Agency  
Region 5  
77 West Jackson Boulevard  
Chicago, IL 60604-3950

Re: Update to Indiana's Round 3 and 4  
Designations for the 2010 Primary 1-Hour  
Sulfur Dioxide National Ambient Air Quality  
Standard and Air Quality Characterization  
Under the Data Requirements Rule

Dear Mr. Kaplan:

This letter serves as an update to Indiana's submittal on June 30, 2016 to address United States Environmental Protection Agency's (U.S. EPA's) *Data Requirements Rule (DRR) for the 2010 1-hour Sulfur Dioxide (SO<sub>2</sub>) Primary National Ambient Air Quality Standard (NAAQS)*, which was published in the *Federal Register* on August 21, 2015 (80 FR 51052). States were to inform U.S. EPA by July 1, 2016 which of the three approaches were selected for characterizing air quality around the sources that are subject to the DRR: 1) conduct new modeling to characterize the ambient air quality in the area of the source; 2) conduct ambient monitoring to characterize ambient air quality in the area of the source; or 3) provide federally enforceable and permanent emission limits of less than 2,000 tons per year (tpy) or documentation of a permanent shut down for the source.

In Indiana's June 30<sup>th</sup> submittal to U.S. EPA, SABIC had determined the best approach to characterize air quality surrounding its Mount Vernon facility was to conduct dispersion modeling. However, several recent source modifications will reduce SO<sub>2</sub> emissions significantly by the end of 2016. SABIC has decided to take federally enforceable and permanent emission limits. This option will lessen the reporting requirements that a modeling approach will require in the future for SABIC to demonstrate continued compliance with the 1-hour SO<sub>2</sub> NAAQS.

Table 1 provides the list of Indiana sources identified as being subject to the DRR and the revised approach for characterizing air quality in the vicinity of SABIC. All other listed DRR source characterization approaches will remain the same.

**Table 1: Indiana SO<sub>2</sub> Sources Subject to the Data Requirements Rule**

<b>Facility</b>	<b>County</b>	<b>2014 SO<sub>2</sub> Emissions (Tons)</b>	<b>Selected Approach</b>
Duke – Gallagher	Floyd	3,524	Modeling
Duke – Gibson	Gibson	22,055	Consent decree source <sup>a</sup>
Isolatek (U.S. Minerals)	Huntington	< 2,000 <sup>b</sup>	Modeling
NIPSCO – R.M. Schahfer	Jasper	8,412	Modeling
Indiana-Kentucky Electric Corporation, Clifty Creek	Jefferson	3,731	Consent decree source <sup>a</sup>
ArcelorMittal – Indiana Harbor	Lake	2,163	Modeling
Coke Energy	Lake	4,952	Modeling
U.S. Steel – Gary Works	Lake	3,285	Modeling
NIPSCO – Michigan City	LaPorte	15,991	Consent decree source <sup>a</sup>
ArcelorMittal – Burns Harbor	Porter	12,189	Monitoring
SABIC Innovative Plastics	Posey	4,030	<b>Federally Enforceable Emission Limit</b>
Vectren – A.B. Brown	Posey	8,080	Consent decree source <sup>a</sup>
AEP – Rockport	Spencer	54,979	Consent decree source <sup>a</sup>
Hoosier Energy – Merom	Sullivan	3,318	Modeling
Duke – Cayuga	Vermillion	3,448	Modeling
Alcoa – Warrick Power Plant	Warrick	4,993	Modeling
Alcoa – Warrick Operations	Warrick	3,500	Modeling

<sup>a</sup> IDEM has completed a characterization for this source under Round 2 designation requirements. Designations by U.S. EPA were effective September 12, 2016 (81 FR 45039).

<sup>b</sup> Added by U.S. EPA.

Appendix A addresses the emission limitations SABIC may pursue to address the DRR as well as details of the dispersion modeling demonstration to support the emission limitation approach. SABIC intends to submit a request for a Commissioner's Order to establish federally enforceable and permanent emission limitations. U.S. EPA has indicated that a source may limit their annual emissions and show compliance through a 12-month rolling average, based on monthly or 30 day rolling averages. SABIC's emission limits and actual SO<sub>2</sub> emissions from any surrounding SO<sub>2</sub> emission sources will be modeled in order to demonstrate attainment of the 1-hour SO<sub>2</sub> NAAQS.

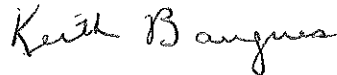
IDEM will review and finalize the Commissioner's Order and begin the public comment process to revise the Indiana State Implementation Plan (SIP). Once completed, IDEM may make a request for parallel processing from U.S. EPA for approval of the Commissioner's Order as a revision to Indiana's SIP to incorporate the federally enforceable and permanent emission limitations for SABIC by the effective date of January 13, 2016.

This submittal consists of one (1) hard copy of the required documentation. An electronic version of the submittal in PDF format that is identical to the hard copy has been sent to Doug Aburano, Chief of U.S. EPA Region 5's Attainment Planning and Maintenance Section and Chris Panos of U.S. EPA Region 5.

Mr. Robert Kaplan  
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Thank you for this opportunity to submit Indiana's revised air quality characterization and modeling protocol concerning SABIC for Round 3 and 4 air quality designations for the 2010 primary 1-hour SO<sub>2</sub> NAAQS. If you have any questions or need additional information, please contact Mark Derf, Chief, Technical Support and Modeling Section, Office of Air Quality, at (317) 233-8256 or [mderf@idem.IN.gov](mailto:mderf@idem.IN.gov).

Sincerely,



Keith Baugues  
Assistant Commissioner  
Office of Air Quality

KB/sd/mad  
Appendix

cc: Chris Panos, U.S. EPA Region 5 (no enclosures)  
John Summerhays, U.S. EPA Region 5 (no enclosures)  
Doug Aburano, U.S. EPA Region 5 (no enclosures)  
Keith Baugues, IDEM-OAQ (no enclosures)  
Scott Deloney, IDEM-OAQ (no enclosures)  
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Gale Ferris, IDEM-OAQ (no enclosures)  
Amy Smith, IDEM-OAQ (w/ enclosures)  
File Copy

# Appendix A

## SABIC Innovative Plastics (18-129-00002)

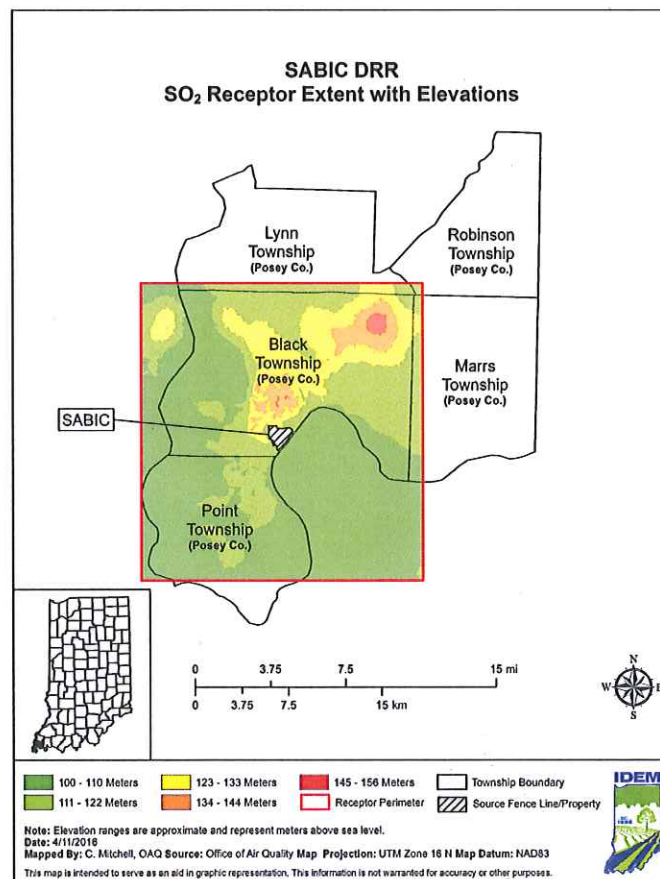
### Source Description of DRR Source

SABIC Innovative Plastics (SABIC) is a plastics manufacturing facility. SABIC makes plastics for industries such as automotive, consumer electronics and medical devices. SABIC is currently in the process of constructing a cogeneration (CoGen) plant that will use natural gas instead of coal to generate the majority of the steam for their operation. This CoGen project is anticipated to be completed by the end of 2016.

### Characterization of Modeled Area

SABIC is located at 1 Lexan Lane, Mt. Vernon, Indiana, less than a mile from the Ohio River in Black Township, Posey County, Indiana. A map of the area and the receptor grid used for DRR modeling is shown below in Figure 1.

**Figure 1 - Map of SABIC Innovative Plastics and Surrounding Area**



### Emission Limitations Approach

SABIC has initiated several source modifications over that past few years that will reduce their overall SO<sub>2</sub> emissions by the end of 2016. Most notably, SABIC received a Prevention of Significant Deterioration (PSD) source modification (129-33998-00002) to construct and operate a CoGen project that converts several of their coal-fired boilers to natural gas. Although the corresponding emission reductions were large, SABIC's plant-wide actual SO<sub>2</sub> emissions would still be above 2,000 tons. Therefore, to bring their plant-wide SO<sub>2</sub> emissions below the DRR threshold, SABIC will request federally enforceable and permanent emission limits in accordance with 40 CFR Part 51, Subpart BB §51.1203(e).

As a result of the CoGen project, a number of SO<sub>2</sub> emission units will shut down including several coal-fired boilers. The unit emitting significant SO<sub>2</sub> emissions will be the COS Vent Oxidizer. Emission limits established will be based on sulfur input, based on coke usage, and percent weight of sulfur of the coke. Ancillary sources, such as liquid waste boilers, will also be included in the inventory. Most of the other ancillary sources will have small SO<sub>2</sub> emissions but will also be limited and included in the modeling. Their emission limits will be based on fuel usage, emissions calculations taken from U.S. EPA's AP-42 emission factors and total sulfur content limits for fuels.

Emission limits will be established based on a 24-hour rolling average. Existing compliance methods are anticipated to be adequate to demonstrate compliance with this plant-wide emission limit. IDEM will review SABIC's Commissioner's Order request and issue an order to address the limits in order to present a revision to Indiana's SIP for U.S. EPA to review and incorporate into the SIP by the effective date of January 13, 2017 established by the DRR §51.1203(b).

### **Supplemental Modeling Support for the Emission Limitation Option**

SO<sub>2</sub> sources from the surrounding area were evaluated to determine if their SO<sub>2</sub> emissions impact the air quality surrounding the DRR source, beyond what is captured through background monitoring data. The latest available actual emissions will be input for CountryMark and Midwest Fertilizer. Table 1 lists the sources to be included to determine overall air quality characteristics based on SABIC's emissions limits.

**Table 1 - 1-Hour SO<sub>2</sub> Source Inventories for SABIC DRR Modeling**

Source	Source ID	Location	2015 SO <sub>2</sub> Emissions (tpy)
CountryMark	129-00037	Posey County	66
Midwest Fertilizer	129-00059	Posey County	7

In addition, A.B. Brown established emission limits in conjunction with the Air Quality Designations for the 2010 Sulfur Dioxide (SO<sub>2</sub>) Primary NAAQS—Round 2, effective September 12, 2016. The emissions limitations finalized in their Commissioner Order (2016-01) were modeled at 2,152.2 pounds per hour, equating to 9,427 tons of SO<sub>2</sub> per year. These limits will be included in the air quality characterization for SABIC as well.

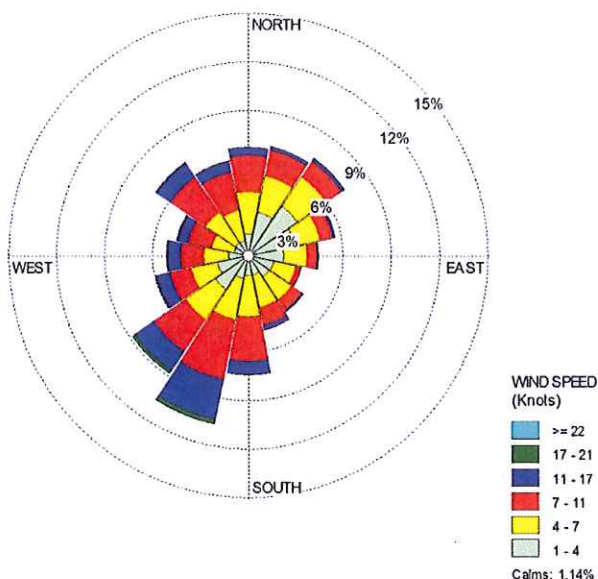
### Model Options

All regulatory default options within AERMOD will be used to determine the air quality characteristics surrounding SABIC. The Auer Land-Use Classification Scheme was used to determine land-use in the area. The area is considered primarily rural; therefore, a rural classification was used, as provided for in the Guideline on Air Quality Models, Section 7.2.3 (EPA, 2005b). No variation of the population selection will be necessary.

### Meteorology/Wind Roses

Evansville, Indiana surface meteorological data and Lincoln, Illinois upper air meteorological data for the years 2013 through 2015 will be used to determine the air quality characteristics in the area surrounding SABIC. Figure 2 shows the cumulative wind rose for 2013-2015 for the Evansville/Southwest Indiana area.

**Figure 2 - Evansville 3-year Cumulative Wind Rose (2013 – 2015)**



### Temporally Varying Seasonal 1-Hour SO<sub>2</sub> Background

Temporally varying seasonal 1-hour SO<sub>2</sub> background concentrations will be taken from the Evansville – Buena Vista Road monitor and input directly into the AERMOD model run for SABIC. The hourly seasonal 1-hour SO<sub>2</sub> values used for representative background concentrations for the area surrounding SABIC are listed below in Table 2.

**Table 2 - 99<sup>th</sup> Percentiles for Temporally Varying Seasonal SO<sub>2</sub> Background  
Values (ppb) from the Evansville – Buena Vista Road SO<sub>2</sub> Monitor for (2013-2015)**

	<b>Hr 1</b>	<b>Hr 2</b>	<b>Hr 3</b>	<b>Hr 4</b>	<b>Hr 5</b>	<b>Hr 6</b>	<b>Hr 7</b>	<b>Hr 8</b>
Winter	6.3	4.83	4.63	4.36	5.77	4.84	4.7	7.39
Spring	5.12	3.89	4.09	3.98	3.4	4.2	6.83	7.59
Summer	2.7	2.48	1	1	1.96	2.65	2.8	5.55
Fall	4.44	4.52	4.5	4.5	4.8	4.6	4.97	5.7

	<b>Hr 9</b>	<b>Hr 10</b>	<b>Hr 11</b>	<b>Hr 12</b>	<b>Hr 13</b>	<b>Hr 14</b>	<b>Hr 15</b>	<b>Hr 16</b>
Winter	9.29	10.42	9.2	10.67	11.55	17.57	8.71	16.01
Spring	9.99	9.84	11.89	11.65	7.94	9.89	8.39	8.55
Summer	9.93	11.05	8.5	9.02	7.34	5.65	5.49	5.16
Fall	7.55	10.68	11.37	11.21	10.39	12.92	9.11	7.56

	<b>Hr 17</b>	<b>Hr 18</b>	<b>Hr 19</b>	<b>Hr 20</b>	<b>Hr 21</b>	<b>Hr 22</b>	<b>Hr 23</b>	<b>Hr 24</b>
Winter	9.94	16.85	8.28	6.67	5.74	6.58	6.79	7.98
Spring	11.04	12.53	9.99	8.4	5.81	3.92	7.04	6.65
Summer	4.11	6.99	5.88	4.05	3.36	2.45	3.58	2.19
Fall	8.2	6.95	5.23	8.6	5.7	4.68	4.46	4.4