UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
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APR 12 2016

REPLY TO THE ATTENTION OF

Gail E. Good
Director, Air Management Program
Wisconsin Department of Natural Resources
101 S. Webster St.
Box 7921
Madison, Wisconsin 53707-7921

Dear Ms. Good:

On behalf of the U.S. Environmental Protection Agency, I would like to thank you for your January 15, 2016 submittal identifying sources to be characterized under the sulfur dioxide (SO_2) Data Requirements Rule (DRR).[1] I am writing to respond to your submittal, to include one additional source to be characterized under this rule, and to provide additional information about the next steps in this source characterization effort, which will result in important data that states and EPA will use to protect public health.

EPA is adding the following source to your state's list of applicable sources under the DRR:

Source	County	Estimated Average Emissions
USG Interiors	Walworth	736 tons/year (tpy)

Although this source emits less than 2,000 tpy, we have sufficient concerns about air quality in the vicinity of this source to warrant listing this source as subject to the air quality characterization requirements of the DRR. Further information on this source is provided in the attachment to this letter. EPA acknowledges that the state does not concur with this action.

Once sources are listed, the DRR requires state air agencies to characterize ambient SO_2 levels in the areas near the sources. The DRR provides that this air quality characterization may be accomplished either by modeling or by monitoring air quality around the listed sources. Alternatively, for a source listed because it emitted more than 2,000 tpy, an air agency may avoid this requirement by adopting federally enforceable emission limits by January 13, 2017 that ensure that the source will emit less than 2,000 tpy of SO_2.

The next key milestone for purposes of DRR implementation is July 1, 2016, the date by which each air agency must identify, for each listed source, the approach it will use to address air quality in the respective area (air quality characterization through air quality modeling or ambient monitoring, or establishment of a federally enforceable emission limit).

[1] "Data Requirements Rule for the 2010 1-Hour Sulfur Dioxide (SO_2) Primary National Ambient Air Quality Standard (NAAQS); Final Rule," 80 *Federal Register* 51052, August 21, 2015.

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For sources that an air agency decides to evaluate through air quality modeling, the DRR requires the air agency to submit a modeling protocol to the EPA Regional Administrator by July 1, 2016, and the completed modeling analysis by January 13, 2017. For sources that an air agency decides to evaluate through ambient monitoring, the air agency will need to identify appropriate sites to characterize peak 1-hour SO_2 concentrations, and may need to relocate existing monitors or install new monitors at such sites. As further required under the DRR, the air agency must submit information about monitoring sites to the EPA Regional Administrator by July 1, 2016, as part of its annual monitoring network plan and in accordance with EPA's monitoring requirements specified in 40 CFR part 58. The air agency must also ensure that ambient monitors will be operational by January 1, 2017.

As noted earlier, in lieu of characterizing air quality around a source with SO_2 emissions that are at or above 2,000 tpy, air agencies may indicate by the July 1, 2016, deadline that they will adopt federally enforceable emissions limitations that will limit the SO_2 emissions of a source to a suitable level below 2,000 tpy. Such limits must be adopted and effective by January 13, 2017. The DRR requires that an air agency provide a description of the requirements and emission limits that the air agency intends to apply for the affected sources in their July 1, 2016, submittal.

We look forward to a continued dialogue with you and your staff as you prepare the required submittals that are due on July 1, 2016. To assist in this process, we are available to discuss any technical issues that you may have concerning either modeling or monitoring in order to assist you in meeting this requirement.

Please note that a copy of each state air agency's submittal and a compiled national list of sources subject to DRR requirements are posted on EPA's SO_2 implementation website at *www3.epa.gov/airquality/sulfurdioxide/implement.html*. We also plan to post this letter on that site and to update the compiled national list with the source added by this letter as described above in the near future.

Again, thank you for your letter and for your efforts to implement this important standard. For additional information concerning the DRR, please visit our SO_2 implementation website listed above. For additional information regarding designations under the SO_2 standard, please visit our website at *www.epa.gov/so2designations*. Should you have any questions, please do not hesitate to call me or contact George Czerniak, Air and Radiation Division Director, at 312-353-2212 or czerniak.george@epa.gov.

Sincerely,

Robert A. Kaplan

Robert A. Kaplan
Acting Regional Administrator

Attachment

Rationale for Listing USG Interiors (Walworth, Wisconsin Facility) As Subject to Sulfur Dioxide (SO_2) Data Requirements Rule (DRR)

As required by the DRR, on January 15, 2016, Wisconsin submitted a list of sources to be subject to provisions of the DRR for air quality characterization or otherwise addressing nearby air quality. All of the sources listed by Wisconsin were listed because their recent emissions exceeded 2,000 tons per year (tpy).

The DRR provides that, in addition to sources emitting over 2,000 tpy, sources emitting less than 2,000 that nevertheless have high potential for causing violations of the SO_2 air quality standard may also be listed at the discretion of the state and EPA. EPA is concerned about the potential for violations in the vicinity of the USG Interiors facility in Walworth, Wisconsin, a mineral wool manufacturer. Available information suggests that air quality near this facility is not meeting the SO_2 air quality standard. The following sections describe preliminary evidence regarding SO_2 concentrations near the facility, the evidence regarding recent emissions at USG Interiors, relevant information regarding emission limits applicable to the facility, and the reasons that EPA believes that USG Interiors warrants listing as subject to the DRR.

Modeling Evidence

Preliminary modeling conducted by EPA estimated concentrations exceeding the 1-hour SO_2 standard. Discussion of the emission estimates used in this analysis is provided below. This modeling was conducted using meteorological data, stack characteristics and other model inputs used by Wisconsin in its modeling of this source for Title V permitting purposes, and was conducted in 2015, approximately a year after EPA's review of the draft Title V permit. With 2014 SO_2 emissions from the cupola estimated to have been 595 tons, and with an additional 14 tons estimated to have been emitted from other operations at the facility, a design concentration, not including background, was estimated to be 262 $\mu g/m^3$, or 100 ppb. Historical average production rates would be estimated to result in cupola emissions of 736 tons per year and a design value of 319 $\mu g/m^3$, or 122 ppb. Even the state's 2014 emission estimate of cupola SO_2 emissions of 406 tons per year leads to a modeled concentration estimate (without background) just under the standard, at 184 $\mu g/m^3$, or 70 ppb, suggesting that concentrations including background would exceed the standard. These results are consistent with information that EPA obtained that the stack at USG Interiors is relatively short, having a height of 21 meters, or 69 feet. As a result, preliminary review of this facility indicates the likelihood of concentrations in Walworth and nearby exceeding the air quality standard.

Wisconsin has indicated that modeling of this facility shows that the 1971 SO_2 standards, including the 24-hour standard, are being met near this facility. Evidence available to EPA also indicates that the area is attaining those standards. However, EPA's preliminary modeling, using

modeling files from Wisconsin created to assess air quality with respect to the 1971 standards, indicates that the area is not meeting the 2010 (1-hour) SO_2 standard, suggesting the need for further air quality characterization pursuant to the data requirements rule.

Emissions from USG Interiors

A critical challenge in assessing emissions from USG Interiors is addressing the emissions arising from sulfur contained in the raw material that the company processes. Wisconsin and EPA agree that the AP-42 emission factor for SO_2 emissions from the cupola in mineral wool production understates emissions from this operation at USG Interiors.

EPA has obtained more plant-specific emissions information from the company, in responses to requests dated April 8, 2009 and October 13, 2009 pursuant to Clean Air Act section 114. This information suggests a relatively stable relationship at this plant between the quantity of sulfur in the fuel that the plant uses and the quantity of sulfur contained in the raw material that the plant processes. Using a mass balance approach that accounts for the sulfur in the combusted coke, the sulfur in the processed slag and other raw materials, and the small amount of sulfur that becomes bound in the final product, EPA estimated an SO_2 emission factor for the cupola at this facility to be 31.18 lbs/ton of slag and other raw materials, or 27.39 lbs/ton of total throughput (also including fuel). Computed in terms of emissions per ton of product, EPA estimated an SO_2 emission factor for the cupola at this plant to be 35.72 lbs/ton. Using the same representative values for feed rates for coke and raw materials and coke heat content for the facility, this would translate to an emission factor in emissions per unit coke-based heat input of 8.52 lbs/MMBTU. Again using these representative values, the emission factor for the portion of the SO_2 emissions that arise from the coke is estimated to be 0.95 lbs/MMBTU, and the emission factor for the portion of the SO_2 emissions that arise from the raw materials, excluding the sulfur that is retained in the final product, is estimated to be 7.57 lbs/MMBTU.

Wisconsin has provided information reflecting a different approach to estimating emissions from this operation. This alternative approach estimates emissions based on the results of a stack test conducted on July 1, 2015. The contractor conducting this stack test measured the concentration of SO_2 in the stack gas, estimated the quantity of combustion gas based on a composition analysis of the metallurgical coke used in the test and the equations in Method 19, and multiplied these two quantities to estimate mass of emissions. The results of this calculation was an estimated emissions value of 121.95 lbs of SO_2/hr, which translates to 4.7 lbs/MMBTU and 12.05 lbs/ton of throughput (defined to include fuel and raw materials). A memorandum provided with the test report notes that these calculations do not include the flow associated with the combustion of natural gas during the test; the memorandum states that calculations including the flow of combustion gas estimated to be associated with these two fuels would result in an estimated emissions of 154.8 lbs of SO_2/hr. This revised value suggests an emission factor of 15.3 lbs/ton of throughput.

emissions from this facility in the course of the air quality characterization efforts that this rule requires.

Review of Applicable Emission Limits

A disputed issue regarding the SO_2 emission limitation for USG Interiors is whether emissions attributable to sulfur in materials used in the process (such as slag or brick chips) other than fuel are counted in determining whether the facility is complying with the applicable emission limit. The applicable limit, originally in NR 154.12(11)(b)2. (approved into the SIP as NR 417.07(2)(b)), was approved on May 21, 1993, at 58 FR 29537. During this rulemaking, an important question as to the approvability of this rule was whether compliance methods other than stack tests could be used to determine that a source was complying with its limit, or whether instead that a source for which the alternative method indicated compliance could nevertheless be required to conduct a stack test and potentially determined to be noncompliant on that basis. During rulemaking on this rule, WDNR wrote that "Our compliance demonstration rules will allow demonstration of compliance or noncompliance on [various methods, such as fuel sampling.] However, none of those techniques would interfere with the ability of DNR or EPA to require a stack test to demonstrate compliance." EPA approved the rule on the basis of that reassurance. Use of a stack test as the compliance method would count all emissions from the cupola without regard to what material contained the sulfur.

Then, during development of the Title V permit for USG Interiors, Wisconsin supported a different interpretation of its rule. In a memo from the Bureau of Legal Services dated March 14, 2014, Wisconsin reviewed the history of the rule, finding that the rulemaking focused on the feasibility of limitations on the sulfur content of fuels, and concluding that the limit was intended to limit specifically the sulfur content of fuels and not the sulfur content of other components of industrial processes. This interpretation was expressed in a footnote to a draft Title V permit for the facility, stating: "Note: The heat input rating of the cupola is 33.21 MMBtu/hr which equates to a sulfur dioxide emission limitation of 182.66 lb/hr. This emission limitation applies only to the fuel burned (i.e. coke, natural gas) and does not include raw materials (slag, brick chips, etc.) added to the cupola." While this footnote was not included in the final Title V permit, Wisconsin has stated that it continues to follow this interpretation of NR 417.07(2)(b).

The listing of USG Interiors' Walworth facility would not directly address the interpretation of this rule. The listing of this facility would simply subject the facility to the requirements of the SO_2 Data Requirements Rule, which requires characterization of air quality near the facility. This characterization would of course address the impact of all SO_2 emitted by the facility, irrespective of whether the emissions originated in the fuel or the raw materials used in the process. If this information indicates that the 1-hour SO_2 air quality standard is being violated, then further efforts would be triggered to address these violations and establish clear limitations that provide for attainment.

EPA has several concerns about this approach. First, in EPA's view, the quantity of combustion gases estimated to be associated specifically with the metallurgical coke being burned during this test is not a reliable means of determining the actual gas flow rate during the test. Even aside from accounting for the combustion of natural gas, the presence of raw materials, including combustible components, can be expected to influence flows in a manner that is not accounted for in estimates based solely on the composition and quantities of fuel. Therefore, in this context, EPA believes that the use of estimated air flow rather than measured air flow adds significant uncertainty to the emission estimates. To the extent that the actual air flow exceeds the flow estimated on the basis of the combusted fuel composition (even supplemented with flow estimated based on the quantity of combusted natural gas), the emission estimates provided by the contractor would understate actual emissions.

Second, the estimate of emissions developed pursuant to the stack test is substantially different from the results of mass balance calculations described above. While uncertainties exist in the mass balance calculations as well (notably with regard to the sulfur content of the raw materials), the absence of an explanation for the discrepancy between the stack test results and the mass balance estimates raises unanswered questions as to the representativeness of the test.

Wisconsin has provided information regarding raw material throughput for 2014, which it used for estimating 2014 emissions. This throughput rate, 43,473.9 tons, is somewhat lower than typical historical throughput at this facility. Using this throughput and the above emission factor (i.e., 27.39 pounds/ton of total throughput), EPA would estimate 2014 cupola emissions to be 595 tons. This estimate contrasts with the emission estimate that would be derived based on the stack test contractor's calculated emission factor, i.e., 4.7 lbs/MMBTU or 12.05 lbs/ton of throughput, which yields an estimate of 2014 emissions of 262 tons. This estimate also contrasts with the estimate that would be derived on the basis of the full estimated air flow associated with all combusted fuels, which apparently yields an estimated emission factor of 15.3 lbs/ton of throughput and a 2014 emission estimate of 333 tons. Finally, this estimate contrasts with the value in Wisconsin's Air Emissions Inventory, based on cupola emissions factor of 18.69 pound/ton of throughput, with total 2014 cupola emissions of 406 tons.

EPA does not have the throughput data that we would ordinarily seek to use to estimate actual air quality over a recent three-year period. Nevertheless, the historical throughput data provide a basis to estimate typical emission rates. Among the last 10 years for which EPA has production data, the corresponding emission rates (estimated at 27.39 lbs/ton throughput) range from 596 tons/year to 822 tons/year, with an average emission rate of 736 tons/year.

This summary has identified some of the uncertainties in available estimates of SO_2 emissions from this facility. Even the lowest of the plausible estimates of emissions from this facility reflects sufficient emissions to be likely to be causing or contributing to violations of the SO_2 standard. Therefore, EPA believes the most appropriate approach to this facility is to list the facility as subject to the requirements of the DRR and to conduct further investigation of the

Conclusion

The SO_2 Data Requirements Rule provides for listing all sources that in the most recent year emitted at least 2,000 tons of SO_2 as well as any additional sources that in the judgment of the state or EPA warrant the air quality characterization that the rule requires. While the emissions from USG Interiors' Walworth facility are below 2,000 tons per year, EPA has nevertheless identified the facility as having significant potential for causing violations of the SO_2 standard. Further efforts are warranted to determine whether violations are in fact occurring near this facility. Thus, EPA believes this facility warrants listing as a source subject to the requirements of the DRR. The information developed in accordance with the DRR may then be used to determine the appropriate designation for this area and to help determine the need for revisions to applicable limitations in the state implementation plan.