



February 21, 2024

Mr. John Mooney  
Director, Air and Radiation Division  
U.S. EPA Region V  
77 W. Jackson Blvd.  
Chicago, IL 60604

**Re: Clarification of Ohio EPA's June 8, 2023 "Request for Approval of Amendments to Ohio Administrative Code (OAC) Rule 3745-18-82(F) into Ohio's State Implementation Plan (SIP)"**

Dear Mr. Mooney:

**Background**

On June 8, 2023, Ohio EPA submitted to U.S. EPA the above referenced request for SIP approval. The requested SIP amendment was for the removal of the requirements in Ohio Administrative Code (OAC) rule 3745-18-82(F) regarding emissions of sulfur dioxide (SO<sub>2</sub>) from Greif Packaging, LLC (OEPA premise number 1576000431)(Greif). During a recent scheduled review of the rules in the chapter, Ohio EPA discovered that all fuel burning sources had been permanently shut down at the facility in 2009 and the emission regulations in OAC rule 3745-18-82(F) were no longer needed since the emission limitation in paragraph (F) was no longer applicable to any sources at this facility.

Since that submittal, U.S. EPA has requested clarification regarding the term "any stack" in the rule as follows, "...shall not cause or permit the emission of sulfur dioxide from **any stack** at this facility in excess of 0.50 pound of sulfur dioxide per MMBtu actual heat input."

In July 2017, Greif began operation of a natural gas flare (P004) as a control device for emissions from an industrial wastewater pre-treatment anaerobic digester system. U.S. EPA requested clarification as to why the "any stack" language in the rule should not apply to the flare. As explained in Ohio EPA's original SIP request, this unit emits sulfur dioxide but is not fuel burning equipment and would not be subject to the requirements in OAC rule 3745-18-82(F) but rather is subject to the requirements for process equipment in OAC rule 3745-18-82(A)(3).

Regardless of Ohio EPA's position that OAC rule 3745-18-82(F) was never intended to apply to the flare, Ohio EPA has performed an additional analysis to support removal of this paragraph from Ohio's rules.

**Analysis of Impact of Emissions from Greif's Flare Compared to Greif's Shutdown Boilers**

Ohio EPA conducted dispersion modeling to demonstrate the net impact of Greif's flare compared to the shutdown boilers is a significant improvement in air quality.

OEPA's modeling results showed, in comparison to the 2010 1-hour SO<sub>2</sub> national ambient air quality standard (NAAQS), there is roughly a tenfold improvement in air quality.

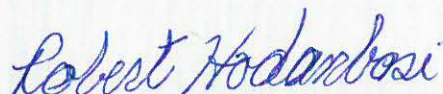
In addition, while the original emissions limits in OAC rule 3745-18-82(F) were established to address emissions from the boilers and their impact on the significantly less stringent 1971 SO<sub>2</sub> NAAQS, modeling results for the new flare indicated that emissions from the flare would not cause an exceedance of the current more stringent 2010 1-hour SO<sub>2</sub> NAAQS.

OEPA's modeling procedures and results are discussed in more detail in the attachment to this letter.

Ohio EPA is submitting this supplementary information so that U.S. EPA can proceed with approval of Ohio's June 8, 2023 SIP revision request.

We would appreciate if U.S. EPA would expedite the review of this material. Please contact Jennifer Van Vlerah if you have any questions about this submittal.

Sincerely,



Robert Hodanbosi  
Chief Division of Air Pollution Control

cc: Jennifer Van Vlerah, Assistant Chief Division of Air Pollution Control

Attachment

**Attachment**  
**Ohio EPA Air Dispersion Modeling Report**

**Greif-Massillon Mill**  
**Ohio EPA Air Dispersion Modeling Report**  
**1-hour Sulfur Dioxide National Ambient Air Quality Standard**  
**February 22, 2024**

**Introduction**

To address concerns regarding Ohio EPA'S clarification of the sulfur dioxide (SO<sub>2</sub>) emission applicable requirements in Ohio Administrative Code (OAC) rule 3745-18-82(F) for the Greif-Massillon Mill (OEPA premise number 1576000431) in Stark County, Ohio EPA conducted dispersion modeling to demonstrate compliance with the 2010 1-hour SO<sub>2</sub> National Ambient Air Quality Standard (NAAQS). Ohio EPA used the most up-to-date version of the AERMOD modeling system and associated subroutines, version 23132.

**Modeling Information**

The coordinates of the center of the property, represented in the Universal Transverse Mercator (UTM) coordinate system, are approximately 455,156 m East, 4,511,084 m North in UTM Zone 17 (NAD83). Ground-level concentrations were calculated within nested Cartesian receptor grids and at receptors placed along the facility fenceline to determine the location of the maximum estimated impacts. The receptor grid was extended to 10 kilometers beyond the facility fenceline.

Ohio EPA used five years (2019-2023) of surface meteorological data collected at the Canton-Akron Regional Airport (KCAK, WBAN# 14895) and five years of upper air data collected at the Pittsburgh International Airport (KPIT, WBAN# 94823). Due to the age of the decommissioned boilers (B005 and B006) and uncertainty with the exact location of the stack that served these boilers in the past, Ohio EPA conservatively treated the existing buildings as a single, flat-roofed building with the boiler stack placed in the geometric center. The exact location of the new enclosed flare is known to Ohio EPA and therefore the exact coordinates, emission rate, and parameters of that stack were used, based on the Permit to Install and Operate P0120849, issued to the facility by Ohio EPA on June 9, 2016. It should be noted that enclosed flares are significantly different than traditional candlestick flares and do not necessitate estimates of effective stack height and diameter. The enclosed flare serves as a control for reduced sulfur compounds emitted by the anaerobic digester.

Ohio EPA applied a fixed background SO<sub>2</sub> concentration of 28 ppb (73.248 µg/m<sup>3</sup>) to

modeled design values. As there are no SO<sub>2</sub> monitoring sites within Stark County, Ohio EPA compared 2022 SO<sub>2</sub> emissions in Stark County (537 tons) to the emissions of nearby counties with SO<sub>2</sub> monitoring sites to select a background. Ohio EPA selected the 2020 - 2022 design value of 28 ppb from monitor 39-035-0038 in Cuyahoga County. Sources in Cuyahoga emitted 772 tons of SO<sub>2</sub> in 2022. This design value is the 8<sup>th</sup>-highest in the State from a total of 29 SO<sub>2</sub> AQS monitors, with those higher design values being in counties with one or more coal-fired electric generating units. Based on the higher level of emissions in Cuyahoga County and the application of a design value concentration, Ohio EPA considers this background value extremely conservative.

**Emission Scenarios**

Two emission scenarios were assessed by Ohio EPA. The first was the full operation of the two decommissioned boilers (referenced as “Decommissioned Boilers” scenario), and the second was the operation of the new enclosed flare and reflective of the shutdown of the two boilers (referenced as the “Enclosed Flare” scenario).

For the Decommissioned Boilers scenario, Ohio EPA used the historic nameplate capacity of the boilers, 53.2 MMBtu/hour each, 106.4 MMBtu/hour combined and the 0.5 pounds SO<sub>2</sub>/MMBtu emission limit from the 1976 Federal Implementation Plan (FIP) to derive a maximum combined emission rate of 53.2 pounds SO<sub>2</sub>/hour. For the Enclosed Flare scenario, Ohio EPA modeled the current permitted allowable emission rate of the enclosed flare, 22.15 pounds SO<sub>2</sub>/hour. The stack parameters and emission rates for each scenario are shown in the table below.

|           |                      | Easting (X) | Northing (Y) | Base Elevation | Stack Height | Temperature | Exit Velocity | Stack Diameter | SO2     |
|-----------|----------------------|-------------|--------------|----------------|--------------|-------------|---------------|----------------|---------|
| Source ID | Source Description   | (m)         | (m)          | (m)            | (m)          | (K)         | (m/s)         | (m)            | (lb/hr) |
| OLDBLR    | Old Oil Boiler Stack | 455129.437  | 4511198.03   | 294.132        | 18.288       | 505.3722    | 5.497848      | 0.9144         | 53.2    |
| FLR       | Digester Flare       | 455120.16   | 4510890.11   | 294.132        | 10.668       | 1033.15     | 8.679731      | 0.9662         | 22.15   |

Ohio EPA notes here that there are two additional fuel-burning emission sources at this facility, units B009 and P005. Both units are capable of only burning natural gas and are not significant sources of SO<sub>2</sub>. Per OAC 3745-18-06(A), fuel burning equipment that combust only natural gas are exempt from Ohio’s Sulfur-dioxide standards.

## NAAQS RESULTS

The results of the NAAQS modeling are shown in the table below.

| <b>Emissions Scenario</b> | <b>Pollutant (Averaging Time)</b> | <b>NAAQS (Modeled Result) with Background</b>         |
|---------------------------|-----------------------------------|---|
| Decommissioned Boilers    | SO <sub>2</sub> (1-hour)          | 196.2 µg/m <sup>3</sup> (1,875.51 µg/m <sup>3</sup> ) |
| Enclosed Flare            | SO <sub>2</sub> (1-hour)          | 196.2 µg/m <sup>3</sup> (135.83 µg/m <sup>3</sup> )   |

The 5-year modeled design value of the decommissioned boilers was 1,875.51 µg/m<sup>3</sup>, almost 10 times greater than the 1-hour SO<sub>2</sub> NAAQS, and the 5-year modeled design value of the new enclosed flare was 135.83 µg/m<sup>3</sup>. Please note, that this is a conservative modeling scenario and does not indicate the decommissioned boilers were not in compliance. The original emissions limitations in the FIP and OAC 3745-18-82 that applied to these emissions units was to address the original 1971 SO<sub>2</sub> NAAQS. This exercise demonstrates:

- **If** the new enclosed flare had been subject to the same emissions limitation as the decommissioned boilers, the flare would not even have violated the current 1-hour SO<sub>2</sub> NAAQS; and
- The new enclosed flare, installed after the shutdown of the boilers, has significantly less emissions and impact on air quality than the boilers; demonstrating the impact of this facility on the SO<sub>2</sub> NAAQS has decreased.