



July 27, 2023

Ms. April Lazzaro
Michigan Department of Environment, Great Lakes, and Energy
Grand Rapids District Office
350 Ottawa Avenue NW, Unit 10
Grand Rapids, MI 49503-2341



SUBJECT: July 7, 2023 MI EGLE Air Violation Notice Response
Arkema Inc.- Grand Rapids, MI Facility

Dear Ms. Lazzaro,

The Arkema Inc. Grand Rapids, Michigan facility (Arkema) received the July 7, 2023 air inspection report and Violation Notice (VN) from the Michigan Department of Environment, Great Lakes and Energy (MI EGLE) in connection with a MI EGLE Inspection at the facility on June 7, 2023. We provided most of the requested records on June 13, 2023 and sent additional information on July 7, 2023. The MI EGLE VN cites two violations and requests certain additional items including an updated Malfunction Abatement Plan (MAP); a Regenerative Thermal Oxidizer (RTO) air emissions performance test; and a written applicability determination for the Chemical Manufacturing Area Source MACT Standard NESHAP at 40 CFR Part 63 Subpart VVVVVV. Arkema is providing responses to each cited violation and each requested item below.

1) Cited Violation 1. Failure to maintain temperature of the regenerative thermal oxidizer (RTO) above 1500°F. The VN requires a written response by July 28, 2023 including: the dates that the violations occurred; an explanation of the causes and duration of the violations; whether the violations are ongoing; a summary of the actions that have been taken and are proposed to be taken to correct the violations; and the dates by which these actions will take place; and what steps are being taken to prevent a reoccurrence.

Arkema response:

In May 2023, Arkema discovered that the thermal oxidizer temperature would occasionally and at random times drop below 1500°F and then recover the temperature on its own very quickly. It took some time to determine that the natural gas valve for the thermal oxidizer was malfunctioning causing low gas flow occasionally and a resulting low temperature. A new gas valve was ordered on June 6, 2023 and installed on June 13, 2023. During installation on June 13, 2023, the FGRESINPROD process unit was shut down. Arkema analyzed the data from the second quarter 2023. For the second quarter of 2023, this resulted in approximately 1231 minutes out of 131,040 total operating minutes when the thermal oxidizer temperature was <1500°F, or about 0.94% of the total TO operating time. For the first half of the year, the low temperature minutes are only 0.47% of the time the thermal oxidizer was operating. Since most of these occurrences were only a few minutes in length, Arkema also calculated the hourly average TO temperature for the quarter, and only 9 of the 2184 hourly averages were below 1500°F due to the malfunctioning natural gas valve. The lowest hourly average temperature was 1416°F. The date and duration of the low temperature occurrences are listed below:

April 27, 2023 – 20.2 minutes over 4 occurrences

April 28, 2023 – 2.2 minutes
 April 29, 2023 – 34.9 minutes over 3 occurrences
 May 3, 2023 – 10.2 minutes
 May 5, 2023 – 15.0 minutes
 May 7, 2023 – 4.7 minutes
 May 9, 2023 – 27.0 minutes over 4 occurrences
 May 10, 2023 – 6.5 minutes
 May 11, 2023 – 13.4 minutes
 May 12, 2023 – 5.6 minutes
 May 16, 2023 – 6.8 minutes
 May 20, 2023 – 6.8 minutes
 May 21, 2023 – 12.0 minutes
 May 22, 2023 – 18.5 minutes
 May 23, 2023 – 31.7 minutes
 May 24, 2023 – 16.5 minutes
 May 26, 2023 – 33.4 minutes over 6 occurrences
 May 27, 2023 – 58.4 minutes
 May 28, 2023 – 42 minutes
 May 29, 2023 – 55 minutes over 7 occurrences
 May 30, 2023 – 60.5 minutes over 7 occurrences
 May 31, 2023 – 17.4 minutes over 4 occurrences
 June 1, 2023 – 12.7 minutes over 2 occurrences
 June 2, 2023 – 42.7 minutes over 6 occurrences
 June 3, 2023 – 97.1 minutes over 10 occurrences
 June 4, 2023 – 123.1 minutes over 9 occurrences
 June 5, 2023 – 99.5 minutes over 6 occurrences
 June 6, 2023 – 36.8 minutes over 6 occurrences PO placed for NG valve replacement
 June 7, 2023 – 21.2 minutes over 4 occurrences
 June 8, 2023 – 78.7 minutes over 8 occurrences
 June 9, 2023 – 14 minutes over 2 occurrences
 June 10, 2023 – 56.2 minutes over 6 occurrences
 June 11, 2023 – 7.3 minutes over 2 occurrences
 June 12, 2023 – 5.9 minutes
 June 13, 2023 – 8:45 am – 11:29 am Central, Natural gas valve replaced – process shutdown for replacement

Emissions calculations were completed for three of the longest duration low temperature events (28, 27, 39 minutes), and all were below the 18.2 lb/ hr VOC permit limit even if hypothetically conservatively considered to be uncontrolled based on engineering calculations. Please note, however, that even during lower than 1500°F thermal oxidizer temperature, the process vent flows were still being routed the thermal oxidizer for destruction. Therefore, there were likely no excess emissions associated with these low temperature dips based on credible evidence. Accordingly, these low temperature events would not result in exceedance of the underlying hourly air permit VOC emission limit. The RTO temperature permit condition is a parametric monitoring provision which serves as an indicator for when RTO operating conditions may result in exceedance of an underlying air permit emissions limit, unless other credible evidence demonstrates otherwise as in this case.

As mentioned above, the natural gas valve was replaced on June 13, 2023, and that corrective measure has resolved the intermittent natural gas supply and low thermal oxidizer temperature issue. The natural gas valve was already part of the annual preventive maintenance performed on the thermal oxidizer by a third party contractor. Additionally, Arkema has improved the low temperature alarms for the thermal oxidizer by creating a notification email sent to several leadership team members in case of approaching a RTO low temperature situation before a deviation of the RTO temperature condition occurs in order to prevent a potential exceedance of an underlying air permit VOC emission limit. Since the valve was replaced, there have been no excursions of the RTO air

permit temperature condition. The site has returned to consistent compliance with this permit condition. This cited item has been addressed.

2) Cited Violation 2. Failure to properly maintain records of the loading rack condenser.

Arkema response:

Arkema maintains the records of the loading rack condenser exit temperature on loading sheets placed with the customer paperwork for each truck loaded, and then each of these records is filed by customer name. The records were on site at the time of the inspection, but many customer files had to be sorted to obtain just the loading rack condenser records. In addition, more attention is needed to proper completion of these records. As described in our letter dated July 7, 2023, Arkema has also addressed the gaps in recorded data by employees being retrained on the proper procedure. To avoid this record retrieval step, we have added a new management review step to confirm that proper documentation occurs which is readily available going forward. Operators will submit their load sheets to the Production Supervisor who will transfer the temperature readings onto a monthly log sheet. This procedure will allow us to confirm proper completion of the temperature records and to quickly locate the environmental records required in order to prevent recurrence of this situation in the future. This cited item has been addressed. In addition, Arkema plans to install a new alarm to the loading rack condenser temperature during the October 2023 plant shutdown to alert operating personnel prior to a deviation of the loading rack condenser temperature permit condition. This alarm should be functional by end of the 4th quarter 2023.

3) Additional Items Requested: MAP Submittal; Regenerative TO air emissions performance test; and written applicability documentation for Chemical Manufacturing Area Source MACT Standard NESHAP at 40 CFR Part 63 Subpart VVVVVV.

Arkema Response:

MAP Submittal.

Arkema is reviewing and updating the malfunction abatement plan (MAP) for the control devices listed in the PTI No 100-07D, including the RTO. A revised MAP, including an updated preventive maintenance plan, will be submitted to MI EGLE by August 21, 2023 as requested.

Regenerative Thermal Oxidizer Emissions Performance Test.

The MI EGLE AQD requests that Arkema conduct an air emissions performance test on the RTO at the facility by October 5, 2023 to determine the VOC emissions rate and TO destruction efficiency. Arkema promptly contacted three stack test companies: Apex (formerly Bureau Veritas), DEECO; and TRC. Bureau Veritas (now Apex) is the company that completed the 2012 emissions testing for the site. Apex responded that the earliest they could conduct the emissions compliance test is October 17-18, 2023. DEECO indicated that they are not available to conduct a stack test until November 2023. TRC indicated that they are available for a compliance test September 27-29 and October 3-5, 2023; however the site is scheduled to be shutdown for the annual maintenance shutdown September 28 through October 5, 2023. Due to lack of availability of compliance testing companies prior to October 5, 2023 and the site scheduled shutdown, Arkema requests an extension of the October 5, 2023 deadline to November 30, 2023 to complete the compliance test. The test protocol will be submitted within 60 days of the receipt of the Violation Notice and the exact date of compliance test will be forwarded to MI EGLE not less than 7 days before the compliance testing.

Written Applicability Determination for Chemical Manufacturing Area Source MACT Standard NESHAP at 40 CFR Part 63 Subpart VVVVVV.

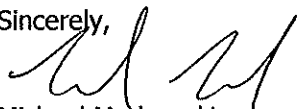
The MI EGLE AQD requested documentation related to the applicability of the Chemical Manufacturing Area Source National Emissions Standard for Hazardous Air Pollutants (NESHAP) found at 40 CFR Part 63 Subpart VVVVVV. Please find attached a non-applicability determination that was completed on April 16, 2012, before the March 21, 2013 deadline for existing sources. This non-applicability review was completed for additional Arkema facilities outside of Michigan, and those

facility locations and personnel have been redacted for this submittal. In addition, Arkema has recently conducted a review of the site's SDS database for the 15 HAPs covered by the Rule 40 CFR 63.11494. This review confirmed this non-applicability determination because of the continued absence of these HAPs in feedstocks used in the site manufacturing process at concentrations at or above 1.0% for quinoline, manganese, and chromium compounds and at or above 0.1% for the other HAPs. In addition, Arkema confirmed that none of the Table 1 organic HAPs are manufactured as a product or by-product at the Grand Rapids facility.

As a general matter, Arkema reserves any privileges and defenses, which it may have regarding the MI EGLE Air Inspection, associated information requests, the VN and Arkema's responses. Also, Arkema reserves the right to amend or supplement this response if new or additional responsive information is identified or becomes available. Arkema considers its environmental management program to be a priority and strives for continual improvement of performance. Accordingly, Arkema has taken this opportunity to strengthen our environmental management program based on the learnings from this MI EGLE Air Inspection.

If there are any questions about this information, please feel free to contact Sadi Overland at (616) 243-4578 or by e-mail at sadi.overland@arkema.com.

Sincerely,

A handwritten signature in black ink, appearing to read 'M. Markowski', is written over the word 'Sincerely,'.

Michael Markowski
Grand Rapids Plant Manager