EMERALD
Engineered Decorative Solutions

September 20, 2022



Ms. April Lazzaro
Grand Rapids District Office
Michigan Department of Environment, Great Lakes, and Energy
State Office Building, 5th Floor
350 Ottawa Avenue, NW, Unit 10
Grand Rapids, MI 49503-2341

**Response to the Violation Notice Dated September 1, 2022**
**Emerald Corporation (SRN N3044)**
**Kentwood, Michigan**

Dear Ms. Lazzaro:

On September 1, 2022, EGLE-Air Quality Division issued a Violation Notice (VN) to Emerald Corporation (Emerald) alleging violation of Permit to Install (PTI) 401-08. The specific allegations cited in the VN are as follows:

| Process Description | Rule/Permit Condition Violated | Comments |
|---|---|---|
| EU-ROBOTLINE | PTI No. 401-08, General Condition 15 and Rule 910 | Failure to install, maintain, and operate the catalytic oxidizer. |
| EU-ROBOTLINE | PTI No. 401-08, FG-Coating, Special Condition IV.3 | Failure to meet 76% reduction of VOC emissions. |
| EU-ROBOTLINE | PTI No. 401-08, FG-Coating, Special Condition 1.1 | Exceeded monthly emission limit. |
| EU-ROBOTLINE | PTI No. 401-08, FG-Coating, Special Condition 1.2 | Exceeded 12-month rolling emission limit. |

As requested, this letter provides information regarding the referenced citations, including: the date the alleged violations occurred; an explanation of the causes and duration of the alleged 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; the dates by which these actions will take place; and what steps are being taken to prevent a reoccurrence.

EGLE has not received a formal stack test report for the sampling performed August 24, 2022. Attached is a summary of the results and data collected by Network during the test, which includes only a small amount of data (Attachment 1). The stack testing was aborted after one hour of sampling because it was apparent that compliance could not be demonstrated through testing. Although Emerald agrees that the minimal testing information collected suggests that control device operation must be investigated, Emerald does not agree that the results of a single hour of stack testing should be used in the emission compliance calculations to demonstrate compliance with the permit, nor that it is representative of control equipment operation during the last two years.

After the test project was abandoned, Emerald began investigating operation of the control equipment. First, Emerald engaged Fishbeck to assist with the investigation. Fishbeck then spoke with Ms. Deborah Devroy, from Durr, Systems, Inc. (DePere, Wisconsin), who performed the catalyst core sampling analytical testing in 2020. Ms. Devroy stated that her review did not indicate that the catalyst needed to be replaced immediately, nor that the catalyst was not in proper operating condition. Her report specifically stated:

> **All of this means that while the catalyst is exhibiting decreased performance in the lab, a mechanically sound oxidizer containing this catalyst is certainly capable of achieving >95% DE.**

A copy of this report is included as Attachment 2.

In addition, because approximately two years have elapsed between the laboratory testing of the catalyst and the stack testing, it cannot be assumed that no degradation or fouling of the catalyst has occurred since the analytical tests and that the catalyst is in exactly the same state as in 2020. Therefore, Emerald has not applied the control efficiency from the aborted stack test retroactively to previous emission calculations. Emerald will, however, utilize the stack testing results indicated in EGLE's letter from the August 24, 2022, test date onward until the unit can be investigated and determined to be operating properly.

It should be noted that the catalytic oxidizer used on EU-ROBOTLINE is currently over-sized for the rate of air flow and concentration of VOCs being controlled. This results in a lower inlet concentration of volatile organic compounds (VOCs) than is necessary to maintain the temperature of the unit, necessitating increased burning of natural gas which emits methane and ethane in addition to VOCs. The data provided by Network Environmental, Inc. (Grand Rapids, Michigan) provides only the total hydrocarbons measured (THC) which would include both methane and ethane generated during combustion. For emission testing performed on catalytic oxidizers, it is recommended that the combustion emissions be subtracted from the outlet prior to determining the destruction efficiency. There is no indication in the preliminary data that has been provided by Network that the THCs associated with combustion were removed.

Emerald currently utilizes a database format for VOC tracking. Any changes to the destruction efficiency in the database will affect all historical records in the database. Therefore, Emerald pulled the monthly uncontrolled VOCs from the database records for the timeframe referenced in the VN and updated the destruction efficiency to the most reflective efficiency from the Durr report based on the operating temperature of the unit. For the timeframe of January 2021 through September 2021, Emerald operated the oxidizer at the permit required operating temperature of 650 °F, which corresponds to an outlet efficiency of approximately 71% in the Durr laboratory report. Because of EGLE's concern following the review of the report, Emerald increased the operating temperature of the unit to 690 °F in late September 2021, which correlates to a destruction efficiency of approximately 80% in the Durr report. These updated emission records are attached as Table 1. After recalculating the emissions, Emerald's emission calculations demonstrate compliance with both the monthly and 12-month rolling emission limit.

Emerald also retained TMP Refining Corporation (TMP) to review the operation of the catalytic oxidizer. TMP recommended that the catalyst be replaced in the unit and provided the attached quote for the catalyst. Due to the excessive cost associated with the catalyst replacement, Emerald has also contacted Jensen Industries, LLC and asked that they visit the facility and perform a thorough inspection of the unit and provide a cost estimate for the necessary repairs as well as some assurance that oxidizer performance will be restored once those repairs are completed. Emerald is currently trying to schedule a site visit for the contractor when the unit is down so a thorough inspection can be done. Emerald anticipates the site visit will occur and we will have an additional quote

before the end of October. We will provide an update to EGLE by October 31, 2022, regarding the status of the repairs and provide emission calculations updated through September 2022.

If you have any questions or require any additional information, please contact me at 616.430.3033 or Sue Kuieck from Fishbeck at 616-464-3721 or slkuieck@fishbeck.com.

Sincerely,

EMERALD CORPORATION

Brian Dillon

Brian Dillon

Attachments

Copy: Jenine Camilleri, Enforcement Unit Supervisor – EGLE
Susan L. Kuieck, PE – Fishbeck