



Trinseo LLC
Michigan Operations
Building 1604 Barth Street
Midland MI 48667

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ROP No: MI-ROP-A1025-2021
Trinseo LLC
Michigan Operations

Environmental Great Lakes & Energy, AQD
401 Ketchum, Suite B
Bay City, MI 48708

January 3, 2023

This letter is in response to a Notice of Violation sent by EGLE on December 13, 2022, to Trinseo LLC (Trinseo), in Midland, Michigan. The violation notice is in reference to Trinseo's self-reporting on December 2, 2022, where it was discovered during stack testing that the Acrylonitrile emissions exceeded the limit in ROP1025.

On December 12, 2022, Trinseo provided a 10-day written report in compliance with Rule 912. At that time, a conservative emission calculation was performed based on available data from stack testing. Trinseo reported an emissions estimation of 225 lbs of Acrylonitrile from November 23, 2022 to December 1, 2022. Since the submission of the 10-day written report, a thorough investigation has been completed and additional stack testing data has been received. Upon review of the additional data, the total amount of emissions of Acrylonitrile from November 23 to December 1, 2022, is calculated at 144 lbs (.072 tons). This is a conservative calculation based on maximum rates during the stack testing. Data and calculations are included in attachment A.

The final results of the investigation indicate the Acrylonitrile emissions deviation was caused by two simultaneous factors. The first factor was an open manual cross-tie valve between the A Process vent header and the B Process vent header. The second factor was a restriction in the flow path of the A Process vent header. In the state where the cross-tie was open and the A vent header was restricted, a portion of the A Process vents was able to proceed to the EU31 Process Heaters (F-3A East and F-3B West) without first being scrubbed through the A Styrene Scrubber. The combination of un-scrubbed A Process vents and B Process vents going to the Process Heaters resulted in the elevated emission levels of Acrylonitrile. Without a restriction present and even with the cross-tie open, we do not believe the emissions exceeded our permit limits prior to that time. This is supported by emissions data from October 2022, and process data collected throughout the year. The restriction was cleared on December 01, 2022. On December 2, 2022, the cross-tie valve was secured closed, and the operating discipline has been updated to administratively control this valve.

Based on a review of process data during the November 2022 stack testing, the elevated emissions began on November 23, 2022 after B-train started up following a one month shutdown, and the total vent load was increased. On December 1, 2022, when the flow restriction was cleared, the process data and stack testing data confirm the emissions decreased to expected levels. We believe the cross-tie was opened in April 2021 during the most recent maintenance shutdown of both A-train and B-train.

Based on the process data review from April 16, 2021, to present, we believe one bypass event may have occurred on May 7, 2022 through May 8, 2022 while purging a filter with Nitrogen in preparation for process cleaning. The conditions started at 16:00 on May 7, 2022 and ended at



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15:30 on May 8, 2022. Using a conservative calculation based on the November 2022 stack testing data, approximately 17.7 lbs (0.0089 tons) of Acrylonitrile was released to the atmosphere during this event.

Trinseo submitted their stack testing plan which was approved on September 2, 2022. On September 21, 2022, a need was identified to change the power source for testing from a generator to a more consistent source of power. An alternative date for testing to begin November 30, 2022 was proposed to ensure that the necessary power supply would be ready and that the state would be able to be present. EGLE agreed to the modified testing schedule verbally in September 2022 and through a letter dated November 22, 2022. During the November 2022 testing, the testing equipment malfunctioned and could not be repaired within the testing window. Trinseo took every effort to reschedule the testing for the next available date of the third-party testing firm and the representative from EGLE. The testing plan was re-submitted on December 8, 2022, after confirming availability of the representative from EGLE. The next stack test is scheduled to begin on January 10, 2023.

In summary, Trinseo has completed a thorough investigation of this event and put corrective actions in place to prevent reoccurrence. If you have any further questions, please contact me at fmcnett@trinseo.com or (989) 600-5243.

Sincerely,

A handwritten signature in cursive script that reads "Fred McNett".

Fred McNett
Responsible Care Leader
Responsible Official
Trinseo LLC
Michigan Operations



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Appendix A: Trinseo November 2022 Stack Test Data

<u>Stack Test Data</u>	<u>Day 1</u>	<u>Day 2</u>
<u>Exhaust Gas Conditions</u>		
Natural Gas Flow (lb/hr)	4206.67	4206.67
Oxygen (% dry)	8.79	8.43
Carbon Dioxide (% dry)	6.76	6.96
Flue Gas Moisture (%)	12.8	12.8
Flue Gas Velocity (Ft/sec)	31.96	31.95
Flue Gas Flow Rate (acfm)	2050	2049
Flue Gas Flow Rate (scfm)	1448	1447
Flue Gas Flow Rate (dscfm)	1262	1262
<u>Acrylonitrile</u>		
Concentration (ppmvw)	64.09	61.79
Concentration (ppmvd)	73.5	70.86
Concentration (ppmvd @ 3)	108.64	101.71
Emission Rate (lb/hr)	0.767	0.739

Run Time – 187.5 hours (November 23 – December 01 of 2022)
Emissions Rate - .767 lb/hr (highest average of the two testing runs)

Total Emissions – 144 lbs (0.072 tons).