

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

B494268801

FACILITY: Corteva LLC		SRN / ID: B4942
LOCATION: 305 N HURON AVE, HARBOR BEACH		DISTRICT: Bay City
CITY: HARBOR BEACH		COUNTY: HURON
CONTACT: James W. McGee, EH&S Leader		ACTIVITY DATE: 08/29/2023
STAFF: Adam Shaffer	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: On-site inspection.		
RESOLVED COMPLAINTS:		

A full compliance evaluation (FCE) consisting of an onsite inspection and records review was conducted by Air Quality Division (AQD) staff Adam Shaffer (AS) of the Corteva AgriScience LLC (Corteva) site located in Harbor Beach, MI. Applicable records were requested on August 23, 2023, to verify compliance with Renewable Operating Permit (ROP) No. MI-ROP-B4942-2020a. An in-person inspection to verify onsite compliance was later completed on August 29, 2023.

Facility Description

Corteva is an insect pesticide production facility. The facility is a major source of hazardous air pollutants (HAPs), nitric oxides (NO_x), and carbon monoxide (CO). The facility is a prevention of significant deterioration (PSD) source and is also subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Pesticide Active Ingredient Production (Subpart MMM). The facility is in operation with ROP No. MI-ROP-B4942-2020a and PTI No. 107-18C. It should be noted that the PTI will not go into effect until the Fourier Transform Infrared (FTIR) is finished being installed, and the PTI subsequently rolled into the ROP. Additionally, since the last inspection on August 25, 2021, the AQD has taken escalated enforcement against Corteva. The site is now operating under Administrative Consent Order (ACO) AQD No. 2023-09.

Offsite Compliance Review

- Based on the timing of the inspection, the 2022 Michigan Air Emissions Reporting System (MAERS) was reviewed. The 2022 MAERS Report was received on March 3, 2023. Upon review of the report, one potential issue was noted with the thermal treatment units (TTU's) in that the company was using average emission factors for calculating emissions. It was stated by Corteva staff that this was based on the catalyst efficiency for each TTU would vary over the year. Using specific emission factors and comparing them to the average reported emission, there appeared to be no significant difference and one instance the company was overreporting emissions. After further review, this appeared acceptable at this time. Overall, the 2022 MAERS Report appeared acceptable.
- Corteva is required to submit semi-annual and annual compliance reports per Part A General Conditions 19-23 of MI-ROP-B4942-2020a. Semi-annual and annual compliance reports were reviewed since the previous inspection on August 25, 2021. Numerous deviations have been reported since the last inspection on August 25, 2021, with follow up completed as needed.
- Since the last inspection, a Rule 912 Report was submitted to the AQD and received on December 13, 2021. The notification had described that preliminary sampling results taken on December 9, 2021, had showed elevated organic HAP emissions from TTU 870 that had been shut down for scheduled maintenance. Sample results showed organic HAP emissions at 28 ppmv and in a follow up telephone call on

February 15, 2022, the emissions appeared to have been elevated for at least 200 hours. A violation notice for the elevated emissions, dated February 24, 2022, had been issued to the company. The violation notice has since then been addressed with follow up testing completed in February / March 2022, that indicated acceptable emission concentrations. A second Rule 912 Report was submitted to the AQD on August 9, 2023. The report was regarding the elevated OHAP emission concentration profile identified on July 19, 2023, during a bakeout of their RTO (TTU 870). The bakeout was described as routine maintenance in order to burn off residue buildup to maintain adequate heat transfer between the vent gas and ceramic. During the online bakeout EPA 320 measurements showed the total OHAP concentration exceeded 20 ppmv. Prior to the 912 Report, Corteva had brought up if it was acceptable for total OHAP concentrations to exceed 20 ppmv if the pound per hour was below permit limits. After discussing this internally, AQD staff disagreed since this 20 ppmv is a MACT emission limit. Additionally, AQD staff disagreed that this would be considered routine maintenance per Rule 285(2)(a). In the Rule 912 Report, Corteva stated they have suspended all online bakeouts, with future bakeouts being conducted offline when the RTO is not controlling emissions. Corteva had stated they will continue to work with the manufacturers to identify ceramic maintenance activities that will not adversely impact the OHAP emission profile. At this time no further action is necessary.

- Corteva is subject to the ACO No. 2023-09, dated April 26, 2023. Per the ACO, Corteva is required to complete monthly FTIR emissions testing of the TTUs. The first monthly results report was received in May 2023, from the April 2023 testing. Upon review of reports submitted, if issues were noted during testing, corrective actions would be completed and follow up testing would verify the TTU's were operating within applicable emission limits. After further review, the monthly required testing completed appears acceptable.
- Corteva is required to submit semi-annual compliance reports per the NESHAP Subpart MMM. The most recent report was received on March 14, 2023, and appeared acceptable.

Compliance Evaluation

A request was sent to Mr. Jim McGee, EH&S Leader, of Corteva, on August 23, 2023, for various records required by ROP No. MI-ROP-B4942-2020a. The onsite inspection of the facility was later completed on August 29, 2023. At the time of the inspection, the requested records were briefly discussed, and a flash drive was provided of the records with the exception of information Corteva believed was confidential, which was reviewed onsite. AQD staff AS arrived in the area at 8:50am. Weather conditions at the time were partly cloudy skies, temperatures in the low 60's degrees Fahrenheit, and winds to the northeast at 5-10mph. While offsite, what appeared to be mild process odors were noted to the north of the site. AQD has not received odor complaints pertaining to Corteva recently. No opacity was observed from several of the stacks that were for the TTU's while offsite. Upon arriving onsite, AS met with Mr. McGee, who was the primary contact for the duration of the inspection. Additionally, during the course of the inspection, AS met with various other Corteva staff who assisted in answering site specific questions and explaining onsite processes.

As mentioned above Corteva is an insect pesticide production facility. Process operations start with a 20,000-gallon anhydrous ammonia tank before various steps such as

fermentation, extraction, crystallization, evaporation, filtration, centrifuge, vacuum and drying are completed. Additionally, there is a lab portion onsite.

ROP No. MI-ROP-B4942-2020a

EUPROCESS

This emission unit is for the insect management product production process. The manufacturing process consists of fermentation, extraction, crystallization, evaporation, continuous belt filter, centrifuge, vacuum, and steam drying equipment. The emission group also includes a raw material storage tank for glucose, one organic oil tank, and two solvent tanks. Emissions from the production process are vented to the thermal treatment units. Emissions from the bioreactor are controlled by an enclosed flare. This emission unit is subject to 40 CFR Part 63, Subpart MMM, and 40 CFR Part 64 – Compliance Assurance Monitoring (PTI No. 107-18B)

Onsite Observations

Per SC III.1, the permittee shall not operate the EUPROCESS bioreactor unless the enclosed flare is installed, maintained, and operated in a satisfactory manner. Additionally, per SC IV.2, the permittee shall operate a continuously burning pilot flame at the enclosed flare at all times when the EUPROCESS bioreactor is operating. At the time of the inspection, methane emissions from the bioreactor were being vented to the flare that was observed. The temperature of both burners for the flare was 341.88°C and 372.13°C. Based on the observations made and speaking with company staff, the flare appeared to be being operated in a satisfactory manner.

Per SC III.2, Corteva shall not operate TTU-870 unless a Malfunction Abatement Plan (MAP) for TTU-870 is implemented and maintained. Corteva most recently submitted an updated MAP for TTU-870 with a last review date of August 9, 2023.

As required per SC IV.1, a system is in place by Corteva to monitor and record the temperatures for each TTU installed.

Per SC IV.3, the permittee shall not operate portions of EUPROCESS ducted to TTU-850 through TTU-870 unless the associated thermal treatment unit is installed, maintained, and operated in a satisfactory manner. Satisfactory operation for TTU's 850-865 include the following:

- A maximum outlet organic HAP concentration of 20 ppmv.
- Maintaining a minimum daily average temperature of 650 degrees F.
- Maintaining a minimum retention time of 0.5 seconds.
- Maintaining an hourly average combustion air to natural gas ratio between 9 to 1 and 11 to 1 by volume, or an alternate ratio approved by the AQD District Supervisor.

Satisfactory operation of TTU-870 includes the following:

- A maximum outlet organic HAP concentration of 20 ppmv or minimum organic HAP destruction of 98%.
- Maintaining a minimum combustion chamber temperature as specified in the approved MAP.

The following data was collected at the time of the inspection:

TTU	Instantaneous Temperature °F	Air to Natural Gas Ratio
850	675	9.99 / 10.25
855	898.19	8.93 / 9.87
860	675.94	9.68 / 9.69
865	675	9.81 / 9.73
870	1,548 / 1,549	NA

Temperature records were requested and reviewed for select time periods. After further review and additional follow up with company staff, the TTU's appeared to overall be being operated in a satisfactory manner. Additionally, per ACO AQD No. 2023-09, Corteva shall complete monthly testing to verify compliance with OHAP and VOC emission limits. The last completed monthly test was on July 17-18, 2023, and appeared to indicate the TTU's were in compliance with applicable limits.

Per SC IV.4, the permittee shall not operate EUPROCESS unless the permittee is implementing a TTU's Catalyst Inspection and Maintenance Plan acceptable to the AQD District Supervisor. Corteva is operating under the most recent "Catalyst Maintenance Plan" with a most recent review date of August 9, 2023.

Per SC VI.11, Corteva shall monitor and record for each TTU (850 – 865) the amount of combustion air fed to the unit, by volume; the amount of natural gas fed to the unit, by volume; and the hourly average ratio of combustion air to natural gas. Based on the observations made at the time of the inspection and follow up with company staff, this appears to be being completed.

Per SC VI.12, temperature monitors shall continuously monitor the combustion chamber temperature and record every 15 minutes for a daily average as an indicator of proper operation of the TTU. Additionally, the temperature monitors shall be calibrated annually. Records were requested and provided for select time periods. After further review of the records provided and follow up with Corteva staff, the requirements of the condition appear to be being completed. Records were also provided of several of the most recent temperature monitor certifications. The calibration records provided appear acceptable.

Per SC VI.16, Corteva shall properly maintain the monitoring system, including keeping necessary parts for routine repair of the monitoring equipment. It was verified by company staff that they maintain components for the monitoring equipment.

Six stacks are listed in association with this emission unit and were observed during the course of the site inspection. A rangefinder was utilized to verify stack heights. The stack heights recorded with the rangefinder appeared consistent with what is listed in MI-ROP-B4942-2020a. Though the remaining stack dimensions were not measured they appeared to be consistent with what is listed in MI-ROP-b4942-2020a.

Records

This emission unit has separate hourly Organic HAP emission limits of 20 ppmv for TTU's 850-865. An hourly Organic HAP emission limit of 20 ppmv or 98% destruction efficiency is for TTU-870. Since the previous inspection on August 25, 2021, the AQD is now in operation under ACO AQD No. 2023-09. Per the ACO, Corteva is required to complete monthly OHAP and VOC testing to verify compliance with the TTU's. The most recent

testing completed on July 17-18, 2023, appeared to indicate the TTU's were in compliance with applicable limits. It should be noted that Corteva is currently in the process of installing an FTIR system to continuously monitor emission rates from each TTU.

Per SC I.6-7, each TTU is subject to an hourly VOC emission limit of 10.4 lb/hr. Additionally, EUPROCESS as a whole is subject to a VOC emission limit of 43.7 tons per year (tpy) per a 12-month rolling time period. As mentioned above, Corteva is subject to ACO AQD No. 2023-09, that requires monthly VOC testing. The most recent testing completed on July 17-18, 2023, showed that each TTU was meeting the hourly VOC emission limit. Records were requested and reviewed for select time periods with regards to the second emission limit. For the month of July 2023, 3,747.5 lbs (approximately 1.87 tons) of VOC emissions were reported emitted. As of July 2023, 27.7 tpy of VOC emissions were reported emitted per a 12-month rolling time period which is within the permitted limit. Previous 12-month rolling time periods reviewed also appeared to be within the permitted limit.

Per SC I.8-9, each TTU is subject to an hourly ammonia emission limit of 31 lb/hr. Additionally, EUPROCESS as a whole is subject to an ammonia emission limit of 2.0 tpy per a 12-month rolling time period. Records were requested and provided for select time periods. Upon review, errors were noted. The records were discussed at length with company staff. It was noted that in the most recent stack testing, the combined hourly ammonia emissions were 0.352 lbs / hr for EUPROCESS which is well within the hourly emission limit. Utilizing this lb/hr emission rate, 12-month rolling time period ammonia emissions appear to be within the applicable limit. It was also noted that the new installation of the FTIR for EUPROCESS would include measuring ammonia emissions. At this time, no further action is necessary with the records provided.

Per SC I.10, each TTU is subject to an hourly PM emission limit of 0.006 lb / 1000 lb of exhaust gas, calculated on a dry gas basis. Testing was most recently completed in July 2021. Emission rates during testing were within the applicable emission limit.

Per SC VI.1, the permittee shall keep, in a satisfactory manner, monthly production records for EUPROCESS. Records were requested and reviewed onsite. Based on the records reviewed, Corteva is keeping track of applicable records.

Per SC VI.2, Corteva shall monitor and record, in a satisfactory manner, the daily average temperature in each catalytic TTU (850 – 865) each day that the TTU operates. Continuous temperature monitor records were provided and after speaking with company staff, daily average temperature records are being kept track of. After further review, the records appear to be acceptable.

Per SC VI.3, Corteva shall monitor and record, in a satisfactory manner, the inlet and outlet catalyst temperature for each catalytic TTU (850 – 865). Records were requested and provided for select time periods. Based on the records reviewed and additional follow up with company staff, Corteva appears to be keeping track of inlet / outlet temperature records.

Per SC VI.4, Corteva shall monitor and record, in a satisfactory manner, the combustion chamber temperature for TTU-870. Records were requested and provided for select time periods. Based on the records reviewed and additional follow up with company staff, the records were determined to appear satisfactory.

Per SC VI.5, Corteva shall keep, in a satisfactory manner, records of catalyst regeneration hours and temperature. Records were requested and received. After further review, the records received appeared to be acceptable.

Per SC VI.6, Corteva shall calculate the VOC emission rates from EUPROCESS monthly, for the preceding 12-month rolling time period. Records were requested and provided for select time periods. Based on the records reviewed, Corteva appears to be keeping track of applicable records.

Per SC VI.7, Corteva shall calculate the ammonia emission rates from EUPROCEES monthly, for the preceding 12-month rolling time period. Records were requested and provided for select time periods. The records were concluded to be acceptable at this time.

Per SC VI.8, Corteva shall monitor and record, in a satisfactory manner, total hydrocarbon concentration on each catalytic TTU outlet stack (SV00003 – SC00006) pursuant to the approved alternative monitoring request (AMR). Records were requested and provided for select time periods. Based on the records provided, Corteva appears to be keeping track of applicable items.

Per SC VI.9, Corteva shall maintain a current list of the materials emitted from EUPROCESS that are determined to be exempt from the health-based screening level requirement of Rule 225 pursuant to Rule 226(a). The list shall include the compound name and CAS number and a calculation demonstrating the emission rate of each material. Since the last inspection, there has been no change to the emission potential list, however, there have been changes with new emission limits, specifically for formaldehyde. Since the last inspection Corteva is now under ACO AQD No. 2023-09 and has since then applied for and received PTI No. 107-18C, which has a new formaldehyde emission limit. No additional changes to the list of materials emitted appears to have occurred since the last inspection.

Per SC VI.10, Corteva shall comply with the alternative monitoring agreement for the catalytic TTU's (850 – 865) as outlined in EPA's letter dated July 1, 2011 (or any subsequent revisions). Since the last inspection, a revised alternative monitoring agreement request was submitted to and approved by the EPA in September 2022. At the time of the inspection, the FTIR system was nearly finished being installed. Corteva plans to complete subsequent testing of the FTIR system and would then begin using it to demonstrate compliance per the AMR.

EUAMMONIATK

This emission unit is for the 20,000-gallon anhydrous ammonia storage tank. (PTI No. 142-95A)

Onsite Observations

Per SC III.1, the permittee shall not operate the ammonia facility unless an inspection and maintenance program, as approved by the AQD District Supervisor, has been implemented and maintained. On August 1, 2011, the AQD received an ammonia inspection and maintenance program from Corteva, and an approval letter dated August 2, 2011, was sent to Corteva. This was verified to still be the most recent plan received by the company.

Per SC III.2, the permittee shall not operate the ammonia facility unless a remotely operated internal or external positive shut-off valve is installed to allow access for

emergency shut-off of all flow from stationary storage containers. After speaking with Corteva staff this appears to be being completed.

Per SC III.3, the permittee shall not operate the ammonia facility unless a bulkhead, anchorage, or equivalent system is used at each transfer area so that any break resulting from a pull will occur at a predictable location while retaining intact the valves and piping on the plant side of the transfer area. Speaking with Corteva staff, this would appear to pertain to the trucking companies, and it was concluded no further action is necessary.

Per SC III.4, the permittee shall not conduct any ammonia transfer operations unless all transfer operations including transport deliveries are performed by a reliable person properly trained and made responsible for proper compliance with all applicable procedures. After speaking with Corteva staff on specifics pertaining to this condition, this appears to be being completed.

Per SC IV.1, hose used for transferring liquid and / or vapor to and from the ammonia storage tank shall not exceed 25 feet. Two hoses were observed that would appear to be used for transfer operations and after further review appeared to be less than 25 feet in length.

Per SC IV.2, all ammonia transfer hoses shall be replaced five years after date of manufacture or more often if there is evidence of damage or deterioration. The two hoses observed appeared to be in good condition. Based on the observations made at the time of the inspection, this appears to be being completed.

Speaking with Corteva staff, it was verified that Corteva is following applicable requirements identified in SC IX.1.

Per SC IX.2, after each ammonia transfer operation is completed, Corteva shall vent the hoses used to transfer the ammonia to a stack with a maximum diameter of 8 inches and an exit point not less than 85 feet above ground level. This shall be done in a manner that minimizes any spillage of liquid ammonia from the hoses. It appears this pertains to the one stack associated with this emission unit. As described below it appears that the stack dimensions listed in MI-ROP-B4942-2020a appear to be consistent with what was observed. No further action is necessary.

One stack is listed in association with this emission unit and was observed during the course of the inspection. A rangefinder was utilized to verify the stack height. Based on the observations made, the stack dimensions appear to be consistent with what is listed in MI-ROP-B4942-2020a.

While inspecting the ammonia tank, there appeared to be no evidence of recent spills.

EUKOHLER38RCL

This emission unit is for the 38 kW, 60 Hz, 75 HP stationary spark ignition (SI) emergency internal combustion engine (ICE) fired on liquified petroleum gas exempt from Rule 201 pursuant to Rule 278 and Rule 285(2)(g). Certified by the USEPA to conform to the Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (40 CFR Part 60, Subpart JJJJ).

Onsite Observations

This emission unit was observed during the course of the inspection.

Per SC III.1, the permittee shall operate and maintain EUKOHLE38RCL over the entire life of the engine. Based on speaking with Corteva staff, observations made at the time of the inspection, and records reviewed, this appears to be being completed.

A non-resettable hour meter was noted on the engine at the time of the inspection as required per SC III.2. The meter read 72.3 hours at the time of the inspection. During the last inspection on August 25, 2021, the meter had read 35.8 hours.

Per SC III.3, in order for the engine to be considered emergency, any operation of the unit other than for emergency operation, maintenance and testing, emergency demand response, and operation in a non-emergency situation is limited to 50 hours per year. Additionally, per SC III.4, the permittee may operate the emergency engine for select reasons specified in 40 CFR 60.4243(d)(2)(i) through (iii) for a maximum of 100 hours per year. Any operation for non-emergency situations as allowed by SC III.5, counts as part of the 100 hours per calendar year allowed by this condition. The unit was installed in August 2019. The last time the unit was used for an emergency situation was a power outage in March 2021. Since then, the unit has only been operated for maintenance which includes a 15 min weekly test.

Records

Per SC VI.1, the permittee shall comply with 40 CFR Part 60 Subpart JJJJ by purchasing a certified engine. Documentation previously provided for the unit verifies that the engine is certified by EPA to conform to the NSPS for stationary spark-ignited emissions.

Maintenance records were requested and provided per SC VI.2. As mentioned above, the unit completes a 15 min weekly test for maintenance. Copies of three month and annual maintenance reports were provided. After further review, the records provided appear acceptable at this time.

Per SC VI.5, Corteva must keep track of the hours of operation. Additionally, Corteva must document how many hours are spent for emergency, how it classified as an emergency, and non-emergency situations. Records were requested and reviewed. The emergency generator is only used for emergency situations. The records provided appear acceptable.

FGBURNERS

This flexible group is for the north and south duct burners located in FGUTILITIES. Both burners are fired with natural gas. This flexible group includes the following emission units: EUNBURNER and EUSBURNER.

Onsite Observations

Both units were observed during the course of the site inspection and in operation.

Per SC II.1, Corteva shall only combust natural gas in FGBURNERS. Based on the observations made this is being completed.

Per SC III.1, Corteva shall not operate either burner in FGBURNERS in fresh air firing mode if its respective turbine (EUNTURBINE, EUSTURBINE) is operating. During the inspection this was verified by Corteva staff to be being completed.

Per SC IV.1, Corteva shall install, calibrate, maintain, and operate, in a satisfactory manner, a device to monitor and record the daily natural gas usage rate in standard cubic feet per day for each unit in FGBURNERS. Natural gas monitors were noted for both burners at the time of the inspection and records of natural gas usage were also provided. The natural gas monitors were most recently calibrated in September 2022.

Two stacks are listed in association with this flexible group and were observed during the course of the site inspection. A rangefinder was utilized to verify the stacks height. Based on the observations made, the stack dimensions appear to be consistent with what is listed in MI-ROP-B4942-2020a.

Records

The flexible group is subject to a daily hourly average NOx and CO emission limit while in fresh air mode of 4.5 lb/hr and 4.8 lb/hr respectively for each burner. Records were requested and provided for select time periods. During the time periods reviewed, Corteva appears to have not exceeded the hourly emission limits for both burners for both NOx and CO.

Per SC V.1, at least once every five years FGBURNERS are to be tested to verify NOx and CO mass emissions and emission factors while firing in Fresh Air Mode. The two burners were most recently tested in October / November 2019. Test results showed at the time that NOx and CO emission rates were within permitted limits. Testing was discussed during the course of the inspection, and it appeared that Corteva plans to complete testing in April 2024 following the plant shutdown.

Per SC VI.2, Corteva shall monitor and record, in a satisfactory manner, the total daily natural gas usage rated in standard cubic feet per calendar day for fresh air mode and all operating modes combined for each burner in FGBURNERS. Records were requested and provided for select time periods. Based on the records reviewed this appears to be being completed as required.

Per SC VI.3, Corteva shall monitor and record, in a satisfactory manner, the total operating hours for fresh air mode for each burner in FGBURNERS on a daily, monthly and 12-month rolling time period. Records were requested and provided for select time periods. Upon initial review, errors had been noted in previous years records being correct for monthly / 12-month rolling time periods. The errors were fixed and corrected records provided. For the month of July 2023, FGBURNERS was not run in fresh air mode. As of July 2023, FGBURNERS was operated in fresh air mode 263 hours per a 12-month rolling time period. Based on the records reviewed, it appears that Corteva is keeping track of daily, monthly, and 12-month rolling time period hours of operation for FGBURNERS.

Per SC VI.4, Corteva shall calculate and keep track of hourly NOx and CO mass emissions for FGBURNERS on a daily basis. Records were requested and provided for select time periods. After further review, it appears that Corteva is keeping track of daily hourly NOx and CO mass emissions.

Per SC VI.5, Corteva shall keep in a satisfactory manner, a log of the hours of operation and mode of operation of each burner in FGBURNERS and each turbine to demonstrate compliance with SC III.1. Records were requested and provided for select time periods. Based on the records reviewed, this appears to be being completed.

Per SC VI.6, Corteva shall keep in file at the facility, test reports for FGBURNERS. This was verified to be being completed.

FGTURBINES

This flexible group is for the north and south natural gas fired turbine engines located in FGUTILITIES. (PTI No. 303-98E)

Onsite Observations

Per SC III.1, Corteva shall not operate EUNTURBINE and EUSTURBINE uncontrolled for more than 500 hours combined per a 12-month rolling time period as determined at the end of each calendar month for all of the turbine operating modes combined. Uncontrolled operation is defined as when the dry ultra-low NOx burners are not operating in low NOx mode. Monthly and 12-month rolling time periods of hours run were requested and provided for select time periods. Based on the records reviewed, it appears that Corteva has not operated uncontrolled since at least the last inspection. An error had been noted in the hours run for the south turbine to be corrected. Based on the records reviewed, it appears Corteva is meeting this limit.

Per SC III.2, Corteva shall not operate both turbines in FGTURBINES in a turbine running mode at the same time. Upon review of records provided, this appears to be being followed.

Per SC IV.1, Corteva shall not operate either turbine in FGTURBINES unless its respective dry ultra-low NOx burner is installed, maintained, and operated in a satisfactory manner as allowed by SC III.1. Speaking with Corteva staff this appears to be completed unless uncontrolled.

Per SC IV.2, Corteva shall install, calibrate, maintain, and operate in a satisfactory manner, a device to monitor and record the daily natural gas usage rate in standard cubic feet per day for FGTURBINES. Gas flow monitors were stated by Corteva staff to be on each turbine. Maintenance of the turbines is completed by another company that owns the units which also includes the gas monitors if an issue is identified. After further review, this appears acceptable.

Four stacks were listed in association with this flexible group and were observed at the time of the inspection. A rangefinder was utilized to verify the stack heights. Based on the observations made, the stack dimensions appear to be consistent with what is listed in MI-ROP-B4942-2020a.

Records

The flexible group is subject to two hourly NOx – TEG & Turbine Running Modes limits of 25 ppmvd and 75 ppmvd for each turbine respectively depending on the type of operation. Additionally, this flexible group is subject to two hourly CO – TEG & Turbine Running Modes limits of 50 ppmvd and 210 ppmvd for each turbine respectively depending on the type of operation. Testing was most recently completed in October / November 2019, where based on the test results the FGTURBINES appeared to be in compliance with select emission limits. It should be noted that the 75 ppmvd NOx and 210 CO emission limits would appear to be in place when during extreme cold weather days dry ultra-low NOx burners (SoLoNOx) technology can't turn off.

This flexible group is subject to an hourly natural gas limit of 0.104 MMscf/hr based on a calendar day averaging period. This limit is equivalent to 100 MMBTU/hr based upon a lower heating value of 960 MMBTU/MMscf. It was previously determined that the turbines cannot physically go over the limit due to a manufacturing limit under normal conditions. It was verified by company staff that no changes have occurred since the last inspection that would change the emission profile.

This flexible group is subject to a second material limit in which Corteva shall not burn natural gas which contains total sulfur in excess of 0.8 percent by weight (8,000 ppmw). Based on documentation provided by Corteva it appears that they are meeting this material limit.

Per SC V.1, at least once every five years FGTURBINES are to be tested to verify NOx and CO mass emissions and emission factors while firing in TEG or Turbine Running Modes. The two burners were most recently tested in October / November 2019. Test results showed at the time that NOx and CO applicable emission rates tested were within permitted limits.

Per SC V.3, Corteva shall verify the NOx and CO emission rates from FGTURBINES, at a minimum, every five years from the date of the last test. As stated previously, Corteva has tested NOx and CO emission rates from FGTURBINES in October / November 2019, with results appearing to show the company was meeting applicable permitted limits.

Per SC VI.2, Corteva shall keep test reports for FGTURBINES required by SC V.1 on file at the facility. Speaking with Corteva staff, it was determined that this is being followed.

Per SC VI.3, Corteva shall verify natural gas used onsite meets several applicable requirements. Documentation was requested and provided by Corteva staff regarding natural gas used. After further review, the documentation provided appears acceptable and no further action is necessary at this time.

Per SC VI.4, Corteva shall monitor and record the total daily natural gas usage rate in standard cubic feet per day for all operating modes combined for FGTURBINES and the hourly usage rate as required in SC II.1 based upon a calendar day averaging period. Records were requested and provided for select time periods. Upon review, Corteva is keeping track of operating hours, gas usage and hourly usage rate for each turbine per day. It had been previously determined that the gas usage and hourly usage rate only applies to the TEG/Turbine Mode. It should be noted that Corteva is keeping track of gas usage and operating hours for the supplemental and fresh air mode which could be used to calculate hourly gas usages. After further review, the records provided appear acceptable.

Per SC VI.5, Corteva shall monitor and record the total hours of uncontrolled operation for FGTURBINES on a monthly / 12-month rolling time period. Records were requested and provided for select time periods. Based on the records reviewed and speaking with company staff, it appears that during the time periods reviewed, the units have not run uncontrolled since at least the last inspection. An error had been noted and was pointed out to company staff. After further review, the records appear acceptable.

FGSOLIDHAND

This flexible group is for the solid handling processes used for packaging dry product. The solids handling processes consist of packaging equipment and dust collectors. Emission units for this flexible group are EUSOLIDHAND1, EUSOLIDHAND2, and EUSOLIDHAND3.

Onsite Observations

This flexible group was observed during the course of the site inspection.

Per SC III.1, Corteva shall not operate EUSOLIDHAND1 and EUSOLIDHAND2 unless the dust collector F-586 and at least one TTU are installed, maintained, and operated in a satisfactory manner. Satisfactory manner for dust collector F-586 includes a pressure drop reading across the filter to be less than 10 psig and greater than 0 psig. A pressure drop indicator was verified to be equipped for dust collector F-586 per SC IV.1. At the time of the inspection, the pressure drop reading from EUSOLIDHAND1 to EUSOLIDHAND2 was 3.58 psig, which is within the acceptable limit.

Based on the observations onsite, the three units appeared to be operating satisfactorily at the time of the inspection.

Records

Per SC VI.1, Corteva shall monitor and record in a satisfactory manner the pressure drop for dust collector F-586 once each shift when EUSOLIDHAND2 is operating. Records were requested and provided for select time periods. Upon review, potential concerns were initially identified where pressure drop readings exceeded the satisfactory range limit. It was later concluded that the pressure drop records were not in psig per the required special condition. Upon correction of the instances noted and review of additional records it did not appear the pressure drop exceeded the upper limit range during the records reviewed. A second potential concern that was noted during the last inspection was several times the pressure drop readings had negative values. It has been verified that despite the negative readings the unit would still appear to be operating satisfactorily. This was also supported with a low pressure drop reading equaling less finished product being collected in filters that would be lost revenue. After further review the unit appeared to be operating satisfactory back through the time periods reviewed. Moving forward a PTI application to correct the units of the pressure drop readings shall be submitted by Corteva.

Per SC VI.2-3, Corteva shall monitor dust collector DC-583A to verify it is operating properly by taking visible emission readings for its exhaust a minimum of once per shift when EUSOLIDHAND3 is operating. If any visible emissions are noted, Corteva shall immediately inspect the dust collector and perform any required maintenance. Additionally, Corteva shall record all visible emission readings for the dust collector. Records were available and reviewed at the time of the inspection. The records reviewed appeared to indicate no issues and it was verified by company staff there had been no visible emissions. It was later determined that for the month of August 2022, the records appear to have been misplaced and were unavailable. Since the remaining time periods reviewed appeared to show no issues with the dust collector, it was concluded that a violation notice would not be issued at this time.

FGUTILITIES

This flexible group is for all fuel burning devices providing compressed air, steam, and chilled water generation equipment. Emission units for this flexible group are EUNBURNER, EUSBURNER, EUNTURBINE, and EUSTURBINE.

Onsite Observations

All four units were observed during the course of the site inspection and onsite observations were previously discussed above.

Records

This flexible group is subject to an hourly NO_x emission limit of 13.6 lb/hr that does not include during startup, shutdown, and malfunction of the flexible group; a second hourly NO_x emission limit of 28 lb/hr during uncontrolled operation, where the dry ultra-low NO_x burners are not operating in low NO_x mode; and a third NO_x limit of 63 tpy per a 12-month rolling time period for when the units are combined for all operating modes, controlled and uncontrolled emissions. This flexible group is also subject to an hourly CO emission limit of 14.1 lb/hr that does not include during startup, shutdown, and malfunction of the flexible group; a second hourly CO emission limit of 30 lb/hr during uncontrolled operation, where the dry ultra-low NO_x burners are not operating in low NO_x mode; and a third NO_x limit of 66 tpy per a 12-month rolling time period for when the units are combined for all operating modes, controlled and uncontrolled emissions. Testing was most recently completed in October / November 2019 and verified that hourly NO_x and CO emission rates for FGUTILITIES in the applicable modes were within permitted limits. It was previously discussed with Corteva staff and noted that the "EU Total North/South Supplemental Mode" results were what can be compared to the 28 lb/hr and 30 lb/hr NO_x and CO emission limits respectively. In addition, these two emission limits appeared to have been put in place when during extreme cold weather days dry ultra-low NO_x burners (SoLoNO_x) technology can't turn off.

Records were requested and provided for select time periods. Upon initial review, errors had been noted in previous years records being correct for monthly / 12-month rolling time periods. The errors were fixed and corrected records provided. For the month of July 2023, 5,112 lbs of NO_x emissions were reported emitted. As of July 2023, 32.22 tpy of NO_x emissions were reported emitted per a 12-month rolling time period, which is within the permitted limit. Previous 12-month rolling time periods reviewed also appeared to be within the permitted limit. For the month of July 2023, 4,046 lbs of CO emissions were reported emitted. As of July 2023, 23.84 tpy of CO emissions were reported emitted per a 12-month rolling time period, which is within the permitted limit. Previous 12-month rolling time periods reviewed also appeared to be within the permitted limit.

Per SC V.1, Corteva shall at least once every five years from the date of the previous performance test verify NO_x and CO mass emissions and emission factors from each burner / turbine pairing in FGUTILITIES while firing in supplemental mode. As mentioned above, testing was most recently completed in October / November 2019. Testing was discussed during the course of the inspection, and it appeared that Corteva plans to complete testing in April 2024 following the plant shutdown.

Per SC VI.2, Corteva shall keep onsite test reports for FGUTILITIES. Speaking with Corteva staff, it was determined that this is being followed.

Per SC VI.3, Corteva shall compile all information from FGBURNERS and FGTURBINES needed to calculate emissions for FGUTILITIES on a monthly basis. This information shall include fuel usage specified by mode of operation and emission calculations. Additionally, Corteva shall keep monthly / 12-month rolling time period NOx and CO emissions calculations. Records were requested and reviewed. Based on the records provided and reviewed, this appears to be being completed.

FGCOLDCLEANERS

This flexible group applies to any cold cleaner that is grandfathered or exempt from Rule 201 pursuant to Rule 278, Rule 278a and Rule 281(2)(h) or Rule 285(2)(r)(iv). Existing cold cleaners were placed into operation prior to July 1, 1979. New cold cleaners were placed into operation on or after July 1, 1979.

One new cold cleaner was located on the Corteva site that replaced the previous unit and was observed during the course of the site inspection. The unit had an air to vapor interface of less than 10 square feet and was heated. A copy of the Safety Data Sheet (SDS) of the material utilized by the cold cleaner was requested and provided, however, no VOC content was listed. The VOC content was later verified after speaking with Ultrasonic Power Corporation (material supplier) staff. Based on the VOC content provided, this cold cleaner appears to be exempt per Rule 281(2)(k), and not subject to the FGCOLD CLEANERS requirements of this ROP. Corteva staff verified they would be using this exemption.

FGPAIPMACT

These conditions apply to the facility-wide collection of pesticide active ingredient manufacturing process units (PAI process units) that process use, or product HAP, are located at a plant site that is a major source, as defined in section 112(a) of the CAA, and are subject to Title 40 of the Code of Federal Regulations (CFR), Part 63, Subpart MMM, National Emissions Standards for Hazardous Air Pollutants for PAI Production. An affected source also includes waste management units, heat exchange systems, and colling towers that are associated with the PAI process units.

The various aspects of the NESHAP Subpart MMM are discussed in further detail above.

Conclusion

Based on the facility walkthrough, observations made, and records received, Corteva appears to be in compliance with the MI-ROP-B4942-2020a, NESHAP Subpart MMM and applicable air quality rules.

NAME Adam J. Smith

DATE 09/29/23

SUPERVISOR C. Hill