

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

B494259521

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: 08/25/2021
STAFF: Adam Shaffer	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: In-person inspection.		
RESOLVED COMPLAINTS:		

An onsite inspection and records review was conducted by Air Quality Division (AQD) staff Adam Shaffer (AS) of Corteva AgriScience LLC (Corteva). Applicable records were requested on August 20, 2021, 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 25, 2021.

Facility Description

Corteva is an insect pesticide production facility. The facility is a major source of hazardous air pollutants (HAPs), nitric oxides (NOx), and carbon monoxide (CO). Additionally, the facility is a prevention of significant deterioration (PSD) source. The facility is in operation with ROP No. MI-ROP-B4942-2020a.

Offsite Compliance Review

- 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 January 8, 2019. In the most recent semi-annual and annual compliance reports submitted for 2020, several deviations were reported. Deviations reported included missing air to natural gas ratio data and excursions, events where there were elevated total hydrocarbons with actions taken, and deposits of foam-over solid material on the thermal treatment unit (TTU)-870 containment pad that occurred during routine maintenance bake outs. Please refer to the Violation Notice dated August 5, 2021, that was later issued regarding the air to natural gas excursions. For the solid material identified, in May 2021, the manufacturer of TTU-870 updated the TTU to perform on-line bake outs for the unit instead of the current procedure of being offline. An updated Malfunction Abatement Plan (MAP) was submitted for the TTU-870 on June 4, 2021. Testing completed in July 2021, included verifying particulate matter (PM) emission rates after bakeout were within the PM emission limit for EUPROCESS.
- Based on the timing of the inspection, the 2020 Michigan Air Emissions Reporting System (MAERS) Report was submitted on March 10, 2021, and was reviewed. The 2020 MAERS Report was initially failed in order for the company to make several changes. Errors were noted in the resubmitted 2020 MAERS Report, however, the report was concluded to appear acceptable.
- Corteva is subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) Subpart MMM for Pesticide Active Ingredient Production. Per the NESHAP Subpart MMM, semi-annual reports are required to be submitted for various aspects of the NESHAP. The most recent report was received on March 1, 2021. After further review, the report did not appear to indicate any concerns and after further review was

acceptable.

- Corteva most recently completed stack testing of TTU's 850 – 870 in March and April 2021. The original purpose behind the testing was to expand the air to natural gas fuel ratio permitted currently between 9 to 1 and 11 to 1 and still verify compliance with applicable emission limits. This was to address the deviations previously reported in semi-annual and annual ROP certification reports. During the deviations, the company had operated the applicable TTU's (850, 855, 860 and / or 865) out of the permitted air to natural gas fuel range; however, it was unclear if Corteva had exceeded any organic HAP emission limit while this occurred. During testing using EPA Method 320, formaldehyde was discovered being emitted and based on responses from Corteva, appeared to be being formed in the TTU firebox and is thus a combustion byproduct in the firebox of the TTU's. The following violations were identified and included in the Violation Notice, dated August 5, 2021, that was issued to Corteva.
 - During the April 12-16, 2021, stack test, the results showed that the combined emission concentrations of methanol and formaldehyde for TTU-850, TTU-860 and TTU-865 exceeded the Organic HAP emission limit of 20 ppmv. This is a violation of MI-ROP-B4942-2020a, EUPROCESS, Special Condition (SC) I.1,3,4. Additionally, this is a violation of the NESHAP for Pesticide Active Ingredient Production, 40 CFR Part 63 Subpart MMM.
 - During the April 12-16, 2021, stack test, the combined lb/hr formaldehyde and methanol emission concentrations exceeded the 10.4 lb/hr VOC emission limit for TTU-860. This is a violation of MI-ROP-B4942-2020a, EUPROCESS, SC I. 6.
 - During the April 12-16, 2021, stack test, the results showed the combined emission concentrations of methanol and formaldehyde for TTU-850, TTU-860 and TTU-865 exceeded the Organic HAP emission limit of 20 ppmv. Based on the results, the control devices for EUPROCESS are not working in a satisfactory manner and this is a violation of MI-ROP-B4942-2020a, EUPROCESS, SC IV.3(a)(i). Additionally, this is a violation of Rule 910 and the NESHAP for Pesticide Active Ingredient Production, 40 CFR Part 63 Subpart MMM.
 - Since the issuance of PTI No. 107-18B on March 31, 2020, which has since then been rolled into MI-ROP-B4942-2020a, the facility has reported approximately 756.75 hours of deviations of missing air to natural gas data and/or air to natural gas ratio excursions from the permitted air to natural gas ratio range of 9 to 1 to 11 to 1. This is a violation of MI-ROP-B4942-2020a, EUPROCESS, SC IV.3(a)(iv).
 - During the March 3-4, 2021, and April 12-16, 2021, stack testing, formaldehyde emissions were identified that were not included in previous permitting. The additional formaldehyde emissions are a Rule 201 violation.
- On April 8-9, 2021, the Environmental Protection Agency (EPA) Region 5 completed a virtual partial compliance evaluation of the Corteva site and an onsite inspection of the facility on August 18, 2021. The purpose of the virtual partial compliance evaluation and onsite inspection was to verify compliance with the NESHAP Subparts MMM (Pesticide Active Ingredient Production) and EEEE (Organic Liquids Distribution). AQD staff AS was present for both the virtual and on-site inspection as the representative state air inspector. The onsite inspection identified a leak in the bio-reactor tank that controls emissions for the extraction portion of the process. Emissions from the tank were stated to be methane and are controlled by the flare

located onsite. The records review by EPA is ongoing at the time of this inspection and compliance determination.

Compliance Evaluation

A request was sent to Mr. Jim McGee, EH&S Leader, of Corteva, on August 20, 2021, for various records required by ROP No. MI-ROP-B4942-2020a. The onsite inspection of the facility was later completed on August 25, 2021. At the time of the inspection, the requested records were provided via flash drive and information Corteva believed to be confidential was reviewed onsite. AQD staff AS arrived in the area of the facility at 8:50am. Weather conditions at the time were mostly cloudy skies, temperatures in the low 70's degrees Fahrenheit, and winds from the south at 0-5mph. While offsite, what appeared to be odors from onsite processes were noted to the north of the site as well as a vegetation / water odor that would appear to not be from the site. No odor complaints have been recently reviewed with regards to the company. Emissions observed appeared to only be steam. Upon arriving onsite, AS met with Mr. McGee who was the primary contact for the duration of the onsite inspection. Additionally, during the course of the inspection, AS met with various other Corteva staff who also described the various onsite processes and helped answer site specific questions.

As mentioned above Corteva is an insect pesticide production facility. The various stages of operation were observed during the course of the site inspection and will be discussed further below. 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, the lab portion that is part of the onsite operations was also observed.

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 operation. 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 322°C and 333°C. Corteva staff verified the applicable items pertaining to SC IV.2 were being followed. Based on the observations made at the time of the inspection, the flare appeared to be operating satisfactorily.

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 dated May 20, 2021.

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 TT-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.

As previously mentioned, a Violation Notice, dated August 5, 2021, was issued to Corteva regarding exceeding the maximum outlet organic HAP concentration of 20 ppmv for several TTU's. The following data was collected at the time of the inspection:

TTU	Instantaneous Temperature °F	Air to Natural Gas Ratio
850	899	10 / 9.8
855	676	9.9 / 9.9
860	675	9.8 / 9.8
865	675	9.8 / 9.7
870	1,547	NA

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, 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. Based on observations made at the time of the inspection, this appears to be being completed.

Per SC VI.16, Corteva shall properly maintain the monitoring system, including keeping necessary parts for routine repair of the monitoring equipment. Speaking with Corteva staff, this appears to be being completed.

Six stacks are listed in association with this emission unit and were observed during the course of the site inspection. Though the dimensions were not measured, the stacks appeared acceptable at this time.

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. As mentioned above, stack testing completed in April 2021 showed that TTU-850, TTU-860 and TTU-865 exceeded the Organic HAP emission limit of 20 ppmv. This is a violation and is included in the Violation Notice dated August 5, 2021, that was issued to Corteva. For the records of June 2021, the average THC concentrations for each TTU were reviewed and appeared to show TTU's 850 and 860 were above the 20 ppmv Organic HAP emission limit. The remaining TTU's 855 and 865 were below the 20 ppmv Organic HAP emission limit. Regarding TTU-870, destruction efficiency of the unit was tested in October 2019 and indicated a 98.91 percent destruction efficiency. Most recently testing was completed in July 2021, and a copy of the test results has not been received at this time.

This emission unit has an hourly VOC emission limit for each TTU of 10.4 lb/hr. In the most recent stack testing completed in April 2021, it was determined that TTU-860 had exceeded the 10.4 lb/hr VOC emission limit. The remaining TTU's didn't appear to exceed the hourly emission limit. This hourly emission limit exceedance was included in the Violation Notice dated August 5, 2021, that was issued to Corteva. This emission unit is also subject to a VOC emission limit of 43.7 tons per year (tpy) per a 12-month rolling time period. Records were requested and reviewed for select time periods. For the month of June 2021, 7,361.4 lbs of VOCs were emitted. As of June 2021, 42.39 tpy of VOCs were 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. It was noted in April 2021, that 43.33 tpy of VOCs were emitted and did not include the additional formaldehyde emissions. This was brought to the attention of company staff. Company staff responded that with the addition of formaldehyde emissions to the VOC total it would equal to 43.4 tpy per a 12-month rolling time period. After further review, this appears acceptable.

This emission unit has an hourly ammonia emission rate of 31 lb/hr. Testing for ammonia emission rates was completed in October 2019. Emission rates were acceptable, however, due to higher-than-expected emissions for TTU-865 and TTU-870 subsequent testing was later completed in January 2020 and results were also within the permitted limit. Most recently testing was completed in July 2021, and a copy of the test results has not been received at this time. This emission unit is also subject to an ammonia emission limit of 2.0 tpy per a 12-month rolling time period. Records were requested and reviewed for select time periods. For the month of June 2021, 108 lbs of ammonia emissions were emitted. As of June 2021, 1,314 lbs of ammonia emissions were emitted per a 12-month rolling time period which is within their permitted limit. Previous 12-month rolling time periods reviewed were also within the permitted limit.

This emission unit is subject to an hourly PM emission limit of 0.006 lb / 1000 lb of exhaust gas, calculated on a dry gas basis for each TTU in EUPROCESS. Testing was done in October 2019 and appeared to be within permitted emission limits. Most recently testing was completed in July 2021, and a copy of the test results has not been received at this time.

Per SC IV.4, Corteva shall not operate EUPROCESS unless the permittee is implementing a TTU's Catalyst Inspection and Maintenance Plan acceptable to the AQD District Supervisor. Corteva most recently submitted a Catalyst Inspection and Maintenance Plan dated July 15, 2021, to the AQD. In the future, changes may be requested to the plan due to the identification of formaldehyde emissions in recent stack testing.

Per SC V.1-5, various testing has been completed for this emission unit since the last inspection. Corteva most recently completed testing in March / April 2021 as discussed above to verify Organic HAP, methane, methanol, and formaldehyde emission rates from each TTU. Additionally, Corteva completed testing the week of July 26, 2021, to verify VOC, PM, MeOH, CH₂O, NH₃, NO_X and CO emissions rates for each TTU in this emission unit. Additionally, PM testing was completed during a burnout for TTU-870 to verify PM emission rates. A test report with the test results is due at the end of September 2021.

Per SC VI.1, Corteva shall keep monthly production records for EUPROCESS. Records were provided for requested time periods and reviewed onsite at the time of the inspection. Based on the records reviewed, Corteva appears to be keeping track of the required 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. Records were requested and provided for select time periods. Based on the records reviewed and additional follow up with company staff on select time periods identified, the records were concluded to appear to be satisfactory.

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, 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 on select time periods identified, the records were concluded to appear to be 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 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.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 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. Speaking with Corteva staff, this list has not changed since at least 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). As mentioned above, Corteva has been issued the Violation Notice, dated August 5, 2021, for exceeding the organic HAP emission limit for TTU's 850, 860 and 865. Corteva has also most recently submitted on July 19, 2021, a request to the EPA for approval to changes made to the AMR. A response to the AMR request has not been received by the EPA at this time of the inspection report.

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 is 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.

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, 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. The hose was observed during the inspection and 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. After speaking with Corteva staff, 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. After speaking with Corteva staff, this appears to be being completed.

One stack is listed in association with this emission unit and was observed during the course of the inspection. Though the dimensions were not measured they appeared to be consistent with what is listed in MI-ROP-B4942-2020a.

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 EUKOHLER38RCL over the entire life of the engine. Based on speaking with Corteva staff and observations made at the time of the inspection, 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 35.8 hours at the time of the inspection.

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. Speaking with Corteva staff it has been used for emergency purposes several times, most recently on March 18, 2021, when the unit ran approximately 45 minutes due to a power outage. With the exception of emergency purposes, the engine is run for maintenance / testing. This appears to be acceptable.

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 per SC VI.2. During the inspection while speaking with Corteva staff, it was determined that since the unit is still relatively new, no

maintenance has been completed thus far. It appeared that preventative maintenance was scheduled to be completed relatively soon for the unit. It does appear that weekly testing is completed. After further review, this appears to be acceptable.

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. After further review, it appears Corteva is keeping track of the applicable items as required.

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.

Per SC II.1, Corteva shall only combust natural gas in FGBURNERS. This was verified to be being completed by Corteva staff.

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. Speaking with Corteva staff it appears that this is being done.

Two stacks are listed in association with this flexible group and were observed during the course of the site inspection. Though the dimensions were not measured they appeared to be consistent with what is listed in MI-ROP-B4942-2020a.

Records

The flexible group is subject to a daily hourly average NO_x and CO emission limit whole in fresh air mode of 4.5 lb/hr and 4.8 lb/hr 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 NO_x and CO.

Per SC V.1, at least once every five years FGBURNERS are to be tested to verify NO_x 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 NO_x and CO emission rates were within permitted limits.

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 and after speaking with Corteva staff 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. For the month of June 2021, both burners were run in fresh air mode for three hours. As of June 2021, both burners were run in fresh air mode for approximately 91.25 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. Speaking with Corteva staff onsite it was verified this was 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 does not appear that Corteva has operated uncontrolled since January 2019 when the south turbine ran for 12 hours. 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. This was verified by Corteva staff to be being completed.

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 being 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. It was verified that is being completed.

Four stacks were listed in association with this flexible group and were observed at the time of the inspection. Though the dimensions were not measured they appeared to be consistent with what is identified in MI-ROP-B4942-2020a.

Records

The flexible group is subject to two hourly NO_x – 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 NO_x and 210 CO emission limits would appear to be in place when during extreme cold weather days dry ultra-low NO_x burners (SoLoNO_x) 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. After speaking with Corteva staff it was determined that the turbines cannot physically go over the limit due to a manufacturing limit under normal conditions. Additionally, it appears there are alarms in place if under ideal weather conditions the units would go over this limit, which would also damage the units. Corteva staff stated that these alarms have never went off. After further review this appears acceptable.

This flexible group is subject to a second material limit in which Corteva shall not burn natural gas which contain total sulfur in excess of 0.8 percent by weight (8,000 ppmw). It was verified following the inspection that the natural gas provided shall not contain more than 5.0 grains of total sulfur per 100 cubic feet which equals 85 ppmw and is within the applicable material limit.

Per SC V.1, at least once every five years FGTURBINES are to be tested to verify NO_x 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 NO_x and CO applicable emission rates tested were within permitted limits.

Per SC V.3, Corteva shall verify the NO_x 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 NO_x and CO emission rates from FGTURBINES in October / November 2019.

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 completed.

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, it appears that Corteva is meeting the applicable requirements of SC VI.3.

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. The question was raised on if the gas usage and hourly usage rate for each turbine should

be the combined values of the TEG/Turbine and Supplemental Modes. Corteva staff stated that the material limit of SC II.1 only applies to the TEG/Turbine Mode. After further review, this was concluded to be acceptable at this time.

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. Initial errors were identified, and corrected records provided. Based on records provided, it appears that the units have not run uncontrolled since January 2019. 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 across the filter of less than 10 psig and greater than 0 psig. At the time of the inspection, the pressure drop reading was 0.43 inch of water column which is within the satisfactory range. It was also noted that dust collector F-585A had a pressure drop reading of 3.18 inch of water column. A pressure drop indicator was verified to be equipped for dust collector F-586.

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 drops for dust collector F-586 each shift when EUSOLIDHAND2 is operating. Records were requested and provided for select time periods. Based on the records reviewed, Corteva appears to be keeping track of pressure drop readings for dust collector F-586. Upon further review of the records provided, instances were noted when the unit had a negative pressure drop reading. After speaking with this to Corteva staff, it appears 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, the operating range for dust collector F-586 in MI-ROP-B4942-2020a shall need to be corrected through a PTI application to accurately reflect the true satisfactory operating range.

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 by AS at the time of the inspection for select time periods. Based on the records reviewed, Corteva appeared to be keeping track of applicable items related to DC-583A.

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 NOx emission limit of 13.6 lb/hr that does not include during startup, shutdown, and malfunction of the flexible group; a second hourly NOx emission limit of 28 lb/hr during uncontrolled operation, where the dry ultra-low NOx burners are not operating in low NOx mode; and a third NOx 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 NOx burners are not operating in low NOx mode; and a third NOx 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 NOx and CO emission rates for FGUTILITIES in the applicable modes were within permitted limits. It was discussed with Corteva staff and was noted that the "EU Total North/South Supplemental Mode" results were what can be compared to the 28 lb/hr and 30 lb/hr NOx 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 NOx burners (SoLoNOx) technology can't turn off.

For the month of June 2021, 4,933 lbs of NOx emissions were reported emitted. As of June 2021, 35.28 tpy of NOx 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 June 2021, 4,113 lbs of CO emissions were reported emitted. As of June 2021, 24.68 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 NOx 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.

Per SC VI.2, Corteva shall keep onsite test reports for FGUTILITIES. Speaking with Corteva staff, this was verified to be being completed.

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 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 cold cleaner is located on the Corteva site and was observed during the course of the site inspection. Corteva staff verified that no changes have occurred to the unit since the last inspection. The unit was labeled, has an air to vapor interface of less than 10 square feet and utilizes hydrotreated light distillates.

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 with the exception of the items noted in the Violation Notice, dated August 5, 2021.

NAME Adam Shaffer

DATE 09/30/2021

SUPERVISOR Chris Hare