

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

B281759899

FACILITY: VERTELLUS ZEELAND LLC		SRN / ID: B2817
LOCATION: 215 N. Centennial St., ZEELAND		DISTRICT: Grand Rapids
CITY: ZEELAND		COUNTY: OTTAWA
CONTACT: Adam Bates , Global Director of EHS& Regulatory Compliance		ACTIVITY DATE: 08/10/2021
STAFF: Kaitlyn DeVries	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: The purpose of this inspection was to determine compliance with PTI No. 104-09G other applicable air quality rules and regulations.		
RESOLVED COMPLAINTS:		

On Tuesday August 10, 2021, Department of Environment, Great Lakes, and Energy (EGLE) Air Quality Division (AQD) Staff Kaitlyn DeVries (KD) and Remediation and Redevelopment Division (RRD) staff Dave Wierzbicki (DW) conducted an unannounced, scheduled inspection of Vertellus Zeeland, LLC located at 215 N. Centennial St., Zeeland, Michigan. The purpose of this inspection was to determine compliance with PTI No. 104-09G other applicable air quality rules and regulations.

KD and DW arrived on site shortly before 9:00 am and surveyed the perimeter of the facility for excess odors and opacity prior to entrance. None were noted. After checking in with the security guard, KD and DW were greeted by Mr. Steve Pohler, process engineer, who accompanied them on a walkthrough of the facility. In addition to Mr. Pohler, Mr. Phil Jolliff, Global Process Safety Manager, also accompanied staff on a walkthrough of the facility. Records were provided by Mr. Adam Bates, Global Director of EHS & Regulatory Compliance.

Prior to the walkthrough of the facility, EGLE staff and several other Vertellus staff met to discuss the site including the status of the flare (see compliance evaluation section of this report), and other possible upcoming changes to the facility.

Facility Description

Vertellus Zeeland, LLC (Vertellus) is a chemical manufacturer specializing in products for the pharmaceutical, personal care, and imaging industries. This site also manufacturer's polymers for composite binders.

Regulatory Analysis

Vertellus is currently operating under OPT-Out PTI No. 104-09G and is a synthetic minor source of Hazardous Air Pollutants (HAPs) and Volatile Organic Compounds (VOCs). In addition to the permit, Vertellus is subject to 40 CFR Part 63 Subpart VVVVVV the National Emissions Standard for Hazardous Air Pollutants (NESHAP) for chemical manufacturing area sources. Michigan currently has delegation for this area source MACT. Many of the conditions of the regulation are already written into the permit. Vertellus is also subject to the provisions of 40 CFR Part 60 Subpart IIII the new source performance standards (NSPS) for stationary compression ignition internal combustion engines, NSPS 40 CFR Part 60 Subpart Dc for Small Industrial-Commercial-Institutional Steam Generating Units and 40 CFR Part 63 Subpart ZZZZ the NESAHP for stationary Reciprocating Internal Combustion Engines at area sources; AQD does not have delegation for the NESHAP area source regulation, subpart ZZZZ.

Compliance Evaluation

EUB026

This emission unit covers all of the process equipment located in Building 26. This building is primarily used for Vitride manufacturing. There are three (3) scrubbers associated with this building; two (2) oil scrubbers and one (1) water scrubber. The operational parameters for the scrubber are recorded every two (2) hours. These parameters include the pressure drop and the water flow rate. The scrubbers were not operating at the time of the inspection because the Vitride was in one of the holding tanks and not being processed. For the oil scrubbers, Vertellus tracks the operational parameters, including the oil level, the oil flow rate, the pump pressure, the pressure drop, and the percentage of Toluene in the oil. The oil for the scrubber is changed based upon the percent of Toluene in the oil. The most recent maintenance conducted on the scrubbers was done on June 3, 2021. KD was able to observe all three (3) scrubbers and could see the flow rate, the pressure drop recording devices, and the oil level. Records of the operational parameters were reviewed on site and indicated that the scrubbers operate within the parameters specified in the Malfunction Abatement Plant (MAP).

There is also an aluminum dust handling baghouse associated with this process. The aluminum collected from this process is recycled and sent back into the process. This process was not running at the time of the inspection. Maintenance records indicate this unit most recently had maintenance done on August 3, 2021.

Vertellus is adequately tracking all maintenance on the scrubbers and baghouse, including annual calibrations of the magnehelic gauges.

The Vitride process has a throughput limit of 5,175,000 lbs. per year (ppy), based on a 12-month rolling time period. Per the attached records, as of June 2020 the 12-month rolling throughput was 1,468,980 lbs. VOC emissions are limited to 2.5 tons per year (tpy) also based on a 12-month rolling time period. As of June 2020, the 12-month rolling emissions were 0.31 tpy.

Upon rooftop inspection, all stacks appeared to be of the correct dimension, and all exhaust points and equipment is properly labeled.

EUB031

All of the equipment found in building #31 comprises this emission unit. This emission unit was the reason for recent permit modifications for the installation and use of a ground flare. The ground flare has been constructed but was not yet in use. KD reminded Vertellus staff in the opening meeting that the permit requires testing of the flare within 180 days of commencement of trial operation, and notification of commencement of trial operation is also required. Upon operation the flare must achieve a 90% destruction efficiency during the production of EMA E60. Currently, an ethylene recovery system and cold chillers (Cold trap #1 and Cold trap #2) are the primary control devices used for this emission unit. In addition to the cold traps, for control, there is a wet scrubber used to control the packaging of the products.

The two (2) primary products in this building are E60 and E400, both of which are ethylene maleic anhydride products. E60 has a maximum throughput of 2,640,000 pounds per year (ppy). This limit applies until the ground flare has commenced trial operation. After operation of the ground flare, the material limit increases to 3,960,000 ppy; both limits are based upon a 12-month rolling time period. The records obtained through the end of June 2021 indicate a throughput of 2,357,560 pounds. E400 has a maximum throughput of 440,000 ppy, both based on a 12-month rolling time period. Based on the attached records, the 12-month rolling throughput for the E400 was 81,614 pounds.

Since the ground flare is not currently in operation, the two (2) cold traps are the primary control devices. After commencement of the ground flare, the cold traps will still be used, but will become a secondary control device. At the time of the inspection, cold traps #1 and #2 had exhaust temperatures of 6.2°F and 2.8 °F, respectively; the permitted maximum temperature of the cold traps is 10°F. Currently, Vertellus is recording the temperatures of the cold traps via a circular disc chart. Temperature records indicate the cold traps operate at around 7°F for Cold Trap #1 and 3°F for Cold Trap #2. The scrubber, at the time of the inspection, was running with a pressure drop of 3" WC.

Toluene is the primary HAP in this process and is recovered and stored in a tank equipped with a conservation vent. VOCs from this process are limited to 78.58 tpy based on a 12-month rolling time period. Based on the attached records, the 12-month rolling emissions as of June 2020 were 41.03 tpy.

While the stack dimensions were not explicitly measured, all dimensions appeared correct.

EUNEWPILOTPLANT

All process equipment located in building #32, or the new pilot plant, comprises this emission unit. The new pilot plant is used primarily for research and development operations or small batches and is comprised of three (3) floors of operation. No products were being made at the time of the inspection. Inside the building there is a clean room that has HEPA filtration and is also equipped with a pressure indicator ensuring negative pressure at all times.

The building is also equipped with two (2) scrubbers, a lead and a tail scrubber, which are exhausted through a common stack. While the stack dimensions were not explicitly measured, it appeared to be correct. The scrubbers are equipped with flow indicators, and per a review of the records Vertellus tracks the operational parameters of the scrubbers daily by logging the flow rate and documenting if there is evidence of any visible emissions.

VOCs from EUNEWPILOTPLANT are limited to 35 lbs. per batch, and 3.7 tpy, based on a 12-month rolling time period. Based on the attached records, the 12-month rolling VOC emissions as of June 2021 were 33.25 lbs. (0.02 tons), and the maximum pounds per batch was 11.116. Particulate matter (PM) emissions from this building are limited to 0.01 pph, based on a daily average, and 0.01 lbs. per 1,000 lbs. of exhaust gas, according to the test method. Based on the attached records, the daily average is 0.0001 lbs. and 0.0033lbs. per 1,000 lbs. of exhaust gas is emitted.

Other emissions from this building are limited based on toxicity. Toxic Air Contaminants (TACs) are categorized based on their respective screening levels, and averaging times, and then limited to a specified pound per hour limit (See PTI No. 104-09G for more details and for the specific TAC categories). Vertellus is required to track all emissions from this building and place it into the correct category, based on averaging time. Records for each are attached to this report, and do not show any exceedances; Vertellus is properly tracking the batches processed per month, and all additional information in order calculate emissions based on appendix 2 and 3 of PTI No. 104-09G.

FGCONSOLIDATED

This flexible group covers all process equipment located in buildings 2, 5, 7, 12, 15, 19, and 26a. The various buildings have associated scrubbers, or dust collectors associated with each building.

Within this flexible group EUB002, EUB007, and EUB019 are the emission units that make Vertellus subject to 40 CFR part 63 Subpart VVVVVV the NESHAP for chemical manufacturing area sources. Vertellus accepted throughput limits on the production through these emission units in order to comply with the MACT. Another requirement, of 40 CFR Part 63 Subpart VVVVVV is the controlling of the metal HAP emissions; for Vertellus, this metal HAP is Chromium. Vertellus has a control device for the chrome emissions and is properly tracking the number of batches per month with a total of 2.51 batches produced in the last 12 months. EUB002 (Stack #6), has a production limit of 1.5 million pounds of any one product, based on a 12-month rolling time period. As of April 2019, the 12-month rolling production was 4,603 pounds. EUB007 has a throughput limit of 10 million pounds based on a 12-month rolling time period, per the records, no production has occurred in this building for the previous 12 months. EUB019 has a throughput limit of 40 million pounds based on a 12-month rolling time period. The June 2021 12-month rolling records indicate a throughput of 930,421 pounds.

In addition to the material limits listed above, this flexible group has a VOC limit of 43.4 tpy, based on a 12-month rolling time period. Based on the attached records, the 12-month rolling VOC emissions as of June 2021 were 9.03 tons. Batches within this flexible group have a VOC limit of 0.03 lbs./lb. of product, except for ethylene. The highest VOC emission in pounds per pound of product was 0.0232, according to the attached records. Ethylene is limited to 1.0 lbs. per lb. of product, on a per batch basis. According to the records, no ethylene was emitted in the last 12-months.

PM emissions from EUB007, for flaking and grinding, is limited to 0.175 pph and 0.01 lbs. per 1,000 pounds of exhaust gas, based upon test protocol. Records indicate daily average PM emissions of 0.011 pph and 0.0099 pounds per 1,000 pounds of exhaust gas. PM from EUB019 and EUB005, for drying and packaging operations and centrifuge unloading, is limited to 0.025 pph and to 0.01 lbs. per 1,000 lbs. of exhaust gas, all based on test protocol. Records indicate daily average PM emission of 0.011 pph and 0.0050 pounds per 1,000 pounds. Additionally, no visible emissions were seen from any of the stacks during the inspection, and Vertellus is conducting and recording visible emissions observations from the processes (EUB007, flaking and grinding, and EUB019 and EUB005, drying and packaging operations), as required.

Emissions of other pollutants are limited based on toxicity, similar to that of EUNEWPILOTPLANT as mentioned above. Toxic Air Contaminants (TACs) are categorized based on their respective screening levels and averaging times and then are limited to a specific pound per hour emission rate based upon those screening levels and the respective stack where they exhaust. Vertellus is required to calculate and track all emissions from this flexible group in accordance with the requirements of Appendix 5 of PTI No. 104-09G. Per the attached records, the emissions do not show any exceedances of any of the limits. All production information, including material throughput, also appears to be properly tracked; no exceedances were noted.

Control devices consisting of dust collectors and scrubbers appeared to be properly operating for all of the buildings. KD was able to observe the control devices during the inspection, and the pressure drops for the dust collectors and the flow rates for the scrubbers. All of the scrubbers are equipped with high level and low flow alarms. Records for all of the dust collectors and scrubbers were operating within the ranges specified in the MAP.

KD was able to observe many of the stacks during the inspection; the stacks were labeled and appeared of proper dimension, however, KD did not measure the stacks.

Based on the compliance with the material throughput limits and the operational practices, as outlined in the MAP, Vertellus appears to be complying with the provisions of 40 CFR Part 63 Subpart VVVVVV.

It should be noted that after the inspection, prior to issuance of this report Vertellus experienced a malfunction on August 31, 2021, for one of their vessel reactors which resulted in a release of 15 pounds of Maleic Anhydride, 1129 pounds of Octadecene, 5439 pounds of Xylene, and 3944 pounds of a Copolymer product that had the appearance of a white plastic type substance. The release totaled 2.73 tons of VOC's and HAPs. Vertellus reported this to EGLE and properly submitted a Rule 912 report. However, the result of these emissions did exceed the VOC lb./lb. of product emission limit and some TAC emission limits as mentioned above and did result in a Rule 901(b) Violation due to the white polymer substance falling out into neighboring communities. These violations have been addressed separately from this inspection report.

FGFACILITY

This flexible group covers all equipment located at the facility including permitted, grandfathered, and exempt equipment. Vertellus has a facility-wide VOC limit of less than 100 tpy based on a 12-month rolling time period. Per the attached records, as of June 2020 the 12-month rolling VOC emissions were 79.22 tons. There are also facility-wide HAP limits of less than 25 tons per year for aggregate HAPs, and less than 10 tpy for individual HAPs; both are based on 12-month rolling time periods. Per the attached records, aggregate HAP emissions were 8.32 tons with Toluene being the individual HAP with the highest emission rate at 6.81 tons. As mentioned in FGCONSOLIDATED, Vertellus is complying with the provisions outlined in 40 CFR Part 63 Subpart VVVVVV.

MISCELLANEOUS EXEMPT EQUIPMENT

Vertellus has several storage tanks on site that store various products including methanol, methyl ethyl ketone, isopropanol, and others. These storage tanks are exempt from Rule 201 permitting under Rule 284(2)(n). Rule 290 is used to track the emissions from the methanol storage tanks and as well as the old pilot plant. The monthly methanol emissions from the storage tanks are 0.68 lbs./month, which is below the allowed 500 pounds per month limit for rule 290. The old pilot plant has not been in use in the last year.

There are four (4) Diesel emergency generators on site, ranging from 20 KW to 80 KW (26.8 HP to 107.3 HP) installed between 1991 and 2010. Specifically, the 20 KW generator was installed in 2002, the 30 KW generator was installed in 1991, the 40 KW generator was installed in 2010, and the 80 KW generator was installed in 1998. All of these engines are exempt from Rule 201 permitting under Rule 282(2)(b)(ii). The 40 KW generator is subject to the provisions of 40 CFR Part 60 Subpart IIII the new source performance standards (NSPS) for stationary compression ignition internal combustion engines. Based on manufacturer’s specification, this is a certified engine, and meets the emissions standards as outlined. All four (4) engines are subject to the provisions of 40 CFR Part 63 Subpart ZZZZ the NESAHp for stationary Reciprocating Internal Combustion Engines at area sources; AQD does not have delegation for this area source regulation. The total lifetime operating hours for the four (4) range between 605.8 hours and 102.1 hours. Maintenance for these generators was conducted in March of 2021.

Vertellus has two (2) 20 MMBTUI natural gas only boilers. Both boilers are exempt from Rule 201 permitting under Rule 282(2)(b)(i). Neither boiler is subject to the provisions of 40 CFR Part 63 Subpart JJJJJ the NESHAP for Industrial, Commercial, and Institutional Boilers at Area Sources since the boilers are natural gas only. One (1) boiler, installed in 1979, is also exempt from the provisions of the New Source Performance Standard (NSPS) 40 CFR Part 60 Subpart Dc for Small Industrial-Commercial-Institutional Steam Generating Units. The other boiler, installed in 1990, is, however, subject to Subpart Dc. AQD has received proper notification of this boiler.

Finally, Vertellus does not have any cold cleaners.

Compliance Determination

Based on the observations made during the inspection and a subsequent review of the records, it appears as if Vertellus Zeeland, LLC is compliant with PTI No. 104-09G. However, as previously mentioned, the non-compliance issue with the release on August 31, 2021, will be addressed independently of this inspection report.

NAME Kaitlyn Durin DATE 9/14/2021 SUPERVISOR HH