

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

P019454837

FACILITY: Clarios APS Production		SRN / ID: P0194
LOCATION: MEADOWBROOK FACILITY, HOLLAND		DISTRICT: Kalamazoo
CITY: HOLLAND		COUNTY: ALLEGAN
CONTACT: Shellie Ritsema , Environmental Supervisor		ACTIVITY DATE: 07/30/2020
STAFF: Cody Yazzie	COMPLIANCE STATUS: Non Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: Scheduled Inspection		
RESOLVED COMPLAINTS:		

This inspection was conducted in two separate portions to best accommodate for social distancing guidelines that are set by the operating facility and the State of Michigan in response to the COVID-19 virus pandemic. The first portion consist of the records review that are associated with any Permit to Install that the facility may have active currently along with any permit exempt equipment that may require recordkeeping. The second part of the inspection would include the on-site visit in which staff could observe the emission units on a typical operation day.

Clarios APS Production LLC (hereafter Clarios). The facility has roughly 75 employees and operates on one shift. Clarios was last inspected by the AQD on May 31, 2012.

Clarios is a lithium ion battery manufacture that produces lithium ion battery cells for hybrid and electric vehicles. Clarios was first permitted in April of 2014. The facility was permitted originally to manufacture lithium ion batteries starting from dry anode and cathode mixtures that are made into a slurry that is used in the coating process. After the coating process the facility winds the anode and cathodes and packs them in a casing and fills the casing with electrolyte to make a battery cell. These cells are then provided to Clarios's customers. Currently Clarios is buying precoated anodes and cathodes largely cutting back production hours spent operating the dry mixing and coating operations.

Records Review Conducted (July 16, 2020):

On April 24, 2020 Air Quality Division (AQD) staff (Cody Yazzie) sent an email to Shellie Ritsema, Clarios, Environmental Supervisor requesting recordkeeping associated with PTI No. 4-14A. Mrs. Ritsema promptly sent over the requested records for staff's review. Staff's summary of the review is included below.

EUCOATING:

This emission unit are two drying ovens that have a total heat input of 6.296 MMBTU/hour. Other process equipment that are also included as apart of this emission unit are coating storage, preparation, application, drying and solvent recovery operations that include a condenser. Emissions from EUCOATING are controlled by a wet scrubber.

When EUCOATING is applying VOC-containing coatings it is required by PTI No. 4-14A Special Condition IV.1 that the wet scrubber shall be installed, maintained, and operated in a satisfactory manner. Satisfactory operations includes, but is not limited to, maintaining a total scrubber water flow rate (sum of water flow rate and recirculation water flow rate) at or above 95% of the total flow rate determined during the most recent Department approved emission test and maintaining a pressure drop across the scrubber according to manufacturer's specifications. The most recent test was conducted on October 30, 2013 and measured a total water flow rate of 470 liters per minute during those tests.

Special Condition VI.2 requires that both the scrubber make-up water flow rate and recirculation water flow rate for EUCOATING be recorded on a calendar day basis when the scrubber is in operation. Staff was provided with the documentation of the make-up water flow rate in liters per minute for the days that EUCOATING was in operation during 2019, however Clarios was unable to provide the records of the recirculation water flow rate for

the days that EUCOATING was in operation during 2019. Because the facility was unable to produce the recirculation water flow rate in liters per minute Staff was unable to confirm compliance that while EUCOATING was in operation a total scrubber flow rate was maintained at or above the 95% of the 470 liters per minute that the scrubber had during the 2013 emission test. Staff indicated to Mrs. Ritsema that this is a violation of Special Condition VI.2 and would be cited in a violation notice.

The facility is also required to maintain monthly and 12-month rolling time period VOC emission calculation records for EUCOATING. The facility calculates these emissions by tracking the monthly NMP usage then applying control efficiency factors for both the condenser and the wet scrubber. The used control efficiency factors are 85.05% and 99.57% respectively. The facility has not operated this emission unit in the year 2020. In 2019 the facility only operated EUCOATING in 5 separate months. The month that recorded the largest amount of VOC emissions since January 2019 occurred in July 2019. The total emissions for this month were calculated and recorded to be 51.9 lbs. Staff reviewed 12-month rolling emissions for the period of January 2019 through June 2020. The largest 12-month rolling VOC emissions for this occurred during the months of December 2019 through May 2020 in which the facility recorded 0.061 TPY of VOC emissions for each 12-month rolling time period. This is well below the permitted 3.0 TPY of VOC emissions.

EUCALENDARING:

This emission unit includes process equipment for slitting, calendaring, second vacuum drying, and winding of anode and cathode materials. Emissions from this emission unit are vented to the general in-plant environment.

Since exhaust gases are to be vented to the general in-plant environment and not directly discharged through a dedicated stack to the outside ambient air at anytime this emission unit has minimal special conditions associated with it. The facility does calculate fugitive emissions from this process. The facility quantified these emissions in 2019 when EUCOATING was in operation. The largest amount of fugitive emission that were calculated occurred in July 2019 and were calculated to be 15.9 lbs of VOC. Since these emissions are fugitive and not associated with being directly discharged through a dedicated stack to the outside ambient air Staff have evaluated the fugitive emissions to appear to be in compliance with Special Condition VIII.1

EUWELDING:

This emission unit are welding operations that are conducted in the facility. There are no recordkeeping requirements that are associated with this emission unit. The emissions from this emission unit are required to be controlled by a dust filtration collection system that is installed, maintained, and operated in a satisfactory manner. In addition to the requirement of control equipment being installed and operated the facility has a 0.01 lbs per 1,000 lbs of exhaust gas, calculated on a dry basis emission limit that is subject to testing when required by the Air Quality Division. As of the time of records review it does not appear that an emission test has been requested by AQD.

EUCLEANUP:

This emission unit is associated with the cleaning of the Dry Clean Room and other areas within the plant with solvent for particle count reduction. Records for this emission unit include monthly recordkeeping that show gallons used for each clean up material used, VOC content in pounds per gallon, monthly VOC mass emission calculations determining the monthly emission rates in tons per calendar month, and VOC mass emission calculations determining the annual emission rate in tons per 12-month rolling time period as determined at the end of each calendar month. Additionally, the facility facility is required to maintain a current listing from the manufacturer of the chemical composition of each clean up material.

The only clean up material that the facility reported that it uses is B-70% Isopropyl alcohol. This is manufactured by WEBB Chemical Service Corp. Staff was provided with the proper SDS sheet. The SDS sheet indicated that the chemical composition has a total of 74.8 Volume percent Total VOC's or 4.9 lbs of VOC/gallon. Currently the facility calculates VOC emissions using 70% isopropyl alcohol then using a density factor of 6.57 lbs/gallon. The facility then applies a 35% retention factor for the isopropyl alcohol being applied via wipes. The 35% retention factor was considered during the permitting process and is shown in Special Condition II.1 in the 24,600 lbs. VOC limit of total clean-up solvent usage per year. Staff mentioned to Mrs. Ritsema that the correct calculation

should use 4.9 lbs of VOC/gallon since Special Condition V.1 requires the facility to use SDS data unless the facility has performed Method 24 testing on the solvent. This change would increase the VOC emissions marginally since the facility is using such low amounts of cleaning materials. If the facility were to ever up the cleaning usage the change in calculation could result in a larger amount.

Staff reviewed VOC emission calculations for the time period of January 2019 through June 2020. The largest amount of VOC's that were emitted in a single month occurred in June 2020 calculating 161.4 lbs of VOC emitted in that month. The largest 12-month rolling for this time period is calculated to be 0.179 TPY which occurred in June 2020. This is well below the 8 TPY permitted limit. Even with the minor VOC calculation error the facility would be expected to be well below the permitted limit.

EUPILOT:

This emission unit covers pilot operations that are controlled by a regenerative thermal oxidizer (RTO). The facility has special conditions that need to be met regarding the operation of the thermal oxidizer and for calculating VOC emissions.

The RTO is required to be equipped with a temperature monitoring device in the combustion chamber of the RTO to monitor and record the temperature on a continuous basis. Special Condition IV.1 also requires that a minimum operating temperature of 1500 degrees Fahrenheit be maintained while EUPILOT is in operation. Staff requested records for the days that EUPILOT did operate in 2019 to see the RTO data that was collected from the run days. It was explained to staff that the facility does have the ability to monitor and record data that is collected from RTO, but the facility was unaware that data gets overwritten after 3 months if the data is not collected in a paper format. For this reason, Clarios was unable to provide records of the RTO temperature from operation in 2019. Mrs. Ritsema did turn on the RTO during the inspection even though EUPILOT was not in operation during the inspection to show that RTO data could be monitored and collected. More discussion on this can be seen in EUPILOT below.

The facility is calculating and recording monthly and 12-month rolling VOC emissions. Staff requested and were provided with records starting from January 2019. This emission unit only operated in September, October, and November of 2019. The facility calculates emissions via a mass balance and applying a 95% pollution control efficiency factor for the RTO. The total amount of VOC emissions for these three months were calculated to be 149.69 lbs which converts to be 0.07 tons of VOC emissions. The largest 12-month rolling emission calculations were recorded as 0.07 TPY during this time. This is well below the permitted limit of 5.0 TPY.

EUFORMATION:

This emission unit includes formation operations that involve the placement of a temporary seal on the battery cells that are followed by the heating, cooling, and replacement of the temporary seal with a permanent seal. This emission unit has minimal recordkeeping requirements associated with it.

Special Condition VI.2 requires the facility to maintain monthly and 12-month rolling records of VOC emission records emitted from EUFORMATION using a method acceptable to the AQD District Supervisor. The facility calculates emissions by tracking the number of cells that produced. Then multiplying the number of cells produced by 31 cc of gas and converting it to cubic feet. The facility then applies a 6.03% of hydrocarbon by volume emission factor and then uses the molecular weight of EMC (104.05 lb/lbmole) and 385.3 as the molar conversion standard in cubic feet/lbmole. The largest monthly calculated VOC emissions were reported during June 2020 and calculated to be 0.6 lbs of VOC in that month. Since January 2019 the facility largest amount of VOC emissions that were calculated were 0.001 TPY in the months ranging from August 2019 through June 2020. This is well below the 0.06 TPY permitted limit.

FGDRYMATERIALS:

This flexible group is the process equipment EUANDRYMIX and EUCATDRYMIX that are used for dry material handling and mixing prior to solvent addition. Emissions are controlled by a high efficiency particulate air (HEPA) filtration system and dust collector.

All the emission limits that are associated with this emission unit are Particulate Matter emission rates that require a test to determine compliance. Each emission limit can be required to be evaluated using general condition 13. It does not appear that AQD has required that Clarios test emission rates at this point to verify PM emissions.

Special Conditions IV.1 require that FGDRYMATERIAL do not operate unless the dry material operations unless the HEPA filtrations system and dust collector control devices are installed, maintained, and operated in a satisfactory manner. Staff was provided with documentation for Monthly preventative maintenance that is conducted and provide the date of the last filter change. The filters were last replaced on October 10, 2019.

Special Condition VI.2 requires the facility to maintain daily records of the pressure drop reading for each dust collector associated with FGDRYMATERIAL. Clarios was unable to provide these records for the operation days in 2019. Staff indicated to Mrs. Ritsema that this is a violation of PTI 4-14A and would be cited in a violation notice.

Special Condition VI.4 requires that the facility maintain records of visible the visible emission readings that are required by Special Condition VI.3. In Special Condition VI.3 it is specified that the facility must verify the filters are operating correctly by taking visible emission readings. It also specifies that the readings can either be certified or non-certified and must be taken at least once per calendar month. If visible emissions are observed the facility must immediately inspect the filters and perform any required maintenance.

FGFACILITY:

This flexible group is for all source-wide process equipment including equipment covered by other permits, grand-fathered equipment, and exempt equipment. There are three emissions limits for VOC, Individual HAP, and Aggregate HAP.

The facility is calculating and recording VOC emission from emission units that are located source-wide at the facility. The largest calculated 12-month rolling VOC emissions since January 2019 were recorded in January 2019 and recorded to be 0.55 TPY of VOCs. This is well below the 25 TPY emission limit included in the flexible group.

The largest source of HAPs appears to Toluene which was calculated to be 59.90 lbs per year or 0.02 TPY. These HAPs emissions come from the EUPILLOT emission unit and is not used on a regular basis. The facility provided documentation of a toxics review that showed Cobalt and Nickel Compounds are emitted at an expected rate of 0.167 lbs per year and 0.752 lbs per year respectively from a process that was operating 6000 hours per year. The facility operates only a few days per year which will bring emission for these HAPs down. The facility also calculates facility wide PM emissions. Since January 2019 the largest PM emissions were reported as 0.00000046 TPY of PM even if all PM emissions were assumed to be Cobalt or Nickel emissions the facility would still be in compliance with the 5 TPY Individual HAP emission limit. The Aggregate HAPs would still be in compliance with the 12.5 TPY emission limit as the addition of the assumed Cobalt and Nickel emissions would be negligible.

Mrs. Ritsema stated that the facility does not have boilers to be included in HAPs emission calculations. Staff looked through requested SDS sheets of different chemicals used through out the facility and it appears that there are no other HAPs than the ones discussed above. Reviewed SDS sheets are attached to the inspection report.

Onsite Inspection Summary Conducted (July 30, 2020):

On July 30, 2020 AQD staff arrived at 70 West 48th Street Holland, Michigan at 9:00 AM to conduct an announced air quality inspection of Clarios. Staff made initial contact with the office receptionist and signed in at the facility and stated the purpose of the visit. Mrs. Ritsema the facility Environmental contact arrived shortly thereafter and took staff to his office for further discussions.

EUCOATING:

This emission unit was not in operation during the inspection. The facility currently only operates this emission unit only a few days a year for maintenance reasons. Mrs. Ritsema also indicated that the facility has moved manufacturing operations to acquiring already coated anode and cathodes. The facility brings these precoated materials in and winds them. After winding the facility packs the winded anode and cathodes in a casing and fills with electrolyte to make a battery cell. These cells are then provided to Clarios's customers. Mrs. Ritsema did indicate that the facility currently does not have plans to start full cathode and anode slurry mixing and coating application production on a regular basis anytime soon.

EUCALNDARING:

This emission unit includes the slitting, calendaring, second vacuum drying, and winding of anode and cathode materials. The facility still does operate parts of this emission unit. During the inspection staff did not observe any of this equipment in operation. Staff was able to observe the equipment for slitting through glass. All this equipment is located in a separate room in the center of the building due to the high sensitivity cleanliness need for operation.

EUCLEANUP:

This emission unit is for the cleaning of the Dry Clean Room and other areas within the facility with solvent for particle count reduction. During the inspection staff did ask Mrs. Ritsema if isopropyl alcohol was the only cleaning solvent that is utilized by Clarios just for verification of the emission records. Mrs. Ritsema did indicate that isopropyl alcohol is the only cleaning solvent used for this. Special Condition III.1 does require that the facility capture all waste clean-up solvent and shall store it in closed containers. During the inspection Staff did not observe any containers containing waste cleaning solvent that were open. It does appear that Clarios is in compliance with this special condition.

EUPILOT:

This emission unit was not in operation during the inspection. The facility uses this emission units to run test batches of anode and cathode "recipes" that a certain customer may require. This emission unit was not in operation during the inspection and has not been operated since 2019. Mrs. Ritsema also indicated that the facility did not have any plans to operate the emission unit anytime soon since the facility has moved away from dry mixing and coating of the anode and cathode material.

During the inspection Mrs. Ritsema had the RTO operating to show Staff that the temperature of the combustion chamber of the RTO can be continuously monitored and recorded. In the records review section Staff discussed how the facility did not have temperature monitoring data for the most recent production days. Staff requested for a copy of the temperature monitoring data for the day of the inspection. The data appears to show that the RTO is typically operated above 1500 degrees Fahrenheit. Mrs. Ritsema also discussed that prior to the inspection she updated the startup and shutdown directions for EUPILOT. In these directions it included language to direct operators to make sure a paper copy of temperature monitoring data is printed off and filed for recordkeeping. Staff indicated to Clarios that while the facility may have had record of the RTO temperature at some point electronically. The facility is required by Rule 201(3) to maintain required records on file for a period of 5 years. Since the facility was unable to produce the records from operation dates in 2019 staff was unable to evaluate compliance with the 1500 degree Fahrenheit combustion chamber limit. Staff indicated to Clarios that this is a violation of PTI No. 4-14A and would be included in a violation notice.

EUFORMATION:

This emission unit are the formation operations involving the placement of a temporary seal on the battery cells followed by the heating, cooling, and replacement of a temporary seal with a permanent seal. This portion of the process is highly automated which staff was able to observe during the inspection. This emission unit does not have any process/operational restrictions included in the special conditions of PTI No. 4-14A all of the special conditions are for recordkeeping of VOC emissions. Recordkeeping requirements were evaluated in the above EUFORMATION section.

EUNMPTANKSTORAGE:

This emission unit is located in the emission unit description within PTI No. 4-14A. This emission unit is described as (4) 10,000-gallon n-methyl pyrrolidone (NMP) bulk storage tanks that store virgin, waste, and reclaim NMP. It is also included in the description that vents from the tanks that are controlled by the EUCOATING wet scrubber.

It was explained during the inspection that since the facility only produces the anode and cathode coatings a few days a year when the facility is operating the full facility for service reasons that waste NMP is no longer stored in these tanks as the waste NMP will turn to a cement like consistently and is hard to clean up. Currently facility only stores a small amount of NMP in these tanks. Since the description of the emission unit included that emissions from these tanks were controlled by the wet scrubber associated with EUCOATING staff did ask if this meant the facility was operating the scrubber continuously even though EUCOATING is only operated a few times a year. Mrs. Ritsema stated that the scrubber was only turned on when EUCOATING was operated or the tank was being filled or some sort of agitation occurred in the tanks. Clarios was able to produce documentation that and process flow diagrams that map the NMP storage tanks venting and connection to the scrubber. In these diagrams it shows that there are valves that close when EUCOATING is not in operation. It was explained that the only way for these valves to open and allow for emissions to vent through the scrubber is for EUCOATING to be operating.

Staff also looked at the original emission calculations associated with EUNMPTANKSTORAGE to see if there were any breathing loss emissions included in the calculation. The calculation showed that emissions were based on the number of times and amount of NMP was transferred and no breathing losses due to the low vapor pressure of NMP. The original calculation for a worst-case scenario assumed that the NMP would be transferred twice a year and result in 0.035 lbs per year of VOC emissions. Staff asked how many deliveries of NMP the facility had in the past two years and was told that there were no deliveries in 2019 but there was one on August 13, 2020. This appears to show that the worst case calculation of two transfers per year to be an accurate worst-case scenario for the calculation.

Based on the documentation provided the facility appears to be in compliance with the emission unit summary description located in PTI No. 4-14A for EUNMPTANKSTORAGE.

EUINK:

This emission unit is located in the emission unit description within PTI No. 4-14A. This emission unit is described as ink jet marking systems used to identify off-specifications or defective materials. It was explained during the inspection that the facility uses this emission unit to mark a line on cells that are determined to have imperfections on them. This emission unit does not have a special condition emission unit table as a part of the permit. Upon review of the original 4-14 PTI application it does appear that EUINK is a permitted piece of equipment. While the facility does not have any special conditions that are associated with EUINK the facility should be tracking VOC and HAP emissions to be calculated as a part of FGFACILITY. The facility did provide VOC emission calculations as a part of the records review.

EUELECTROLYTE:

This emission unit is located in the emission unit description within PTI No. 4-14A. This emission unit is described as electrolyte addition and final cell assembly with only emissions occurring during electrolyte cylinder disconnection. It was explained during the inspection that the facility hooks up drums of electrolyte in a separate room outside the main manufacturing building. In this building when the facility switches drums and causes a disconnection from the feeding system a small amount of VOC emissions are released. The facility calculates VOC emissions based on the number of times this disconnection happens. This emission unit does not have a special condition emission unit table as a part of the permit. Upon review of the original 4-14 PTI application it does appear that EUELECTROLYTE is a permitted piece of equipment. While the facility does not have any special conditions that are associated with EUELECTROLYTE the facility should be tracking VOC and HAP emissions to be calculated as a part of FGFACILITY. The facility did provide VOC emission calculations as a part of the records review.

FGDRYMATERIALS:

This emission unit was not in operation during the inspection. The facility currently only operates this emission unit only a few days a year for maintenance reasons. Mrs. Ritsema also indicated that the facility has moved manufacturing operations to acquiring already coated anode and cathodes. The facility brings these precoated materials in and winds them. After winding the facility packs the winded anode and cathodes in a casing and fills with electrolyte to make a battery cell. These cells are then provided to Clarios's customers. Mrs. Ritsema did indicate that the currently does not have plans to start full cathode and anode slurry mixing and coating application production anytime soon.

MACT 7C:

Staff had a discussion with Mrs. Ritsema that the Kalamazoo District Office received notice that another Lithium Ion Battery Manufacturing facility that is in the Kalamazoo District had recently received an Applicability Determination Letter from the United States Environmental Protective Agency (USEPA). Staff discussed that the Applicability Determination Letter from the USEPA determined that the other Lithium Ion Battery Manufacturing facility was subject to 40 CFR Part 63 Subpart CCCCCC which is the National Emission Standard for Hazardous Air Pollutants for Area Sources: Paints and Allied Products Manufacturing. Staff explained that this subpart defines paints and allied products to mean materials such as paints, inks, adhesives, stains, varnishes, shellacs, putties, sealers, caulks, and other coatings from raw materials that are intended to be applied to a substrate and consists of a mixture of resins, pigments, solvents, and/or other additives. The Applicability Determination letter discussed how the other Lithium Ion Battery Manufacturing facility met this definition of paints and allied products. Staff mentioned to Mrs. Ritsema that if the other facility was determined to be subject to this regulation then there is a good possibility that Clarios is also subject to the regulation as well. This regulation is an area source MACT standard that AQD has not been given delegation to enforce so staff would not be making a determination on compliance for this regulation. Staff recommended that Mrs. Ritsema evaluate or have the applicability of regulation evaluated as it regards to Clarios.

At the time of the inspection and based on a review of records obtained during or following the inspection, the facility appears to be in non-compliance with PTI No. 4-14A. Staff stated to Mrs. Ritsema that a report of the inspection would be sent to the facility for their records along with a violation notice. Staff concluded the onsite inspection at 11:00 AM.-CJY

NAME Cody Young

DATE 8/28/20

SUPERVISOR RIL 9/9/20