

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

P102771889

FACILITY: DDP Specialty Electronic Materials US, LLC		SRN / ID: P1027
LOCATION: 3400 S. Saginaw Rd Unit 96, MIDLAND		DISTRICT: Bay City
CITY: MIDLAND		COUNTY: MIDLAND
CONTACT: Randy Reinke , Environmental Specialist		ACTIVITY DATE: 05/15/2024
STAFF: Nathanael Gentle	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MEGASITE
SUBJECT: EU88 Scheduled Onsite Inspection		
RESOLVED COMPLAINTS:		

On May 16, 2024, AQD staff conducted a scheduled onsite inspection of the emission unit (EU) identified as EU88 at DDP Specialty Electronic Materials US, LLC, SRN P1027. The purpose of the inspection was to determine compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control of Natural Resources and Environmental Protection Act, 1994 Public Act 451; Michigan Department of Environment Great Lakes and Energy, Air Quality Division (AQD) Administrative Rules and Renewable Operating Permit, MI-ROP-P1027-2020b. At the time of inspection, the facility was found to be in compliance.

Facility Description and History

DDP Specialty Electronic Materials US, LLC is a megasite located at 3400 South Saginaw Road Unit 96, Midland, Midland County, Michigan 48640. The stationary source consists of DDP Specialty Electronic Materials US, LLC and Nutrition & Biosciences USA 1, LLC (SRN P1027), The Dow Chemical Company (SRN: A4033), Dow Silicones Corporation (SRN: A4043), SK Saran Americas LLC (SRN: P1026), Corteva Agriscience LLC (SRN: P1028), and Trinseo LLC (SRN: P1025). During the May 16, 2024, compliance was evaluated for EU88.

EU88, also known as the Cation process, is located in the ion exchange resins manufacturing complex. The Cation process produces ionized beads. The ionized beads are sold to customers to be used in water filtering processes. The Cation process consists of reactors, separators, storage tanks/silos and related equipment. The process consists of three stages including sulfonation, hydration, and neutralization. During the sulfonation stage, raw material including beads, sulfuric acid, and solvent as needed are added to a reactor and heated to functionalize the beads. Solvent used in the reaction is recovered and used in future batches, with fresh solvent added as needed. The slurry is transferred to the hydration stage. In this stage the beads go through a series of washes to wash the sulfuric acid out of the beads. Following the hydration stage is the neutralization stage. This stage consists of a series of hot and cold washes to remove impurities. After neutralization, the beads are dewatered and packaged. Most process vents in the process are sent to the 963THROX for control. Emissions from oleum storage tank venting and loading are controlled by a water scrubber identified as T-301 Cation water scrubber. EU88 is subject to the requirements of 40 CFR Part 63, Subpart FFFF (MON) and 40 CFR Part 63, Subpart EEEE (OLD). EU88 is also subject to the equipment leak provisions of the HON (40 CFR Part 63, Subpart H).

Compliance Evaluation

Special Condition (S.C.) III.1. stipulates the permittee shall not vent portions of EU88 ducted to the 963 THROX unless one of the following conditions is met, the 963 THROX is installed,

maintained and operated in a satisfactory manner, including conditions outlined in FG963THROX and attaining the following efficiencies, at least 99.9% destruction of organic compounds, at least 99.1% total chloride removal in the THROX Scrubber, and at least 80% SO₂ removal efficiency, or in the event of a malfunction of the 963 THROX, the portions of EU88 ducted to the 963 THROX shall be vented to the T-301 Cation water scrubber until the process can be safely shut down, S.C. III.1. Staff within the Cation process explained that proper operation of the 963 THROX is monitored by staff dedicated to the 963 THROX, including monitoring operating conditions to ensure destruction efficiencies are being achieved. In the event the 963 THROX were not operating properly, staff explained an alarm will sound and vents going to the 963 THROX from the Cation process automatically close. Staff are unable to bypass the automated closed vents. The vents reopen once the 963 THROX is operating in a satisfactory manner. Staff explained if the process is unable to vent to the 963THROX, the backup emission control is the T-301 scrubber. However, if the 963 THROX were to alarm, typically the Cation process were be put on hold until venting to the 963 THROX can resume. The 963 THROX is typically shut down for maintenance annually in the spring. During this down period, the Cation process is also shut down for maintenance.

At the time of inspection, the EU88 process was observed to be in operation from the operator room with portions venting to 963 THORX with the 963 THROX in run status. Staff were able to point out the vent to the 963 THROX was in the open position and program logic was in place to close the vent when the 963 THROX alarm was engaged.

The permittee shall not transfer any oleum into the storage tank unless the T-130 Cation water scrubber is installed, maintained, and operated in a satisfactory manner, S.C.III.2. The hourly average liquid flow rate of the T-301 Cation water scrubber shall not be less than 5 gallons per minute, S.C.III.4. The T-301 Cation water scrubber is equipped with a liquid flow indicator to monitor the liquid flow rate, S.C.IV.1. AQD staff observed the liquid flow rate to be 26 gpm while in the control room. At the time of observation, a load of oleum was just finishing being unloaded from a truck into the storage tank, which was being vented to the scrubber. The label on the operator screen for the liquid flow indicator was FT12788. During the process walk through, AQD staff verified the liquid flow indicator was in place on the scrubber with a tag labeled FT12788. The readout display of the liquid flow indicator read 65%. The liquid flow indicator is reported to be pulled for maintenance and calibration annually.

The T-301 scrubber is equipped with a low flow alarm which is set at 5 gpm. In the event the alarm is triggered, the system automatically prevents unloading of trucks into the oleum storage tank. In the event the low flow alarm was to be activated while unloading was already in process, staff report the operators would stop the unloading process. Fresh water is continually fed to the scrubber with used water sent to the onsite wastewater treatment plant. The scrubber is continuously operated even if oleum transfer is not occurring. The continuous operation ensures the scrubber is available for pressure releases from the oleum tank or emergency venting from the process in the event the 963 THROX were to alarm.

Special Condition VI.2. stipulates the permittee shall keep, in a satisfactory manner, continuous liquid flow rate records for the T-301 Cation water scrubber, as required by S.C.VI.1. Special Condition VI.1. defines "on a continuous basis" as an instantaneous data point recorded at least once every 15 minutes for at least 90% of the operating time during an operating calendar day. In

the event the permittee collects more than one data point during the 15-minute period, the data point recorded may be the average (rolling or block) of all data points recorded during the 15-minute period, S.C.VI.1. Staff report the T-301 Cation water scrubber flow rate is recorded every 5 minutes. The data points are automatically recorded by the AABB control system and stored in the IP21 data historian system. Once a month, facility engineers utilize a data extractor tool to pull the scrubber flow rate data from the data historian system into an excel spreadsheet.

Graph representation of continuous liquid flow rate records of the T-301 Cation water scrubber were requested and reviewed for the months of June 2023 and February 2024. Daily continuous liquid flow rate records were requested and reviewed for the dates June 6, 2023, June 22, 2023, February 14, 2024, and February 19, 2024.

The liquid scrubber flow rate is maintained at 10 gpm during normal operations. The flow rate is increased to 26 gpm during periods in which oleum is being unloaded. Staff report the low flow alarm is set to alarm at 18 gpm during periods of unloading. In the graphs of data provided for June 2023 and February 2024 the liquid flow rate was observed to primarily be at these values. In the graph for June 2023, data points when the scrubber flow rate dropped below 5gpm could be observed. Staff were able to pull up historical data during the onsite inspection and demonstrate the instances when the flow rate dropped below 5 gpm only lasted for a few seconds each time. The 15-minute average during these periods remained above 5 gpm. Staff reported the dampening of the flow meter was changed in response to the dips, which corrected the issue. The graph data for February 2024 displayed liquid flow rates above the 5gpm minimum. Onsite staff reported flow rate records are periodically reviewed. The instances in which the liquid flow rate dropped below 5 gpm were previously verified by onsite staff to have 15-minute averages above 5 gpm. Staff report if the 15-minute average were to be below 5 gpm, this deviation would be reported in a ROP deviation report.

Daily records provided were reviewed. Liquid flow rate data points were verified to be recorded once every 5 minutes. During the days in which data points were reviewed, the liquid flow rate of the scrubber remained above 5 gpm.

Special Condition III.3. stipulates the permittee shall not transfer any methylene chloride into the storage tank unless the vapor balance system is installed, maintained, and operated in a satisfactory manner. The methylene chloride truck load-out station was visually verified to be equipped with a vapor return line. Onsite staff report methylene chloride is able to be recovered and reused in the process. Because of this the process receives approximately 2-3 trucks of methylene chloride per calendar year. Trucks are unloaded by onsite operators. As part of truck unloading procedures, operators must complete an unloading checklist. Included in the checklist is a step verifying the truck is hooked up to the vapor balance system.

EU88 has a permitted VOC limit of 0.9 tpy based on a 12-month rolling time period as determined at the end of each calendar month, S.C.I.1. Within 30 days following the end of each calendar month, the applicant shall calculate and record VOC emissions from the process for the previous calendar month and for the 12-month rolling time period ending that month to demonstrate compliance with the emission limit in SC I.1., S.C.VI.3. Monthly and 12-month rolling VOC emission records were provided for the period of December 2022 to April 2024. Emissions are calculated and tracked in an onsite spreadsheet. VOC emissions are determined based the number of batches produced each month. The VOC emissions from each vent for an individual

batch is a known value. The facility tracks the number of batches to calculate the VOC emissions from each vent each month. The VOC emissions from all vents are summed to determine the monthly VOC emissions from the process. Monthly total VOC emissions are then used to calculate the 12-month rolling VOC emissions. The spreadsheet used to calculate emissions was reported to be most recently reviewed and updated during the PTI modification for EU88 in 2019. VOCs emitted from the process include isoOctane and Styrene. During the period of records reviewed the month with the lowest VOC emissions was March 2024 with 791.12 lbs of VOCs emitted. The month with the highest VOC emissions was July 2023 with 975.84 lbs emitted. During the period of records reviewed the lowest 12-month rolling VOC emissions was 0.3887 tpy at the end of April 2024. The highest 12-month rolling VOC emissions was 0.4879 tpy at the end of July 2023. Appropriate records are maintained to demonstrate compliance with the VOC emission limit. During the period of records reviewed, VOC emissions were below the permitted limit of 0.9tpy.

EU88 is subject to the requirements of 40 CFR Part 63, Subpart FFFF (MON) and 40 CFR Part 63, Subpart EEEE (OLD). EU88 is also subject to the equipment leak provisions of the HON (40 CFR Part 63, Subpart H). Initial MACT applicability assessments were completed by the facility for the process. As updates or changes occur to the regulations, staff report the entire process is assessed for applicability and when necessary, actions are taken to ensure compliance. When process updates occur, a management of change (MOC) is utilized. Staff explained the MOC process entails review of process changes by environmental personnel. If the process change were determined to affect the processes' applicability, actions would be taken to ensure compliance. In addition, staff report the facility has compliance related policies, procedures, and internal inspections that are updated during the MOC review process. In addition to during the MOC review process, internal compliance inspections are conducted routinely. These inspections are tracked using a digital task management system to ensure they are completed within the required timeframe. Each month, staff conduct a reasonable inquiry to assess compliance of the previous month with the MON, HON, and OLD MACT. LDAR monitoring is performed by an onsite contractor and an internal database of all components associated with the emission unit is maintained. Based on the information provided, the facility appears to be taking appropriate steps to ensure compliance with the applicable MACT standards.

Summary

On May 16, 2024, AQD staff conducted a scheduled onsite inspection of EU88 at DDP Specialty Electronic Materials US, LLC, SRN P1027. DDP Specialty Electronic Materials US, LLC is a megasite located at 3400 South Saginaw Road Unit 96, Midland, Midland County, Michigan 48640. EU88, also known as the Cation process, is located in the ion exchange resins manufacturing complex. The Cation process produces ionized beads used in water filtering processes. EU88 is subject to the requirements of 40 CFR Part 63, Subpart FFFF (MON) and 40 CFR Part 63, Subpart EEEE (OLD). EU88 is also subject to the equipment leak provisions of the HON (40 CFR Part 63, Subpart H). At the time of inspection, the facility was found to be in compliance.

Mathamuel Denton
NAME

DATE 6/27/2024

SUPERVISOR

David J. Farnsworth