

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

A404367507

FACILITY: Dow Silicones Corporation		SRN / ID: A4043
LOCATION: 3901 S Saginaw Rd, MIDLAND		DISTRICT: Bay City
CITY: MIDLAND		COUNTY: MIDLAND
CONTACT: Jim Alger , Midland Area State Air Permitting Specialist		ACTIVITY DATE: 04/12/2023
STAFF: Adam Shaffer	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MEGASITE
SUBJECT: Partial Compliance Evaluation of EU501-01 and EU501-02.		
RESOLVED COMPLAINTS:		

A partial compliance evaluation (PCE) consisting of an onsite inspection and records review was conducted by Air Quality Division (AQD) staff Adam Shaffer (AS) of the Dow Silicones Corporation (DSC) site located in Midland, MI. Applicable records were requested on April 6, 2023, to verify compliance with Renewable Operating Permit (ROP) No. MI-ROP-A4043-2019a, specifically emission units (EU)501-01 and EU501-02. Through these two emission units, select records were requested and reviewed through flexible group (FG)MONMACT. An in-person inspection to verify compliance was later completed on April 12, 2023.

Facility Description

DSC is a chemical processing facility. The facility is a mega-site and is a major source of hazardous air pollutants (HAPs), nitrox oxides (NOx), particulate matter (PM) and volatile organic compounds (VOCs). Additionally, the site is subject to various federal regulations and the site is operating under an EPA Civil Order No. 19-11880.

Offsite Compliance Review

DSC is required to submit semi-annual and annual compliance reports per Part A General Conditions of 19-23 of MI-ROP-A4043-2019a. Previous reports were reviewed for select time periods. In the most recent annual compliance report submitted for 2022, one deviation was noted for EU501-02, and was stated as the permittee may have exceeded the listed VOC emission limit. The deviation was described as vent sampling, to assess potential emissions during both startup and normal operating conditions was completed. Sample results were higher than expected and errors were noted which raised to question the validity. DSC went on to describe that they plan to complete additional sampling to validate the previous results. An updated permit application will be submitted with the possibility of a new potential to emit. This deviation was discussed at the time of the site inspection and after further review, no violation notice will be issued at this time.

A second deviation was noted that included a site wide audit of stacks. Discrepancies were noted for several stacks associated with EU501-01. Revised PTI applications will be submitted by DSC.

A third deviation for EU501-01 was noted and was described as the EU501-01 process was operated while the carbon drum system was not operating properly. During 2021, it was discovered that the weight of the drums used to control emissions was not changing as would be expected and would appear to indicate unsatisfactory operation for several times in 2021 / 2022. The cause of the issue appears to have been the regeneration of carbon too many times thus the carbon was no longer effective in absorbing organics. The company believes that the issue has been resolved after getting a new vendor to provide new drums with non-regenerated carbon. DSC increased the frequency of inspections and drum change outs. Additionally, an alarm was implemented that will alert if weight differential

deviates from what is expected. Carbon testing has started at the beginning of 2022 to ensure the new permit has correct information and provide quality trial testing. A PTI application shall also be submitted.

Several additional deviations noted may also be associated with EU501-01 and EU501-02, however, were concluded to not be cause for a violation notice at this time.

Based on the timing of the inspection, the 2022 Michigan Air Emissions Reporting System (MAERS) Report was reviewed. Upon review it appears DSC uses "Emission Master" software when determining emissions for each product. DSC uses MAERS emission factors for natural gas used. Additionally, fugitive emissions such as from LDAR monitoring and emissions from spills are added in as well. Upon initial review of the MAERS Report, discrepancies were noted between the emissions reported and the records provided for several recent inspections. In a follow up phone conversation on April 24, 2023, it was concluded that the discrepancies were from DSC reporting both process emissions and fugitive emissions together. Data was reviewed for several emission units inspected. Minor errors were noted, however, after further review the 2022 MAERS Report appears acceptable. Additionally, at this time the supporting documentation is acceptable, though it was stated to DSC staff moving forward that more specific supporting documentation to better understand how DSC came to the amount of emissions reported per each unit will be required.

Compliance Evaluation

A request was sent to Mr. Jim Alger, Midland Area State Air Permitting Specialist, of DSC on April 6, 2023, for records required by ROP No. MI-ROP-A4043-2019a, specifically for EU501-01, EU501-02, and FGMONMACT. The onsite inspection was later completed on April 12, 2023.

AQD staff AS arrived at the facility at 8:31am. Weather conditions at the time were sunny skies, temperatures in the high 50's degrees Fahrenheit and winds to the northeast at 10-15mph. During the drive up to the site, nothing of concern was noted. Upon arrival AS met with Mr. Adler and several other company staff to initially go over records and later was provided a tour of the site, specifically, EU501-01 and EU501-02. Records were provided by Mr. Alger and site-specific questions were answered by company staff at the time.

As mentioned above DSC is a chemical processing facility. During the inspection, the components of EU501-01, EU501-02, and FGMONMACT were reviewed and discussed at length with company staff.

ROP No. MI-ROP-A4043-2019a

EU501-01

This emission unit is for intermediate viscosity (IV) and low viscosity (VLV) silicone fluid manufacturing process. This emission unit is subject to the requirements of 40 CFR Part 63, Subpart FFFF.

Onsite Observations

Per Special Condition (SC) III.1, the weight increase of the last carbon drum (i.e., drum prior to discharge) within the carbon drum system shall not exceed 45 pounds. At the time of the inspection the scale was observed and read 19.8 lbs. Records were requested and

reviewed while onsite. Based on the observations made and records reviewed, this limit appeared to be being met.

Per Special Condition (SC) IX.1, the permittee shall not operate the process unless the carbon drum system is installed and operating properly. The carbon drum system was reviewed at length during the site inspection and appeared to be being operated in a satisfactory manner.

Per SC IX.2, the permittee shall equip and maintain the carbon drum system with a scale that measures the weight of the last carbon drum. The weight scale is calibrated annually with the last two calibrations having been completed on 04/28/21 and 04/28/22.

Five stacks were listed as associated with EU501-01. Photo verification was provided for the exhaust stacks following the site inspection and reviewed. Though the dimensions were not measured they appeared to be consistent with what is identified in MI-ROP-A4043-2019a. Stacks SV501-229, SV501-230 and SV501-231 were noted to be venting downwards. DSC had identified in their most recent ROP Semi-annual / Annual Compliance Report that a sitewide audit was completed with two stacks (SV501-222 and SV501-230) having a flame arrestor and not discharging vertically respectively. The remaining two stacks, SV501-229 and SV501-231 were brought to the attention of DSC staff. It was determined that the equipment attached to SV501-231 was decommissioned, removed and no longer exists. The equipment attached to SV501-229 had been tied into the main vent SV501-222. DSC stated they plan to re-permit this emission unit (the most recent PTI for this emission unit was in 1997). Additionally, it appears DSC plans to remodel the emission unit as well. After further review, this appears acceptable at this time.

Records Review

This emission unit is subject to an hourly VOC emission rate of 0.34 pounds per hour (pph). Records were requested and provided for select time periods. Based on the records provided, DSC appears to be meeting this emission limit. This emission unit is subject to a VOC emission limit of 0.5 tons per year (tpy) per a 12-month rolling time period. Records were requested and provided for select time periods. For the month of January 2023, 41.85 lbs of VOCs were reported emitted. As of January 2023, 350.27 lbs of VOCs were reported emitted per a 12-month rolling time period which is within the permitted limit. Previous 12-month rolling time periods reviewed also appear to be within the permitted limit.

This emission unit is subject to an hourly methyl siloxane emission rate of 4.1 pph. Records were requested and provided for select time periods. Based on the records reviewed, DSC appears to be meeting this emission rate. This emission unit is subject to a methyl siloxane emission limit of 4.2 tpy per a 12-month rolling time period. Records were requested and provided for select time periods. For the month of January 2023, 339.43 pounds of emissions were reported. As of January 2023, 2,589.86 lbs (approximately 1.294 tpy) were reported per a 12-month rolling time period which is well within the permitted limit. Previous 12-month rolling time periods reviewed also appeared to be within the permitted limit.

Per SC VI .1, the permittee shall monitor and record, at least once per shift, the weight of the last carbon drum (i.e., drum prior to discharge to atmosphere) within the carbon drum system with instrumentation acceptable to the AQD. A written log of these weights shall be kept on file and made available upon request. Records were requested and reviewed while onsite. Based on the records reviewed, DSC appears to be keeping track of applicable records.

Per SC VI.2, the permittee shall keep a written record of the amount of material processed per a 12-month rolling time period and made available upon request. Records were reviewed at the time of the inspection, with additional records requested and provided after the inspection. For the month of February 2023, 482,868 lbs of material was processed. As of February 2023, 10,662,488 lbs of material was processed per a 12-month rolling time period. Based on the records reviewed / provided, DSC appears to be keeping track of applicable records.

EU501-02

This emission unit is for the 1107 hydrolysis process, including tanks 4160 and 23535. This emission unit is subject to the requirements of 40 CFR Part 63, Subpart FFFF. EU501-02 is a CAM subject emission unit subject to the requirements of 40 CFR Part 64.

Onsite Observations

Per SC III.1, if the liquid flow rate of venturi scrubber 4109 during startup, shutdown and emergency conditions is less than 18 gallons per minute, the permittee shall implement corrective action and maintain a record of action taken to prevent a reoccurrence. Records were requested and reviewed at length during the site inspection. Based on the records reviewed, it appears that overall, the venturi scrubber is being operated in a satisfactory manner. It is noted that the venturi scrubber 4109 is mainly used as a backup and the primary scrubber used is venturi scrubber 7585.

Per SC III.2, if the liquid flow rate for venturi scrubber 7585 during process operations in EU501-02 is less than 1.5 gallons per minute, the permittee shall implement corrective action and maintain a record of action taken to prevent a reoccurrence. Records were requested and reviewed at length during the site inspection. Based on the records reviewed, it appears that overall, the venturi scrubber is being operated in a satisfactory manner.

Per SC III.3, the permittee shall calibrate the liquid flow measurement devices for scrubbers 4109 and 7585 in a satisfactory manner. DSC cleans the flow devices every six months and calibrates the devices annually. The last two calibrations for the two flow meters was 03/21/22 and 03/31/23. This appears acceptable.

Per SC IV.1, the permittee shall not initiate startup or planned shutdown of operations in EU501-02 unless venturi scrubber 4109 is installed maintained and operated in a satisfactory manner. Satisfactory manner includes maintaining the venturi scrubber 4109 at a minimum flow rate of 18 gallons per minute. At the time of the inspection the venturi scrubber 4109 flow rate was 4.01 gallons per minute, however, the unit would have been idle and not being used. Based on the records reviewed and observations made at the time of the inspection, it appears overall, that the venturi scrubber 4109 is being run in a satisfactory manner.

Per SC IV.2, the permittee shall not initiate startup or planned shutdown of operations in EU501-02 unless venturi scrubber 7585 is installed maintained and operated in a satisfactory manner. Satisfactory manner includes maintaining the venturi scrubber 7585 at a minimum flow rate of 1.5 gallons per minute. The flow rate for venturi scrubber 7585 at the time of the inspection was 3.50 gallons per minute. Based on the observations made at

the time of the inspection and records reviewed it appears that overall, the venturi scrubber 7585 is being operated in a satisfactory manner.

Per SC IV.3, the permittee shall equip and maintain venturi scrubbers 4109 and 7585 with liquid flow measurement devices. Flow meters for both scrubbers were observed during the site inspection.

Three stacks are listed as associated with EU501-02. A follow up statement and photo verification was provided for the exhaust stacks after the site inspection. Though the dimensions were not measured they appeared to be consistent with what is identified in MI-ROP-A4043-2019a. It was noted that stacks SV503-158 and SV-503-159 were mistakenly mislabeled at the time of the permit and are actually 501 vents. Therefore, the correct labels should appear to have been SV501-158 and SV501-159. DSC staff stated that they plan to correct this in the future. This appears acceptable.

Records Review

This emission unit is subject to a 9.1 pph VOC emission limit. Records were requested and provided for select time periods. Based on records reviewed, DSC appears to be meeting this emission limit. This emission unit is subject to a second VOC emission limit of 5.9 tpy per a 12-month rolling time period. Records were requested and reviewed for select time periods. For the month of February 2023, 230.86 lbs of VOCs were reported emitted. As of February 2023, 2,074.88 lbs (approximately 1.037 tpy) of VOCs were reported emitted which is well within the permitted limit. Previous 12-month rolling time periods reviewed also appeared to be within the permitted limit.

Per SC VI.2, the permittee shall monitor and record, on a per shift basis, the liquid flow rate of venturi scrubber 7585 with instrumentation acceptable to the AQD. Records were requested and reviewed during the inspection. Based on the records reviewed, DSC appears to be keeping track of applicable records.

Per SC VI.3, during startup, shutdown, and emergency conditions, the permittee shall monitor and record, on a per shift basis, the liquid flow rate of venturi scrubber 4109 with instrumentation acceptable to the AQD. Based on the records reviewed, DSC appears to be keeping track of applicable records.

Per SC VI.4, the permittee shall keep monthly / 12-month rolling time period VOC emission records. Records were requested and provided for select time periods. Based on the records provided, DSC appears to be keeping track of applicable records.

Per SC VI.5 – 8, various items further described in these special conditions shall be completed. After further review of the records provided, no further action is necessary.

Per SC VI.9, the permittee shall properly maintain the monitoring system including keeping necessary spare parts for routine repair of the monitoring equipment. It was verified during the inspection that spare parts are kept onsite.

FGMONMACT – Only for EU501-01 and EU501-02

This flexible group applies to miscellaneous organic chemical manufacturing process units (MCPU) that are located at, or are part of, a major source and meet the criteria specific in the NESHAP Subpart FFFF.

With regards to EU501-01, this emission unit is part of MCPU-024 that no longer contains vents through which a HAP-containing gas is or has the potential to be released to the atmosphere. Based on this, it appears to not meet the definition of the MON batch process vent. The HAP associated with this process was hexane that was historically used as a cleaning agent. The cleaning operation has since then ceased to exist. DSC plans to remove hexane from emissions associated with this emission unit in a future PTI application.

With regards to EU501-02, this emission unit is associated with MCPU-012, and is considered part of MON Group 2. The annual emissions for this group are 293.60 lbs/yr.

Conclusion

Based on the observations made and records reviewed, DSC appears to be in compliance with MI-ROP-A4043-2019a, specifically the portions related to EU501-01 and EU501-02.

NAME Adam J. [Signature]

DATE 08/17/23

SUPERVISOR C. [Signature]