

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

A404370801

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: 02/08/2024
STAFF: Adam Shaffer	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MEGASITE
SUBJECT: Partial Compliance Evaluation - EU502-04, EU502-09 and EU502-11		
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 January 31, 2024, to verify compliance with Renewable Operating Permit (ROP) No. MI-ROP-A4043-2019b, specifically for emission units (EU)502-04, EU502-09 and EU502-11. Through these emission units, select records were requested and reviewed for flexible group (FG) SITEBLOWER, FGSITESCRUBBERS, FGTHROX, FG337SCRUBBER, and FGMONMACT. An in-person inspection to verify onsite compliance was later completed on February 8, 2024.

Facility Description

DSC is a chemical processing facility. The facility is a mega-site and is a major source of hazardous air pollutants (HAPs), nitrous 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 19-23 of MI-ROP-A4043-2019b. Previous reports were reviewed for select time periods.

One deviation was noted for the THROX on February 20-21, 2023, where during testing, the hourly max exhaust flow and minimum combustion chamber temperature were not maintained within prior parameter limits. Due to recent revisions to the NESHAP Subpart FFFF, DSC was required to complete a performance test to establish a maximum exhaust flow and minimum combustion chamber temperature. A test was completed in August 2022; however, a new process vent was introduced, and a second test was required to reestablish new operating parameters. During testing and while trying to establish new operating parameters, the exhaust flow and combustion chamber temperature were temporarily not maintained within the old operating parameters. Once testing was finished, the THROX was returned to normal operation. The Notice of Compliance Status Report with the new exhaust flow was submitted to the AQD on March 14, 2023, establishing the new parameter values.

Several deviations were noted that could possibly be associated with the selected emission units for this inspection, however, it was concluded that no violation notice would be issued.

Based on the timing of the inspection, DSC has not submitted at this time their State and Local Emissions Inventory System (SLEIS) Report for 2023. After the company submits their 2023 SLEIS Report, select portions shall be reviewed and follow up completed as needed.

Compliance Evaluation

A request was sent to Mr. Jim Alger, Midland Area State Air Permitting Specialist, of DSC on January 31, 2024, for records required by ROP No. MI-ROP-A4043-2019b, specifically for EU502-04, EU502-09, EU502-11, FGSITEBLOWER, FGSITESCRUBBERS, FGTHROX, FG337SCRUBBER, and FGMONMACT. The onsite inspection was completed on February 8, 2024. AQD staff AS arrived at the facility at approximately 8:29 am. Weather conditions at the time of the inspection were mostly cloudy skies winds to the north / northwest at 5-10 mph and temperatures in the mid 30's degrees Fahrenheit. During the course of the inspection AS met with Mr. Alger and several other company staff to complete a tour of the site, specifically of select portions of EU502-04, EU502-09 and EU502-11. Site specific questions were answered by company staff at the time of the inspection.

As mentioned above DSC is a chemical processing facility. During the inspection, various components pertaining to EU502-04, EU502-09 and EU502-11 were reviewed and discussed at length with company staff.

ROP No. MI-ROP-A4043-2019b

EU502-04

This emission unit is for the container maintenance and wash for the high volume silanes production facility. Includes nitrogen purge for some containers. This emission unit is subject to the requirements of 40 CFR Part 63, Subpart FFFF and the equipment leak provisions of 40 CFR Part 63, Subpart UU.

Onsite Observations

This emission unit was observed during the course of the site inspection. Though no purging was being completed at the time, there were trucks at the location.

Per Special Condition (SC) III.1, the permittee shall not operate nitrogen purging activities of containers in EU502-04 unless FGTHROX is operated in accordance with the requirements of FGTHROX. One instance was noted during select time periods reviewed by company staff where EU502-04 was operating, venting to the THROX and the THROX was not operating properly. The incident was discussed during the course of the inspection and determined to have been when company staff completed an ethylene oxide performance test. This is discussed further above and had been reported as a deviation. No additional instances had occurred during the select time periods reviewed. This appears acceptable and after further review, it appears that DSC is meeting the requirements of this special condition.

Per SC IV.1, the permittee shall not conduct nitrogen purging activities to FGTHROX unless FGTHROX is installed, maintained, and operated in a satisfactory manner, which includes meeting the requirements of SC III.1. As discussed above there was one instance during select time periods reviewed where EU502-04 was operating, venting to the THROX and the THROX was not operating properly.

Four stacks are listed as associated with this emission unit. One of the stacks listed is for the THROX and was not reviewed during the course of the inspection. The remaining three stacks were discussed during the inspection and appeared to be for the pits observed for the wash areas. The zero feet minimum height was noted and appeared to take into account that the pits are not elevated. After review, no further action is necessary.

Records Review

This emission unit is subject to a VOC emission limit of 0.33 tons per year (tpy) per a 12-month rolling time period. It is also noted that the emissions for this emission limit do not include fugitive emissions. Records were requested and reviewed for select time periods. For the month of December 2023, 0.88 lbs of VOCs were reported emitted. As of December 2023, 13.59 lbs of VOCs were emitted 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.2, the permittee shall calculate and keep, in a satisfactory manner, records of monthly and 12-month rolling time period VOC emissions for EU502-04 using production records, operating records, and / or other data acceptable to the AQD District Supervisor. 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.3, the permittee shall keep a record of nitrogen purging activities for each calendar month, noting all occasions when nitrogen purging was interrupted because FGTHROX was not installed, maintained and operated in a satisfactory manner. Records were reviewed for select time periods at the time of the inspection. After further review, the records observed at the time of the inspection appear to show that DSC is keeping track of applicable nitrogen purging activities.

EU502-09

This emission unit is for the chlorosilane waste tank 25403 for phenyl supply chain located in the 502 tank farm.

Onsite Observations

This emission unit was observed in operation during the course of the site inspection.

Per SC III.1, the permittee shall not load any tank truck or railcar from EU502-09 unless the THROX or the vapor balance system is installed, maintained and operated in a satisfactory manner. Based on observations made at the time of the inspection, responses from company, and select items reviewed, there appeared to be no issues. Additionally, DSC staff stated that procedures are currently in place to make sure the vapor balance system is operated properly when loading trailers and railcars.

Per SC IV.1, the permittee shall not operate EU502-09 unless the emissions are routed to FGTHROX or FGSITESCUBBERS and the control device (FGTHROX or FGSITESCUBBERS) is installed, maintained and operated in a satisfactory manner. Upon review, DSC staff stated there was one instance during select time periods reviewed where emissions from EU502-09 were venting to the THROX and the control device was not operating properly. The one instance was discussed further during the course of the inspection and determined to have been caused when testing of the THROX. Additional information regarding this instance is discussed further above in this report. There were no instances during the select time periods reviewed where the emission unit was operating, venting to the FGSITESCUBBERS and the control device was not operating properly. After further review this appears acceptable.

EU502-11

This emission unit is for the chlorosilane waste tank 256 in the 2502 tank farm, with nominal capacity of 20,000 gallons. The tank receives liquid waste from various emission units at the facility and can be unloaded to either tank trucks or railcars. The tank typically vents to the THROX. In the event the THROX is offline, the tank vents to one of the parallel site scrubbers. If both the THROX and the site scrubbers are unavailable, the tank vents to one of the 337 tower scrubbers.

Onsite Observations

Per SC III.1, the permittee shall only transfer the 3295 vessel and column bottoms stream from 311 building to EU502-11 when emissions from the transfer are being exhausted to the THROX and the THROX is installed, maintained and operated in a satisfactory manner. It was verified by company staff during select time periods reviewed that there were no instances when the emission unit was operating, venting to the THROX and the THROX was not operated properly.

Per SC IV.1, the permittee shall not operate EU502-11 unless all emissions are vented to one of the emission control devices (THROX, Site scrubber system, 337 spray scrubber system) and the emission control device is installed, maintained and operated in a satisfactory manner. There was one instance when venting to the THROX when it was not operating properly and this was determined to have been caused during testing of the THROX. This is discussed further above. There were no instances when the emission unit was operating, venting to the FG337SCRUBBER or FGSITESCUBBERS and the control devices were not operating properly. This appears acceptable.

Per SC IV.2, the permittee shall not transfer material from EU502-11 to DV15G railcar station or to DVST-61 trailer station unless the transfer is vapor balanced and the vapor balance equipment is installed, maintained and operated in a satisfactory manner. DSC staff stated that there have been instances during select time periods reviewed where material was transferred from EU502-11 to DV15 or DVST-61 when the vapor balance system was not operating, however, the emissions were being controlled by the THROX. At the time of the inspection, the events that lead to issues occurring and steps taken to address the problem were discussed at length with company staff. This issue would be included in the next ROP deviation report. After further review, no violation notice will be issued. It was later determined that DSC appears to plan on submitting a PTI application to remove the vapor balance system being required to be operating while emissions are being controlled by the THROX.

Records

This emission unit is subject to a VOC emission limit of 1.9 tpy per a 12-month rolling time period. Records were requested and provided for select time periods. For the month of December 2023, no emissions were reported emitted. As of December 2023, 22.37 lbs of VOC emissions 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 keep monthly records of the time periods when emissions from EU502-11 are vented to each emission control device listed in SC IV.1. Records were requested and reviewed for select time periods during the course of the inspection. Speaking with company staff the emission unit primarily vents to the THROX. After further review, overall, the records appear acceptable

Per SV VI.3, the permittee shall keep monthly records of the identity and source of waste streams transferred to EU502-11. For the 3295 vessel and column bottoms stream from 311 building, the records shall also include the date and time during which the stream was transferred to EU502-11. Records were requested and reviewed for select time periods during the course of the inspection. After further review, overall, the records appear acceptable.

Per SC VI.4, the permittee shall calculate the VOC emission rate from EU502-11 monthly, for the preceding 12-month rolling time period, using a method acceptable to the AQD District Supervisor. Records were requested and reviewed for select time periods. Based on the records reviewed, DSC appears to be keeping track of applicable records.

Per SC IX.1, the permittee shall comply with all provisions of the federal New Source Performance Standards (NSPS) Subpart Kb Standards of Performance for Volatile Organic Liquid Storage Vessels. Company staff stated that due to the size and vapor pressure of the equipment, control is not required. The current vapor pressure for the tank was provided. After further review, there appeared to be no issues.

FGSITEBLOWER

This flexible group is for site vent consolidation and blower system that collects vapor streams from numerous emission units and vents throughout the facility and routes them to either the on-site thermal oxidizer with heat recovery (FGTHROX) or to a site-wide water scrubber system. There are two parts to the site vent consolidation and blower system; a dry vent header system for water reactive vents and wet vent header system for vents that can contain water. It should be noted that only portions related to EU502-04 and EU502-09 were reviewed to determine compliance with FGSITEBLOWER.

Per SC IV.1, the permittee shall not operate the emission units in FGSITEBLOWER unless they are routed to FGTHROX or the site wide water scrubbers, except as described further in MI-ROP-A4043-2019b, and the control device is installed, maintained and operated in a satisfactory manner or the system is operated in accordance with the malfunction abatement plan (MAP) further described in SC III.1 of the FGFACILITY section of this permit. Select time periods were requested to verify if any instances occurred where applicable emission units were venting to FGSITEBLOWER when both EUTHROX or site wide water scrubbers were not operating properly. Based on the responses from the company there appeared to be no issues in the select time periods reviewed.

Per SC VI.1, the permittee shall record the time and duration of each bypass episode wherein the vents comprising FGSITEBLOWER are not routed to FGTHROX. Bypass records were requested and provided for select time periods. Based on the records provided, DSC appears to be keeping track of bypass episodes for FGSITEBLOWER.

FGTHROX

This flexible group is for the site wide thermal oxidizer system. The THROX will remove VOC, HAPs, PM10, hydrogen chloride, and other toxic air contaminants from the FGSITEBLOWER consolidated vent system prior to discharge to atmosphere. This flexible group is subject to the requirements of 40 CFR Part 63, Subpart FFFF. FGTHROX is a CAM subject emission unit subject to the requirements of 40 CFR Part 64. It should be noted that only portions related to EU502-04, EU502-09 and EU502-11 were reviewed to determine compliance with FGTHROX.

Per SC IV.1, the permittee shall not route process vents to EUTHROX unless the burner, quencher, absorber, and two 2-stage ionizing wet scrubbers (IWS) in series are installed, maintained, and operated in a satisfactory manner. Satisfactory operation includes various criteria that are listed in this condition. For select time periods reviewed, one instance was noted where emissions were being controlled by EUTHROX and the

temperature would have been below the minimum temperature. This appears to have been during the testing of the EUTHROX that was discussed above. It was determined that there appeared to be no issues.

FGMONMACT

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 40 CFR Part 63 Subpart FFFF (NESHAP Subpart FFFF). It should be noted that only portions related to EU502-04 were reviewed to determine compliance with FGMONMACT. It was stated by company staff that this emission unit does not have process vents, therefore, neither Group 1 or Group 2 is applicable. This emission unit receives containers that previously contained a MON product from an onsite MCPU and completes a maintenance wash on the container. The Dow Silicones Maintenance Wastewater Plan was reviewed. It was concluded there appeared to be no issues with the items reviewed to verify compliance.

FGSITESCRUBBERS

This flexible group is for the site-wide water scrubber system. FGSITESCRUBBERS will remove HCl and chlorosilanes from the FGSITEBLOWER consolidated vent system prior to discharge to atmosphere when the site wide thermal oxidizer system is not operating properly. It should be noted that only portions related to EU502-09 and EU502-11 were reviewed to determine compliance with FGSITESCRUBBERS.

Per SC III.2, the permittee shall not bypass the FGTHROX unless applicable vents are either routed to the site wide scrubbers or control equipment specified in the vent emission unit tables further specified in MI-ROP-A4043-2019b. It was verified by company staff that during the select time periods reviewed, there were no instances where emissions from the applicable vents controlled by the THROX were routed to the site wide scrubbers or local control where they were not operating properly. This appears acceptable.

Per SC III.5, proper operation of the site wide water scrubbers includes the total scrubber water flow rate shall not be less than the minimum flow rate specified in the MAP. Additionally, per SC VI.2, the permittee shall keep, in a satisfactory manner, continuous records of scrubber flow rates for the site wide water scrubbers during bypass events. Records for select time periods where the site wide water scrubbers were in use were reviewed at the time of the inspection. Based on the records reviewed and further discussion with company staff, there appeared to be no issues.

Per SC VI.3, the permittee shall keep in a satisfactory manner, records demonstrating that the BEMMP is being implemented and maintained as required by SC III.1. Monthly benzene concentration records were requested and provided for select time periods. Based on the records reviewed, the benzene concentrations were within acceptable limits.

FG337SCRUBBER

This flexible group is for the 337 spray tower water scrubber used to remove HCl and chlorosilanes from process exhaust prior to discharge to atmosphere. The 304 vent recovery system vents to the 337 scrubber. The 337 scrubber receives process exhaust from several emission units on site. The 337 scrubber is comprised of two scrubbers (i.e., scrubbers 9950 and 9960) which typically alternate in operation but can operate in parallel. The 337 scrubber utilizes water from the venturi scrubbers at EU325-01 (TCS vent recovery system) and city water as makeup. It should be noted that only portions related to EU502-11 were reviewed to determine compliance with FG337SCRUBBER.

Per SC III.1-2, prior to discharge of process emissions through vent no. SV337-001 or SV337-002, process emissions shall pass through scrubber 9950 or scrubber 9960. If the liquid flow rate for the applicable scrubber is less than 45 gallons per minute while process gas is passing through it, the permittee shall implement and record corrective actions taken. During the select time periods reviewed, there appeared to be no instances where the applicable scrubber flow rates were below the 45 gallons per minute. After further review, the records appear acceptable.

FGRULE290

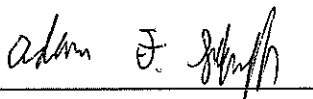
This flexible group is for any emission unit that emits air contaminants and is exempt from the requirements of Rule 201 pursuant to Rules 278, 278a, and 290. Emission units installed / modified before December 20, 2016, may show compliance with Rule 290 in effect at the time of installation / modification.

Records for emission units that DSC believes are exempt per Rule 290 were requested for applicable areas. Two emission units were identified in Building 502 that DSC believes are exempt per Rule 290 and monthly emission records were provided. After further review, the records show that each emission unit appears to be exempt per Rule 290.

Conclusion

Based on the observations made and records reviewed, DSC appears to be in compliance with MI-ROP-A4043-2019b, specifically the portions related to EU502-04, EU502-09 and EU502-11.

NAME



DATE

08/26/24

SUPERVISOR

