

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

A404371126

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: 03/19/2024
STAFF: Adam Shaffer	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MEGASITE
SUBJECT: Partial Compliance Evaluation: EU508-01 and FG337SCRUBBER		
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 March 11, 2024, to verify compliance with Renewable Operating Permit (ROP) No. MI-ROP-A4043-2019b, specifically for emission unit (EU)508-01 and flexible group (FG)337SCRUBBER. Through these two units, select records were requested and reviewed for FGTHROX, FGSITESCRUBBERS and FGMONMACT. Records were also requested and reviewed for select emission units under FGRULE290. An in-person inspection to verify onsite compliance was later completed on March 19, 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. Several deviations were noted that could possibly be associated with the selected items being reviewed for this inspection, however, it was concluded that no violation notice would be issued.

Based on the timing of the inspection, the 2023 State and Local Emissions Inventory System (SLEIS) Report for 2023 was submitted on March 14, 2024. Upon review, the supporting documentation initially provided with the SLEIS report was concluded to not be acceptable. DSC primarily uses an EPA approved emissions software to determine their emissions each year. Speaking with company staff several times it was decided that DSC would submit a representative demonstration for an emission unit on how the software calculates emissions. A representative demonstration was later submitted, and based on this, the 2023 MAERS Report appeared acceptable.

Compliance Evaluation

A request was sent to Mr. Jim Alger, Midland Area State Air Permitting Specialist, of DSC on March 11, 2024, for records required by ROP No. MI-ROP-A4043-2019b, specifically for EU508-01, FG337SCRUBBER, FGTHROX, FGSITESCRUBBERS, FGMONMACT and FGRULE290. The onsite inspection was completed on March 19, 2024. AQD staff AS and Dillon King (DK) arrived at the facility at approximately 8:30am. Weather conditions at the time of the inspection were cloudy skies, winds to the northeast at 15-20 mph and temperatures in the low 30's degrees Fahrenheit. Initially, AQD staff met with Mr. Alger and several DSC staff offsite to review select records. Following the records review, a tour of the applicable units were viewed onsite. Site specific questions were discussed at length with company staff during the course of the inspection.

As mentioned above DSC is a chemical processing facility. During the inspection, various components pertaining to EU508-01 and FG337SCRUBBER were reviewed and discussed at length with company staff.

ROP No. MI-ROP-A4043-2019b

EU508-01

This emission unit is for the phenyltrichlorosilane (PhSiCl₃) and diphenyldichlorosilane (Ph₂SiCl₂) processes, which include production, storage, and transfer activities. Emissions are controlled by FGTHROX (as well as FGSITESCRUBBERS or FG337SCRUBBER during periods where FGTHROX is out of operation or when total or partial diversion is necessary for any safety-related or operational scenarios). This emission unit is subject to the requirements of 40 CFR Part 63, Subparts 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 and was in operation.

Per Special Condition (SC) III.1, the permittee shall not operate EU508-01 unless FGTHROX is operated in accordance with the requirements of FGTHROX, except as described in SC III.2. Select time periods were reviewed to verify compliance. DSC staff stated there was one instance when EU508-01 was operating, venting to the THROX and the control device was not operating properly. This was determined to have been during scheduled testing. There appeared to be no additional instances where emissions were being vented from EU508-01 to the THROX while the control device was not operating properly for the time periods reviewed. This appears acceptable.

Per SC III.2, the permittee may operate EU508-01 when FGTHROX is not operating as long as one of the requirements further described in this special condition is met. As mentioned above, there was one instance when emissions were rerouted from the THROX, and this was due to testing. Emissions for that one instance were routed to the site scrubbers and are discussed further below. This appears acceptable.

Per SC IV.1, the permittee shall not operate EU508-01, except as described in SC III.2, unless FGTHROX is installed, maintained and operated in a satisfactory manner. After review, DSC appears to overall be meeting the requirements of this condition.

Six stacks are listed as associated with this emission unit. Any stacks listed for units such as the THROX were not reviewed during the course of the site inspection. The two stacks (Scrubber 9950 and Scrubber 9960) were observed during the course of the site inspection. Discrepancies were noted in the minimum height listed in EU508-01 when compared to other sections of the ROP. Moving forward, this shall be addressed and corrected in a timely manner.

Records Review

This emission unit is subject to a 20.3 tons per year (tpy) VOC emission limit per a 12-month rolling time period. This emission limit does not include fugitive emissions (i.e. emissions from leaking valves, flanges, etc) from the emission unit. Records were requested and provided for select time periods. For the month of January 2024, 282.03 lbs of VOCs were reported emitted. As of January 2024, approximately 1.64 tpy 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 appeared to be within the permitted limit.

Per SC VI.2, the permittee shall calculate and maintain records of the VOC emission rate on a monthly / 12-month rolling time period basis. Records were requested and provided for select time periods. As described above, based on the items provided, DSC appears to be keeping track of VOC emission records.

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.

Onsite Observations

The scrubber was observed in operation at the time of the inspection and no items of concern were noted.

Per SC III.1, prior to discharge of process emissions through vent no. SV337-001, process emissions shall pass through scrubber 9950. If the liquid flow rate of scrubber 9950 is less than 45 gallons per minute while process gas is passing through it, the permittee shall implement corrective action and maintain a record of action taken to prevent reoccurrence. Records were requested and reviewed for select time periods during the course of the inspection. Potential dates of concern were identified and discussed at length. Based on the records reviewed and responses received by AQD staff, it was determined that overall, the scrubber appears to be operating properly.

Per SC III.2, prior to discharge of emissions through vent no. SV337-002, process emissions shall pass through scrubber 9960. If the liquid flow rate of scrubber 9960 is less than 45 gallons per minute while process gas is passing through it, the permittee shall implement corrective action and maintain a record of action taken to prevent reoccurrence. Records were requested and reviewed for select time periods during the course of the inspection. Potential dates of concern were identified and discussed at length. Based on the records reviewed and responses received by AQD staff, it was determined that overall, the scrubber appears to be working properly.

The two scrubbers were observed during the course of the inspection and flow rate readings were collected for both scrubbers. The readings collected are below.

Scrubber 9950 – 85.0 gallons / minute

Scrubber 9960 – 0.2 gallons / minute (offline)

Per SC VI.2, the permittee shall install and maintain a color camera and monitor system to monitor the visual emissions from the 337 wet scrubber. The color camera and monitor system was observed in place at the time of the inspection. Speaking with company staff, if visible emissions are observed there are procedures for corrective actions to be taken to address any issues.

There are two stacks associated with this flexible group. It was noted and discussed during the inspection that the minimum stack heights for the two stacks in FG337SCRUBBER of MI-ROP-A4043-2019b are inconsistent throughout the ROP. Sitewide audits have been historically conducted for stacks on the site in the past. Moving forward the stack dimensions for FG337SCRUBBER of MI-ROP-A4043-2019b will need to be corrected to be consistent. Though the remaining dimensions at the time of the inspection for the two stacks were not measured they appeared to be consistent with what is listed in MI-ROP-A4043-2019b.

Records Review

Per SC VI.1, the permittee shall monitor and record, on a continuous basis, the liquid flow rate of scrubber 9950 and 9960 with instrumentation acceptable to the AQD. Liquid flow rate records for select time periods were requested and reviewed at the time of the inspection. Based on the records reviewed, it appears that DSC is adequately keeping track of liquid flow rate records for the two scrubbers.

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 of this flexible group were reviewed in order to verify that EU508-01 is in 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. Temperature records for select time periods had been previously requested and provided. For select time periods reviewed DSC staff stated there was one instance in which emissions from EU508-01 were being controlled by the THROX when the control device was not at the minimum 1,800 degrees Fahrenheit

operating temperature parameter. This was later determined to be due to a scheduled test of the THROX. No additional instances were noted by DSC staff. After further review, this appears acceptable. It should be noted that DSC is in the process of installing a backup THROX (TOX) for instances when the THROX control is not running properly.

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 of this flexible group were reviewed in order to verify that EU508-01 is in compliance with FGSITESCRUBBERS.

Per SC III.2, the permittee shall not bypass FGTHROX unless the following vents further described in this special condition are routed to either the site wide water scrubbers or the applicable control equipment specified for that vent's emission unit. It was verified by DSC staff that for select time periods reviewed there were no instances where the vents from EU508-01 being controlled by the THROX were routed to the site wide scrubbers or local control when they were not operating properly. This appears acceptable.

Per SC III.5 and VI.2, if the site wide scrubbers are used as control the minimum flow rate per the most recent MAP shall be maintained and flow rate records shall be kept. It was verified by company staff during select time periods reviewed there was one instance when the site wide scrubbers were used as control. The one instance occurred on April 20, 2023. Records of water flow to each scrubber were provided and were above the required minimum flow rates.

Per SC VI.3, the permittee shall keep, in a satisfactory manner, records demonstrating that the BEMMP is being implemented and maintained as required per SC III.3. Based on records requested and historically provided for previous inspections, DSC is meeting the 7.1 lb / hr benzene emission limit.

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 of this flexible group were reviewed in order to verify that EU508-01 is in compliance with FGMONMACT. DSC considers EU508-01 a Group 2 continuous process stream. The emission unit also contains two Group 2 continuous process vents and one continuous process vent that is designated a Group 1 associated with 516. It should be noted that the group 1 vent is not used and is blind flanged. This emission unit is associated with MCPU-005 which also includes EU515-01, EU502-01, EU502-09 and EU502-13. After further review, there appears to be no issues.

FGRUL290

This flexible group is for all emission units that DSC believes to be exempt per Rule 290. It was determined that DSC has no emission units they believe are exempt per Rule 290 in the 508 building. This appears acceptable.

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 EU508-01 and FG337SCRUBBER.

NAME William F. Hoff

DATE 06/24/24

SUPERVISOR Shia L. McCann