

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

A404371395

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: 04/04/2024
STAFF: Adam Shaffer	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MEGASITE
SUBJECT: Partial Compliance Evaluation: EU340-03, EU515-01, and FGOLDFACILITY		
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 26, 2024, to verify compliance with Renewable Operating Permit (ROP) No. MI-ROP-A4043-2019b, specifically for emission units (EU)340-03, EU515-01, and flexible group (FG)OLDFACILITY. Through these units, select records were requested and reviewed for FGMONMACT, FGLEAKDETECTION, FGTHROX, FGSITESCRUBBERS and FGRULE290. An in-person inspection to verify onsite compliance was later completed on April 4, 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.

Based on the timing of the inspection, the 2023 State and Local Emissions Inventory System (SLEIS) Emissions Report for 2023 was submitted on March 14, 2024. Upon review, the supporting documentation initially provided with the SLEIS Emissions Report was determined to not be acceptable. Following up with company staff it was determined that DSC utilizes an EPA approved emission software system when determining emissions. It was later decided after speaking with company staff that a representative sample demonstrating how emissions are calculated for each emission unit would be submitted to the AQD. Additionally, records of emissions received would be compared to reported emissions and any major discrepancies would be further reviewed.

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 EU515-01 and was regarding the pressure drop for bag filters, DV22979 and DV22981, which were not within the required range of operation. It was described that in a recent PTI an atmospheric vent and conditional requirement to monitor the baghouse differential pressure only when venting to the atmosphere were removed and incorrectly replaced with a requirement to ensure a differential pressure is met at all times, even when venting to the THROX. This was corrected in revised permit conditions that were acceptable by DSC on 12/07/2023, and a minor mod to the ROP was submitted on 12/12/2023. After further review this appears acceptable.

A second deviation was noted for EU515-01 and was where multiple components missed the required Method 21 monitoring. The deviation occurred on 03/31/2022. Several valves and connectors had been removed from service prior to having received the required Method 21 monitoring. It appeared monitoring had taken place in that area but was not verified for the components prior to removal. Corrective procedures to address this were stated and appear acceptable.

A third deviation was noted for EU515-01 and was the listed process equipment was operated without Condensers 10453 and 10541 operating in a satisfactory manner. The deviation was described as a

condenser incorrectly referenced. An updated PTI application was submitted and issued on 05/16/2022 to resolve the deviation. This appears acceptable.

A fourth deviation was noted for EU515-01 and was the $MgCl_2$ quench process vented to the atmosphere. This occurred on 09/15/2023. The deviation was described as the manual drain valve on tank 10471 was left in the open position on 12/14/2022 which allowed emissions to vent to atmosphere through a sump pump. The draining of the 23618 Column became less frequent due to improvements made to process operations. Due to this the open manual drain valve was not discovered until 07/25/2023. Upon discovery of the open valve, it was closed and procedures were put into place to prevent a reoccurrence. Additional follow up verified that there were no emission limit exceedances. After further review, this appears acceptable.

A fifth deviation was noted where the HX-10657 Condenser liquid flow rate was less than 100 gpm while EU515-01 was not venting to the THROX. This deviation occurred on 04/20/2023. The company stated that this condenser is normally operated at a low flow rate for process purposes and requires manual intervention to increase the flow when a diversion from THROX occurs. There was a slight delay in the manual intervention which resulted in venting through the condenser while the flow rate was below the minimum required flow as it ramped up. As an immediate corrective action, the condenser liquid flow rate ramped up to the required flow rate. To prevent a reoccurrence, DSC is evaluating the automation of the increase in flow when a diversion from THROX is triggered. After further review, this appears acceptable.

A sixth 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 NESHA 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 potentially be associated with the selected items being reviewed for this inspection, however, it was concluded that no violation notice would be issued.

Compliance Evaluation

A request was sent to Mr. Jim Alger, Midland Area State Air Permitting Specialist, of DSC on March 26, 2024, for records required by ROP No. MI-ROP-A4043-2019b, specifically for EU515-01, EU340-03, FGOILFACILITY, FGMONMACT, FGLEAKDETECTION, FGTHROX, FGSITESCUBBERS, and FGRULE290. The onsite inspection was completed on April 4, 2024. AQD staff AS arrived at the facility at 8:33am. Weather conditions at the time of the inspection were cloudy skies with rain, temperatures in the mid 30's degrees Fahrenheit, and winds to the south at 5-10mph. Initially, AQD staff AS met with Mr. Alger and several DSC staff onsite to review 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 EU515-01 and EU340-03 were reviewed / discussed at length with company staff.

ROP No. MI-ROP-A4043-2019b

EU515-01

This emission unit involves all activities associated with production, storage and transfer of Phenylmethyldichlorosilane ($PhMeSiCl_2$) and Diphenylmethylchlorosilane ($Ph_2MeSiCl$). The unit can vent to several different pathways which in turn have respective control equipment. Additional information regarding specifics of the various pathways is discussed further in PTI No. 812-91E.

Onsite Observations

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

Per Special Condition (SC) III.1, the permittee shall not operate EU515-01 unless the emission control devices listed in this special condition are installed, maintained and operated in a satisfactory manner. In the response provided by the company it was stated that there were instances when the emission unit was in operation and the respective control device was not operating in a satisfactory manner. It was later determined that DSC was referring to when they completed ethylene oxide testing for the THROX. This will be discussed further below.

Per SC IV.1, the permittee shall not operate the reactors; all distillation columns; all raw / crude material tanks; in EU515-01 unless the emissions are routed to the HX-10541 Condenser, DV10530 Toluene Scrubber, and FGTHROX or FGSITESCRUBBERS. The control devices must be installed, maintained and operated in a satisfactory manner as specified in SC III.1. Coolant supply temperature and exhaust air temperature records were requested and reviewed at the time of the inspection for HX-10541 Condenser and DV10530 Toluene Scrubber respectively. Regarding the HX-10541 Condenser records, several potential instances of concern were noted and after further review, appeared acceptable. After further review, DSC appears to be operating the HX-10541 Condenser in a satisfactory manner. Regarding the DV10530 Toluene Scrubber records, several potential instances were noted and after further review and responses provided by DSC staff appeared acceptable. After further review, it appears that DSC is operating the DV10530 Toluene Scrubber in a satisfactory manner.

Per SC IV.2, the permittee shall not operate the dryers in EU515-01 unless the particulate emissions are routed to the 456 MgCl₂ Bin Baghouse and the vapor emissions are routed to the HX-10453 Condenser, DV10530 Toluene Scrubber, and FGTHROX or FGSITESCRUBBERS. The control devices must be installed, maintained and operated in a satisfactory manner as specified in SC III.1. Coolant supply temperature and exhaust air temperature records were requested for select time periods and reviewed at the time of the inspection for HX-10453 Condenser and DV10530 Toluene Scrubber respectively. Regarding the HX-10453 Condenser records, several potential instances of concern were noted and discussed further during the inspection. After further review and responses received from DSC staff, there appears to be no issues and the HX-10453 Condenser appears to be being operated in a satisfactory manner. As discussed above, the DV10530 Toluene Scrubber appears to be being operated in a satisfactory manner.

Per SC IV.3, the permittee shall not operate the MgCl₂ quenching equipment unless the emissions are routed to the MgCl₂ Carbon Drums. The control devices must be installed, maintained and operated in a satisfactory manner, as specified in SC III.1. Carbon bed weight records were requested and reviewed for select time periods while onsite. During the review of the carbon bed weight records, several potential concerns were noted and after further review, there appeared to be no issues. One additional instance was noted on November 27, 2023, and discussed further, where the drums briefly went over the limit. After further review, no violation notice will be issued at this time. It was also stated by company staff that the November 27, 2023, instance was missed and not reported in the most recent deviation report.

Per SC IV.4, the permittee shall not operate the MgCl₂ Bin unless the 456 MgCl₂ Bin Baghouse (10457) is installed, maintained and operated in a satisfactory manner. Select time periods were requested and verified by company staff that during the time periods selected there were no instances when the control device was not operating properly. Additionally, company staff stated there is no pressure drop monitor for the baghouse. This appears acceptable.

Per SC IV.5, the permittee shall not operate the 515 MgCl₂ Quenching unless the MgCl₂ Carbon Drums are installed, maintained and operated in a satisfactory manner, as specified in SC III.1. As discussed above, after further review it appears that overall, the MgCl₂ Carbon Drums are being operated in a satisfactory manner.

Per SC IV.6-8, the permittee shall equip and maintain the applicable control with devices to continuously monitor and record the controls applicable unit of measurement. The permittee shall calibrate each device in a satisfactory manner acceptable to the AQD District Supervisor. Monitors were noted during the site inspection and dates of the last two calibrations were provided for each. It appears that the monitors are all on a yearly cycle. After further review this is acceptable.

At the time of the inspection, readings were noted for control devices and based on the observations made of readings at the time there appeared to be no issues.

Records Review

This emission unit is subject to a 4.6 pounds per hour (pph) VOC emission limit. Based on observations made and records reviewed, DSC would appear to be meeting this emission limit.

This emission unit is subject to a second VOC emission limit of 20.16 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 2024, 1,569.94 lbs of VOC emissions were reported emitted. As of January 2024, approximately 6.53 tpy of VOC emissions were reported 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 V.1, upon request of the AQD District Supervisor, the permittee shall verify the VOC emission rates from EU515-01 by testing at the owner's expense. Based on the observations made at the time of the inspection and records reviewed no testing shall be required at this time.

Per SC VI.2-5, applicable records shall be monitored and recorded for various control devices. Records were requested and reviewed at the time of the inspection. Based on the observations made, overall, the records reviewed appear acceptable.

Per SC VI.6, the permittee shall perform, and record the results of, a monthly visible emission observation of SV515-002 during routine operating conditions as an indicator of satisfactory operation. This observation need not be performed using Method 9. If visible emissions are observed, the permittee shall take corrective actions as necessary to ensure the 456 MgCl₂ Bin Baghouse (10457) is operating in a satisfactory manner. Records were requested and provided for select time periods. Based on the records provided, there appeared to be no issues.

Per SC VI.7, 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 reviewed, DSC appears to be keeping track of applicable VOC emission records.

FGOLDFACILITY

The flexible group is for each new, reconstructed, or existing Organic Liquid Distribution (OLD) (non-gasoline) operation that is located at, or is part of, a major source of HAPs.

Prior to the inspection a discussion with DSC staff was held to discuss how the company maintains compliance with the flexible group. Historically, DSC has submitted semi-annual compliance reports for this NESHAP. However, DSC since then maintains compliance by being in compliance with the NESHAP Subpart FFFF. After further discussion with company staff this appears acceptable.

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 EU515-01 were reviewed to determine 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 EU515-01 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 that during select time periods reviewed, the site wide scrubbers were used. Records of water flow to each scrubber were reviewed at the time of the inspection and after further review appeared acceptable.

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 historically provided / reviewed, DSC appears to be meeting this benzene emission limit.

FGLEAKDETECTION

This flexible group is for emission units subject to the requirements of 40 CFR Part 61, Subpart A (General Provisions), Subpart J (National Emission Standard for Equipment Leaks (Fugitive Emission Sources) of Benzene), and Subpart V (National Emission Standard for Equipment Leaks (Fugitive Emission Sources)). It should be noted that only portions related to EU515-01 were reviewed to determine compliance with FGLEAKDETECTION.

It was noted by DSC staff that during select time periods reviewed, there were leaks. The NESHAP Subpart V Section 61.246 is applicable to the facility; however, DSC maintains compliance through the NESHAP Subpart FFFF requirements. After further review, this appears acceptable.

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 EU515-01 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. During the select time periods reviewed, DSC staff stated there was one instance in which emissions from EU515-01 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. Additional information regarding this instance was discussed further above. 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).

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 EU340-03 and EU515-01 were reviewed to determine compliance with FGMONMACT.

DSC stated that EU340-03 does not have any MON process vents. DSC does consider EU515-01 a Group 1 continuous process stream and has two Group 1 continuous process vents. The EU515-01 is part of MCPU-022 that is only comprised of this emission unit. In order to maintain compliance with the NESHAP Subpart FFFF, DSC connects EU515-01 to the THROX for control. This appears acceptable.

FGROL290 (EU340-03)

This flexible group is for emission units that DSC believes are exempt per Rule 290.

DSC believes that the emission unit EU340-03 is exempt per Rule 290. Monthly emission records were requested and provided for select time periods. Upon review, records provided appear to show that there are no reported emissions. During the course of the inspection, it was explained by company staff how the emission unit is under a vapor balance and thus there are no emissions. This appears acceptable at this time.

Records were also requested for any other emission units that DSC believe are exempt per Rule 290 in Building 515. One additional emission unit (EU340-04) was identified. Monthly emission records were provided that appear acceptable. There appears to be no additional emission units that DSC believes are exempt per Rule 290 in the Building 515.

Conclusion

Based on the observations made and records reviewed, DSC appears to be in compliance with MI-ROP-A4043-2019b / PTI No. 812-91E, specifically the portions related to EU340-03, EU515-01 and FGOLDFACILITY.

NAME Alana J. Hoff

DATE 08/26/24

SUPERVISOR Glenn M. Pa