

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

A404366303

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: 02/08/2023
STAFF: Adam Shaffer	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MEGASITE
SUBJECT: Partial Compliance Evaluation of EU303-15 and EU303-16.		
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, 2023, to verify compliance with Renewable Operating Permit (ROP) No. MI-ROP-A4043-2019a, specifically emission units (EU)303-15 and EU303-16. Through these two emission units, select records were requested and reviewed through flexible group (FG) SITEBLOWER, FGTHROX, FGSITESCRUBBERS, and FGMONMACT. An in-person inspection to verify onsite compliance was later completed on February 8, 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), 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-A4043-2019a. Previous reports were reviewed for select time periods. After further review there appeared to be no issues specifically for EU303-15 and EU303-16 in the ROP compliance reports reviewed.

Based on the timing of the inspection, the 2021 Michigan Air Emissions Reporting System (MAERS) Report, specifically emissions for EU303-15 and EU303-16 were reviewed. Emissions for these two units are reported under RG-303. 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. Based on the supporting documentation, the quantity of emissions could not be identified for each specific emission unit, however, the report is acceptable at this time.

Compliance Evaluation

A request was sent to Mr. Jim Alger, Midland Area State Air Permitting Specialist, of DSC on January 31, 2022, for records required by ROP No. MI-ROP-A4043-2019a, specifically for units EU303-15, EU303-16, FGSITEBLOWER, FGTHROX, FGSITESCRUBBERS, and FGMONMACT. The onsite inspection was later completed on February 8, 2023.

AQD staff AS arrived at the facility at 8:28am. Weather conditions at the time of the inspection were sunny skies, winds to the northeast at 5-10mph and temperatures in the upper 20's degree Fahrenheit. 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, EU303-15 and EU303-16. Follow up 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 EU303-15, EU303-16, FGSITEBLOWER, FGTHROX, FGSITESCRUBBERS, and FGMONMACT were reviewed and discussed at length with company staff.

ROP No. MI-ROP-A4043-2019a

EU303-15

This emission unit is for the 1600 Batch Kettle batch manufacturing process consisting of an agitated, jacketed kettle, with a service water condenser (DV1602), water trap, receiver, blending and filtration, and product packaging. The process can also use a shared vacuum pump that exhausts through a glycol condenser (DV1637). This emission unit is subject to the requirements of 40 CFR Part 63, Subpart FFFF (NESHAP Subpart FFFF). The unit is also subject to 40 CFR Part 64 (CAM).

Onsite observations

Per special condition (SC) III.1 while 1600 Batch Kettle is venting through SC303-19, the permittee shall not operate 1600 Batch Kettle unless the service water condenser DV1602 exit water temperature is 35 degrees Celsius or less. At the time of the inspection, the 1600 Batch Kettle was empty and not in operation though the process was still venting to the FGTHROX. The service water condenser DV 1602 exit water temperature was 24.4 degrees Celsius at the time of the inspection, though as stated the unit was not in operation. Additionally, records were reviewed for select time periods while onsite. Based on the records reviewed and verification by DSC staff, there appeared to be no times where the 1600 Batch Kettle was in operation and the service water condenser DV1602 exit water was over 35 degrees Celsius for select time periods.

Per SC III.2, while the 1600 Batch Kettle is venting through the vacuum pump to glycol condenser DV1637, the permittee shall not operate 1600 Batch Kettle unless the glycol condenser DV1637 exit coolant temperature is 5 degrees Celsius or less. At the time of the inspection, the 1600 Batch Kettle was empty and not in operation. The glycol condenser DV1637 exit coolant temperature was -15 Degrees Celsius. Additionally, records were reviewed for select time periods while onsite. After further review, it appears that there were no times that the 1600 Batch Kettle was in operation when the glycol condenser DV1637 was over the 5 degrees Celsius limit.

Per SC IV.1, the permittee shall not route emissions from the 1600 Batch Kettle through SV303-019 unless the emissions are routed to service water condenser DV1602 and the condenser is installed, maintained and operated in a satisfactory manner. This emission unit was observed during the course of the site inspection and though the 1600 Batch Kettle was not in operation, based on the records reviewed, the units appeared to be operating in a satisfactory manner.

Per SC IV.2, the permittee shall not route emissions from 1600 Batch Kettle through the vacuum pump unless the emissions are routed to glycol condenser DV1637 and the condenser is installed, maintained and operated in a satisfactory manner. This emission unit was observed during the course of the site inspection and though the 1600 Batch Kettle

was not in operation, based on the records reviewed, the units appeared to be operating in a satisfactory manner.

Per SC IV.3, the permittee shall equip and maintain service water condenser DV1602 with an exit coolant temperature indicator. A temperature indicator was noted on the service water condenser DV1602 at the time of the site inspection.

Per SC IV.4, the permittee shall equip and maintain glycol condenser DV1637 with an exit coolant temperature indicator. An exit coolant temperature indicator was noted on the glycol condenser DV1637 at the time of the site inspection.

Per SC IV.5, the permittee shall calibrate the temperature indicator for condensers DV1602 and DV1637 in a satisfactory manner. It was stated by staff that calibrations of the two condenser temperature indicators is every four years. Dates of the last two calibrations were provided with the last calibrations being in 2020 / 2021 respectively.

There are six stacks associated with this emission unit. Photo verification was provided for the exhaust of each stack due to the difficulty at the time of the inspection of locating each stack. Based on the observations made, stack dimensions appear to be consistent with what is identified in MI-ROP-A4043-2019a.

Recordkeeping

This emission unit is subject to a 15 tons per year (tpy) VOC emission limit per a 12-month rolling time period. Records were requested and reviewed back for select time periods. For the month of December 2022, no emissions were reported emitted and as of December 2022, approximately 90.88 lbs of VOCs were reported emitted per a 12-month rolling time period. Previous 12-month rolling time periods reviewed also appeared to be within the applicable limit.

Per SC VI.2, while 1600 Batch Kettle is venting through SV303-19, the company shall continuously monitor and record the service water condenser DV1602 exit coolant temperature. During the inspection, select time periods of records were reviewed. It was concluded that DSC appears to be monitoring and recording the service water condenser DV1602 exit coolant temperature in a satisfactory manner.

Per SC VI.3, while 1600 Batch Kettle is venting through SV303-19, the company shall continuously monitor and record the glycol condenser DV1637 exit coolant temperature. During the inspection, select time periods of records were reviewed. It was concluded that DSC appears to be monitoring and recording the glycol condenser DV1637 exit coolant temperature in a satisfactory manner.

Per SC VI.4, the permittee shall keep monthly / 12-month rolling time period records of the VOC emission rate for EU303-15. Based on the records provided, DSC appears to be keeping track of monthly / 12-month rolling time period VOC emissions.

Per SC VI.8, the permittee shall properly maintain the monitoring system including keeping necessary parts for routine repair of the monitoring equipment. It was verified that spare parts are available.

EU303-16

This emission unit is for the 1650 Batch Kettle batch manufacturing process consisting of an agitated, jacketed kettle, with a service water condenser (DV3420), water trap, receiver, blending and filtration, and product packaging. The process can also use a shared vacuum pump that exhausts through a glycol condenser (DV1637). This emission unit is subject to the requirements of the NESHAP Subpart FFFF. The unit is also subject to 40 CFR Part 64 (CAM).

Onsite observations

Per special condition (SC) III.1 while 1650 Batch Kettle is venting through SV303-19, the permittee shall not operate 1650 Batch Kettle unless the service water condenser DV3420 exit water temperature is 35 degrees Celsius or less. At the time of the inspection, the 1650 Batch Kettle was in operation and the service water condenser DV3420 exit water temperature was later verified to be less than the 35 degrees Celsius operating limit. Additionally, records were requested of any times the 1650 Batch Kettle was in operation and the service water condenser DV3420 exit water was over 35 degrees Celsius for select time periods. Company staff stated no such incidents occurred in 2022. It was later determined that there were two times the exit temperature was over 35 degrees Celsius, however, were less than 15 minutes and not considered an excursion. Both times, emissions were being controlled by the THROX, which was operating properly. This appears acceptable.

Per SC III.2, while the 1650 Batch Kettle is venting through the vacuum pump to glycol condenser DV1637, the permittee shall not operate 1650 Batch Kettle unless the glycol condenser DV1637 exit coolant temperature is 5 degrees Celsius or less. At the time of the inspection, the 1650 Batch Kettle was in operation and the glycol condenser DV1637 exit coolant temperature was -15 degrees Celsius. Additionally, records were requested of any times the 1650 Batch Kettle was in operation and the glycol condenser DV1637 exit coolant temperature was over 5 degrees Celsius for select time periods. One instance was noted on August 13, 2022, that the exit coolant temperature went over the 5 degrees Celsius limit, however, emissions were controlled by the THROX at the time. After review of temperature records the THROX appeared to be operating properly at the time. The company had provided a follow up response in order to address the excursion which appeared acceptable. One additional time was noted in October that also went over the 5 degrees Celsius limit, however, was less than 15 minutes and was venting to the THROX; which was operating properly.

Per SC IV.1, the permittee shall not route emissions from the 1650 Batch Kettle through SV303-019 unless the emissions are routed to service water condenser DV3420 and the condenser is installed, maintained and operated in a satisfactory manner. This emission unit was observed during the course of the site inspection and after further review appeared to be being operated in a satisfactory manner.

Per SC IV.2, the permittee shall not route emissions from 1650 Batch Kettle through the vacuum pump unless the emissions are routed to glycol condenser DV1637 and the condenser is installed, maintained and operated in a satisfactory manner. This emission unit was observed during the course of the site inspection and after further review appeared to be being operated in a satisfactory manner.

Per SC IV.3, the permittee shall equip and maintain service water condenser DV3420 with an exit coolant temperature indicator. A temperature indicator was noted on the service water condenser DV3420 at the time of the site inspection.

Per SC IV.4, the permittee shall equip and maintain glycol condenser DV1637 with an exit coolant temperature indicator. An exit coolant temperature indicator was noted on the glycol condenser DV1637 at the time of the site inspection.

Per SC IV.5, the permittee shall calibrate the temperature indicators for condensers DV3420 and DV1637 in a satisfactory manner. It was stated by staff that calibrations of the two condenser temperature indicators is every four years. Dates of the last two calibrations were provided with the last calibrations being in 2020 / 2021 respectively.

There are six stacks associated with this emission unit. Photo verification was provided for the exhaust of each stack due to the difficulty at the time of the inspection of locating each stack. Based on the observations made, stack dimensions appear to be consistent with what is identified in MI-ROP-A4043-2019a.

Records

This emission unit is subject to a 15 tpy VOC emission limit per a 12-month rolling time period. Records were requested and reviewed back for select time periods. For the month of December 2022, no emissions were reported emitted and as of December 2022, approximately 104.11 lbs of VOCs were reported emitted per a 12-month rolling time period. Previous 12-month rolling time periods reviewed also appeared to be within the applicable limit.

Per SC VI.2, while 1650 Batch Kettle is venting through SV303-19, the company shall continuously monitor and record the service water condenser DV3420 exit coolant temperature. During the inspection, select time periods of records were reviewed. It was concluded that DSC appears to be monitoring and recording the service water condenser DV3420 exit coolant temperature in a satisfactory manner.

Per SC VI.3, while 1650 Batch Kettle is venting through SV303-19, the company shall continuously monitor and record the glycol condenser DV1637 exit coolant temperature. During the inspection, select time periods of records were reviewed. It was concluded that DSC appears to be monitoring and recording the glycol condenser DV1637 exit coolant temperature in a satisfactory manner.

Per SC VI.4, the permittee shall keep monthly / 12-month rolling time period records of the VOC emission rate for EU303-16. Records were requested and provided for select time periods. Based on the records reviewed, DSC appears to be keeping track of monthly / 12-month rolling time period VOC emissions.

Per SC VI.8, the permittee shall properly maintain the monitoring system including keeping necessary parts for routine repair of the monitoring equipment. It was verified that spare parts are available.

FGSITEBLOWER

This flexible group is for the 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 (EUTHROX) 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 vent and wet vent header system for vents that can contain water.

It should be noted that only portions of this flexible group were reviewed in order to verify that EU303-15 and EU303-16 are in compliance with FGSITEBLOWER.

Per SC IV.1, the permittee shall not operate the emission units in FGSITEBLOWER unless they are routed to EUTHROX or the site wide water scrubbers except as further described in this condition, and the control device is installed, maintained and operated in a satisfactory manner in accordance with the sites Malfunction Abatement Plan (MAP). Dates of any events where emissions from FGSITEBLOWERS being sent to EUTHROX / site wide scrubbers when EUTHROX / Site wide scrubbers were not operating properly were requested for select time periods. It was verified by company staff that no incidents occurred in 2022. This appears acceptable.

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 EUTHROX. Records were requested for bypass episodes that would involve EU303-15 and EU303-16. It was verified by DSC staff there were no bypass incidents in 2022 that would have applied to EU303-15 or EU303-16 emissions.

FGSITESCRUBBER

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 EU303-15 and EU303-16 are in compliance with FGSITESCRUBBER.

Per SC III.2, the permittee shall not bypass EUTHROX unless the vents listed in the special condition are routed to either the site wide scrubbers or the control equipment specified in these vents' emission unit tables in ROP No. MI-ROP0A4043-2008 (or subsequent revisions) and the control equipment is installed, maintained, and operated in a satisfactory manner. Records were requested for time periods where emissions from the vent SV303-019 was controlled by EUTHROX or site wide scrubbers or local control where it was not operating properly. EU303-15 and EU303-16 are controlled by local service water condensers, and it was concluded that times the condensers were not operating properly, the EUTHROX appeared to be operating properly. As discussed above it appeared that the local service water condensers appeared to be operating properly during the remaining time periods.

Per SC III.5, proper operation of the site wide water scrubber includes the total scrubber water flow rate shall not be less than the minimum flow rate specified in the MAP. As discussed above, it was verified by DSC staff that in 2022 the site wide water scrubbers were not used for SV303-019.

Per SC VI.2, the permittee shall keep track of, in a satisfactory manner, continuous records of scrubber flow rates for the site wide water scrubbers. As stated above it was verified by DSC staff that in 2022 the site wide water scrubbers were not used for SV303-019.

Per SC VI.3, the permittee shall keep, in a satisfactory manner, records demonstrating that the Benzene Emissions Management and Monitoring Plan (BEMMP) is being implemented

and maintained as required by SC III.1. It was verified by DSC staff that the BEMMP dated February 14, 2018, is being followed.

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 the NESHAP 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 EU303-15 and EU303-16 are 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 were requested and provided. After further review, no issues were noted during the select time periods reviewed.

FGMONMACT

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

During the site inspection, company staff explained that the two emission units EU303-15 and EU303-16 are categorized as Group 2 per the NESHAP Subpart FFFF. The emission units EU303-15, EU303-16, and EU303-17 are grouped together into one miscellaneous organic chemical manufacturing process unit (MCPU). DSC provided verification on how this MCPU is not subject to Group 1 requirements at the time of the inspection. DSC takes the total estimated production and applicable emissions for all three units for that year and multiplies by three. For 2023, the total emissions are 6,605 lbs which is below the 75% setpoint it appears the company has established and is within the 10,000 lbs/yr emission limit, therefore, the Group 2 category appears applicable.

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 EU303-15 and EU303-16.

NAME Adam Shapiro DATE 04/03/23 SUPERVISOR Chris Kane