DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

A404348555

FACILITY: Dow Silicones Corporation		**SRN / ID:** A4043
LOCATION: 3901 S Saginaw Rd, MIDLAND		**DISTRICT:** Saginaw Bay
CITY: MIDLAND		**COUNTY:** MIDLAND
CONTACT: Jennifer Kraut , Air Specialist		**ACTIVITY DATE:** 03/26/2019
STAFF: Gina McCann	**COMPLIANCE STATUS:** Non Compliance	**SOURCE CLASS:** MEGASITE
SUBJECT: EU108-01, EU2504-01, EU304-02 and EU304-01 (FGRULE290)		
RESOLVED COMPLAINTS:		

Inspection Date: 3/26/2019
Inspection Started: 8:30
Inspection Ended: 14:30

DOW Silicones/MDEQ-AQD staff present during the inspection:

- **Gina McCann (MDEQ-AQD, Senior Environmental Quality Analyst)**
- **Matthew Karl (MDEQ-AQD, Environmental Quality Analyst)**
- **Jennifer Kraut (Air Specialist, DOW Silicones)**
- **Leah Olson Perry (EHS Specialist, DOW MiOps)**
- **Brandon Bishop (EHS Specialist, DOW MiOps)**
- **Chris Dinh, (Production Engineer for 304 Building, DOW Silicones)**
- **Ali Amir (Production Engineer for 316 Building, DOW Silicones)**
- **Mike Klohn (Production Engineer for 2504 Building, DOW Silicones)**
- **Khang Vo, (Production Engineer for 108 Building, DOW Silicones)**

Records reviewed as part of the inspection were:

- **ROP Annual report for 2018**
- **40 CFR Part 64 CAM excursion/exceedance report for 2018**
- **40 CFR Part 63 Subpart FFFF, MON MACT periodic report for 2018**
- **Permit evaluation 44-89D**

EU108-01

- **Carbon adsorption system consisting of two carbon drums in series**
- **Hydrogen chloride (HCl) scrubber (tank 20734)**

Platinum catalyst manufacturing process. This emission unit is subject to the requirements of 40 CFR Part 63 Subpart FFFF.

One product vents directly to the carbon totes and (2) two other products vent to the HCl scrubber and then the totes.

Special condition (SC) IV.1. restricts operation of EU108-01 unless the carbon adsorption system is installed, maintained, and operated in a satisfactory manner. Satisfactory operation of the carbon adsorption system includes exhausting emissions directed to the system through two carbon drums connected in series and replacing activated carbon in the system based on the weight gain of the second of the two drums. A fresh drum shall be placed in the second drum position before the weight gain of the second drum exceeds 30 pounds over the "as received" weight of the drum. SC VI.2. is the associated recordkeeping requirement requiring records of carbon replacement for the carbon adsorption system to be maintained. The alarm setpoint is at 13.6 kilograms or 29.99 pounds. I viewed the operator logs showing replacement of carbon totes, during the inspection.

During the inspection we viewed the carbon adsorption system. There were two totes in place. SC VI.4. is the associated recordkeeping requirement for monitoring and recordkeeping the weight gain of the second carbon drum over its "as received" weight on a continuous basis. Continuous basis is defined as an instantaneous data point recorded at least once every 15 minutes. The local readout for the weight of the second carbon drum was 2.9 in the control room at 2.9 kg. I viewed records from March 1st, 2018 through March 22nd, 2019. The second drum was replaced before the weight gain exceeded 30 pounds over the "received as" weight of the drum.

SC IV.2. restricts production of Platinum II unless the HCl scrubber is installed, maintained, and operated in a satisfactory manner. Satisfactory operation of the HCl scrubber includes replacing the scrubbing solution before beginning each batch of Platinum II production. I viewed the operator run sheets when Platinum II was last produced, which coincided with replacing the scrubbing solution in the HCl scrubber.

SC I.2. limits VOC emissions to 0.07 ton per year (tpy) based on a 12-month rolling time period as determined at the end of each calendar month. SC VI.1. and SC VI.3. are the associated recordkeeping requirements, which requires the plant to maintain batch production records in sufficient detail to demonstrate compliance with the emission limits. I viewed the 12-month rolling emissions data from February 2018 through January 2019. VOC emissions were 0.06422 tpy for the 12-month rolling period ending January 2019.

Compliance Reporting
I reviewed the ROP Annual report for 2018 and 40 CFR Part 63 MON MACT periodic report for 2018. No deviations were reported for this unit.

EU2504-01

- **Vent recovery system consisting of two parallel condenser trains. Each condenser train includes two shell-and tube condensers, the first (24608 & 24610) using service water as coolant, and the second (24609 & 24611) using a chilled mix of water and glycol as coolant. The condenser trains (24608/24609 and 24610/24611) typically operate in parallel, but only one set of condensers may operate at any given time. The vent recovery system is a CAM subject unit for VOCs.**

Silicone products manufacturing process including packaging, filtration, and cleanout operations. EU2504-01 is a CAM subject emission unit subject to the requirements of 40 CFR Part 64.

The plant does not operate only one set of condenser trains at a time. I reviewed the permit evaluation and spoke with Paul Schleusener, permit engineer regarding this wording. It appears that this shouldn't make a difference, if the stack exhaust has not changed. Ms. Olson Perry had indicated that they remained the same exit velocity and temperature.

The plant is currently in the process of re-permitting this unit. The initial plan is to break it into (2) permits, (3) R290 units and (2) R291 units. Reasoning is specified under the deviations section.

SC III.1. restricts operation of EU2504-01 unless the emissions, excluding packaging and filtration, are exhausted through the vent recovery system and the vent recovery system is installed, maintained and operated in a satisfactory manner. Vent id SV2504-24 does not exhaust through the vent recovery system. See deviation discussion below under *Compliance Reporting*. Satisfactory operation of the vent recovery system includes operating one chilled water condenser and glycol condenser in series and maintaining a maximum coolant outlet temperature of 40°F from the chilled water/glycol condenser through which EU2504-01 emissions are being exhausted. SC VI.2 is the associated recordkeeping requirement that requires the plant to monitor and record the coolant outlet temperature from the chilled water/glycol condenser through which EU2504-01 emissions are being exhausted on a continuous basis. I reviewed coolant outlet temperature for the chilled water/glycol condenser from January 2018 through December 2018. During times of production the temperature was maintained below 40°F.

SC VI.3. and VI.4. requires the plant to maintain production records on a monthly basis and other records in sufficient detail to demonstrate compliance with the VOC emission rate of 11.4 tpy, based on a 12-month rolling time period. I reviewed the 12-month rolling VOC emissions records, ending January 2019. VOC emissions were 7.32 tpy.

SC VI.5-8 are recordkeeping requirements pertaining to CAM. The *Compliance Reporting* section, below, describes reporting according to these requirements.

Compliance Reporting
I reviewed the ROP Annual report for 2018 and 40 CFR Part 64 CAM excursion report for 2018. Three (3) deviations were reported for the 2018 reporting period, including one of the three reported as a CAM excursion.

12/19/2016 During an internal audit of the emission calculations the plant determined emission calculations used to determine compliance with the permit calculate higher emissions than what was submitting during the permitting process and there is a potential to exceed emission limits. The difference in emissions is more than a meaningful change. The plant is working on submitting a PTI application by June 30, 2019.

1/1/2018 8220 Kettle (SV 2504-024), permitted under EU2504-01, has a process vent that does not exhaust to the vent recovery system. The plant has been keeping R290 records on the emissions. Permitting actions are taking longer than expected due to new screening levels for ethylene oxide. The plant is having issues with modeling this toxic. This is also a CAM excursion.

1/24/2018 MON deviation. Misunderstanding of the requirement. Group 1 waste water stream subject to MON was shipped to offsite locations for disposal without the required notifications.

EU304-02

- 337 wet scrubber (9950, 9960 – scrubbers typically alternate in operation but can operate in parallel and vent to SV337-001/002, respectively)
- Condensers (414, 1154) These devices are CAM subject units for VOCs
- FGTHROX
- FGSITESCRUBBERS

Alkylsilane process including reactors, distillation columns, condensers, scrubber, storage tanks, tanker station, and related equipment. Tanks that do not vent include 258, 259, and 34E. This emission unit vents to the 337 wet scrubber. This emission unit is subject to the requirements of 40 CFR Part 63, Subpart FFFF. EU304-02 is a CAM subject emission unit subject to the requirements of 40 CFR Part 64. The most recent PTI for this emission unit is PTI No. 616-92A.

SC III.1. requires the maximum coolant inlet temperature of condenser 414 to not exceed -13C. Exceeding this operational parameter limit is a CAM excursion. The plant does not operate this condenser below -13C. At some point, post permitting, the plant changed the product that was utilizing this condenser and now it will freeze if it is chilled to this point. SC VI.1 is the associated recordkeeping requirement to monitor and record, on a continuous basis, the coolant inlet temperature of condensers 414 and 1154. I reviewed glycol temperatures on condenser 414 from March 1, 2018 through March 23, 2019. Several periods of time were identified when condenser 414 did not operate below -13C. Special condition IV.1a. of FGSITEBLOWER allows the emission vents at EU304-02, that are part of FGSITEBLOWER, the ability to operate the additional air pollution control equipment with parameters at levels or ranges outside of the specified parametric ranges or levels in their individual ROP tables, while EUTHROX is operating properly. However, coolant inlet temperatures of condenser 414 operated at higher temperatures than permitted, while emissions were not vented to EUTHROX or EUTHROX was not operating properly, as defined. The plant is non-compliant with SC III.1.

The plant is currently operating condenser 414 as a R290 unit, EU304-02. While the exemption demonstration supports a R290 decision from an emissions standpoint, the condenser is still permitted with specific operational restrictions. Exclusions from exemptions, Rule 336.1278(4), states the exemptions in R 336.1280 to R 336.1291 apply to the requirement to obtain a permit to install only and do not exempt any source from complying with any other applicable requirement or *existing permit limitation*. The plant should modify permit 616-92A to incorporate these changes.

SC III.2. restricts the coolant inlet temperature of condenser 1154 to below -13C. SC VI.1 is the associated recordkeeping requirement to monitor and record, on a continuous basis, the coolant inlet temperature of condensers 414 and 1154. I reviewed glycol temperatures on condenser 1154 from March 1, 2018 through March 23, 2019. During periods of operation this condenser operated below -13C.

SC III.3. restricts operation of the process unless the 337 wet scrubber is installed and operating properly. The plant vents to FGTHROX. According to an email from J. Kraut, dated 4/15/2019, *EU304-02 vents through condenser 1154 and then to THROX (including an absorber and an ionizing wet scrubber). EU304-02 no longer vents through condenser 414 as this condenser is associated with a different emission unit (i.e., EU304-01). Although EU304-02 is permitted to vent to the 337 scrubber, it no longer utilizes this option.* The plant is not compliant with condition III.3.

SC III.4 restricts operation of the process unless the condensers (414, 11154) are installed and operating properly. Condenser was last maintained on 2/12/2019 and 6/20/2018. Calibrations were completed on 12/13/2016 and 10/01/2014. Condenser 1154's last maintenance days were the same as calibrations done on 12/02/2018 and 12/13/2016. Condenser 414 does not operate as permitted in SC III.1.

SC III.5. requires the plant to equip and maintain the coolant line connected to the condensers with a temperature indication device. Calibration on condenser 414 was completed 12/13/2016 and 10/01/2014. Condenser 1154 was calibrated on 12/02/2018 and 12/13/2016.

SC III.6. restricts operation of the amyltrichlorosilane process to less than 262 hours per calendar month. SC VI.2. is the associated recordkeeping condition. The plant does not produce product associated with these emissions any longer.

SC III.7. restricts operation of the amyltrichlorosilane process for more than 3153 hours pre year. SC VI.3. is the associated recordkeeping condition. The plant does not produce product associated with these emissions any longer.

SC III.8. requires the temperature indicators for condensers 44 and 1154 to be calibrated. Calibration on condenser 414 was completed 12/13/2016 and 10/01/2014. Condenser 1154 was calibrated on 12/02/2018 and 12/13/2016.

SC VI.4. requires the plant to calculate and record emissions from the process for the previous calendar month to demonstrate compliance with the 12-month rolling time period emission limits specified in the emissions table. VOC emissions for the 12-month rolling time period ending February 2019 were 0.33 tpy. 1-Octene (CAS# 111660) emissions for the 12-month rolling time period ending February 2019 were 0.33 pounds. The plant no longer produces products with emissions of EtTCS (CAS #115219), EtMeDCS (CAS# 4525444) or Amylene (CAS# 513359). The plant was initially a research plant where multiple products were made that would have had these emissions. Since the approval of the permit, the plant no longer makes products with these emissions.

EU304-01, FGRULE290, records the 12-month rolling time period emissions for MeHDCS (#75547). Emissions for the 12-month rolling time period ending February 2019 were 0.01 pounds.

SC VI.5. states, for condensers 414 and 1154, upon detecting an excursion or exceedance, the owner or operator shall restore operation of the pollutant-specific emissions unit (including the control device and associated capture system) to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution practices for minimizing emissions. The response shall include minimizing the period of any startup, shutdown, or malfunction and taking any necessary corrective actions to restore normal operation and prevent the likely recurrence of the cause of an excursion or exceedance (other than those caused by excused startup or shutdown conditions). Condenser 414 does not always operate below -13C, according to SCIII.1., which defines an excursion as exceeding this operational parameter limit is a CAM excursion.

SC III.6. states, For condensers 414 and 1154, except for, as applicable, monitoring malfunctions, associated repairs, and required quality assurance or control activities (including, as applicable, calibration checks and required zero and span adjustments), the owner or operator shall conduct all monitoring in continuous operation (or shall collect data at all required intervals) at all times that the pollutant-specific emissions unit is operating. Data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities shall not be used for 40 CFR Part 64 compliance, including data averages and calculations or fulfilling a minimum data availability requirement, if applicable. The owner or operator shall use all the data collected during all other periods in assessing the operation of the control device and associated control system. A monitoring malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring to provide valid data. Monitoring failures that are caused by poor maintenance or careless operation are not malfunctions. The plant appears to be meeting this requirement.

SC III.7. states, for condensers 414 and 1154, the permittee shall maintain records of monitoring data, monitor performance data, corrective actions taken, any written quality improvement plan if required by the Administrator pursuant to 40 CFR 64.8 and any activities undertaken to implement a quality improvement plan, and other information such as data used to document the adequacy of monitoring, or records of monitoring maintenance or corrective actions. The plant appears to meet this requirement.

III.8. states, the permittee shall properly maintain the monitoring system including keeping necessary parts for routine repair of the monitoring equipment. The plant appears to be meeting this requirement.

VII. 1. Requires reporting of deviations pursuant to General Conditions 21 and 22 of Part A. No deviations were reported for the 2018 reporting period.

VII.2. Requires semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. No deviations were reported for the 2018 reporting period.

VII.3. Requires annual reporting of monitoring and deviations pursuant to General Condition 19 and 20 of Part A. No deviations were reported for the 2018 reporting period.

VII.4. Requires semiannual reporting of monitoring deviations including a summary of the number, duration and cause of excursions and/or exceedances and the corrective actions taken. No deviations were reported for the 2018 reporting period.

Compliance Reporting
I reviewed the ROP Annual report for 2018 and 40 CFR Part 63 MON MACT periodic report for 2018. No deviations were reported for this unit.

The following non-compliance findings were identified during this inspection. A violation notice was sent on 4/25/2019.

Process Description	Rule/Permit Condition Violated	Comments
EU304-02 Alkylsilane Process	MI-ROP-A4043-2019, SC III.1.	Exceedances of process/operational restriction of coolant inlet temperature, -13C.
EU304-02 Alkylsilane Process	MI-ROP-A4043-2019, SC III.4.	Proper operation of condenser 414 requires maintaining the operational restriction in III.1.
EU304-02 Alkylsilane Process	MI-ROP-A4043-2019, SC VII.2. and VII.3.	Exceedances of the coolant inlet temperature on condenser 414 were not reported in the Semiannual and Annual deviation reports for 2018.
EU304-02 Alkylsilane Process	MI-ROP-A4043-2019, SC VII.4.	Exceedances of the coolant inlet temperature on condenser 414 were not reported in the 2018 CAM excursion reports.
EU304-02 Alkylsilane Process	MI-ROP-A4043-2019, SC III.3.	Process operates although the 337 wet scrubber is not utilized as control.

NAME Mirah L. McCann DATE 4/25/19 SUPERVISOR C. Hare