

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

A404347835

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: 02/14/2019
STAFF: Gina McCann	SOURCE CLASS: MEGASITE
SUBJECT: EU2703-01, EU2703-03 and EU2703-17	
RESOLVED COMPLAINTS:	

Inspection Date: 2/14/2019

Inspection Started: 8:30

Inspection Ended: 12:30

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

- Gina McCann (MDEQ-AQD, Senior Environmental Quality Analyst)
- Jennifer Kraut (Air Specialist, DOW Silicones)
- Justin Franks (2703 Production Engineer, DOW Silicones)
- Steven Rausch (2703 Production Engineer, DOW Silicones)
- Travis Jenkins (2703 Production Engineer, DOW Silicones)

Records reviewed as part of the inspection were:

- ROP Annual report for 2017
- ROP Semiannual report for reporting period 1/1/2018-6/30/2018
- 40 CFR Part 64 CAM excursion/exceedance report for 1/1/2018-6/30/2018
- 40 CFR Part 63 Subpart FFFF report for reporting period 1/1/2017-12/31/2017 and 1/1/2018-6/30/2018

EU2703-01

Hydrosilylation and alkoxylation process. This emission unit is subject to the requirements of 40 CFR Part 63, Subpart FFFF. EU2703-01 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. 155-80G.

- Shell and tube condensers (9214 and 9226). This device is a CAM subject unit for VOCs and Methyl Chloride.
- Emergency spray tower scrubber (9163). This device is a CAM subject unit for VOCs.
- Spray tower scrubbers (9208 and 9215). This device is a CAM subject unit for VOCs.
- Activated carbon units (CDCARBONUNITS)
- FGTHROX

Special Condition (SC) III.1. restricts the scrubber liquid flow rate to at least 6.0 gallons per minute for both scrubber 9215 and 9208. SC VI.1a. is the associated monitoring/recordkeeping requirement to record, on a continuous basis the scrubber liquid flow rate of scrubber 9215 and 9208.

During the inspection the plant provided a R285 demonstration for removing scrubber 9215 and upgrading spray tower scrubber 9208 in June of 2012. The demonstration provides that the vent stack, height, diameter and orientation did not change. The demonstration requires spray tower scrubber 9208 to operate at 7.4 gallons per minute (gpm). During the inspection the process was routed to the THROX and the liquid flow on scrubber 9208 was at 8.4 gpm (12:05). I reviewed liquid flow rates for tower scrubber 9208 and during times of operation the scrubber flow was maintained above the 7.4 gpm identified in the demonstration, with the exception of two deviations reported on 4/30/2018 and 5/31/2018. Compliance reporting below has more details on the deviations.

SC III.2. requires, that in the event of an emergency, scrubber 9163 shall operate at a minimum of 6.0 gpm. SC VI.1a. is the associated monitoring/recordkeeping requirement to record, on a continuous basis the scrubber liquid flow rate of scrubber 9163. At the time of the inspection the process was venting to the THROX and the liquid flow on scrubber 9163 was 9.5 gpm (12:05). I reviewed the liquid flow rates for emergency scrubber 9163 and during times of operation the scrubber flow was maintained above 6.0

gpm. Low water flow was identified between 5/17/18 and 5/26/18, however the process was not in operation at that time.

SC III.3. requires the proper operation of condenser 9214 and 9228, which means that the coolant return temperature from either of the two condensers shall not be greater than -10C. SC VI.1b. is the associated monitoring/recordkeeping requirement to record, on a continuous basis, the coolant return temperature of condenser 9228 ad 9214. During the inspection the coolant return temperature on condenser 9214 was -20.8C and -21.0C on condenser 9228. I reviewed the coolant return temperatures for both condenser 9214 and 9228. The temperature from either of the two condensers were less than -10C, when the process was in operation.

SC III.4. requires CDCARBONUNITS to be used when the EU2703-01 process manufacturers compounds that emit methylallyl chloride and that they operate "properly", which means that the first tote shall be replaced whenever the second tote's weight increases by 50 pounds (and the "second" tote now becomes the "first" tote). During the inspection we viewed these units, which are housed in a shed next to the control room. Field weight displays varied from what was saw in the control room. In a subsequent email, J. Kraut explained the plant had verified that the output readings in the control room were accurate and that they were working to correct the output on the field display. Compliance is determined using the control room readout and therefore in compliance with the permit. During the inspection the readout in the control room read a difference of 0.6 pounds (lbs), with a set point of 48.00 lbs. I did review THROX temperature readings from January 1, 2018 through December 31, 2018 and during times the THROX was down this unit did not appear to be venting to it.

Further, EU2703-01 does not typically use the carbon totes and instead vents to FGTHROX. It appears that the THROX is a more efficient control. However, the facility needs to resolve the language in this PTI to reflect actual conditions at the plant. Per the District Supervisor, a violation notice will not be written. Instead, we are requesting the plant to make the necessary modifications to its ROP, either by PTI revisions or ROP modifications.

SC III.5. restricts operation of EU2703-01 unless scrubber 9215 and vent condensers 9214 and 9228 are installed and operating properly. The plant shall not operate the process in such a way that methylallyl chloride is generated unless the dual-stage carbon units control system is installed and operating properly. Scrubber 9208 shall be installed and operating properly whenever EU2703-01 is operating, except when the process is manufacturing compounds that emit methylallyl chloride (i.e. scrubber 9215 need not operate whenever the carbon adsorption system is operating). Scrubber 9215 has been replaced with an upgraded spray tower scrubber 9208 in June of 2012. Again, EU2703-01 does not typically use the carbon totes and instead vents to FGTHROX. It appears that the THROX is a more efficient control. However, the facility needs to resolve the language in this PTI to reflect actual conditions at the plant. Per the District Supervisor, a violation notice will not be written. Instead, we will request the plant to make the necessary modifications to its ROP, either by PTI revisions or ROP modifications.

SC IV.1. requires the plant to equip and maintain condensers 9228 and 9214 with a coolant return temperature monitor. The most recent maintenance for condenser 9228 was 2/1/18 and 2/14/18. Condenser 9214 was last maintained 5/12/18 and 10/17/18. The plant appears to meet this requirement.

SC IV.2. requires the plant to equip and maintain each scrubber with a liquid flow indicator. At the time of the inspection, the plant appeared to be meeting this requirement.

SC IV.3. requires the plant to equip and maintain the CDCARBONTOTES with scales that measure each carbon tote's weight whenever the carbon adsorption system is operating. Maintenance on the CDCARBONTOTES last occurred on 8/15/2018, 11/12/18 and 2/11/18. At the time of the inspection, the plant appeared to be meeting this requirement.

SC IV.4. requires the plant to calibrate the temperature monitor on condenser 9214 and 9228, and the liquid flow indicator on scrubber 9163, 9208, and 9215. Scrubber 9215 is not installed, see discussion above regarding R285 demonstration replacement. The facility needs to resolve the language in this PTI to reflect actual conditions at the plant. Per the District Supervisor, a violation notice will not be written. Instead, we will request the plant to make the necessary modifications to its ROP, either by PTI revisions or ROP modifications.

SC VI.1.c. requires the plant to monitor and record, on a continuous basis, the weight of carbon totes. I reviewed records from January 1, 2018 through January 1, 2019. During times when the process was venting to the carbon totes, the secondary tote did not increase by an additional 50 pounds.

SC VI.2. requires the plant to maintain production records on a monthly basis and other records necessary to demonstrate compliance with the 12-month rolling time period emission totals for VOCs, 8.5 ton per year (tpy). I reviewed emission record for the 12-month rolling time period ending December 31, 2018. VOC emissions were 0.05 tpy.

SC VI.3., VI.4. and VI.5. are CAM requirements. The compliance reporting section below references deviations and/or actions taken to mitigate excursions if applicable. The plant appeared to be in compliance for the CAM conditions referencing condensers 9214 and 9228, emergency scrubber 9163 and spray tower scrubber 9208. These conditions reference scrubber 9215 and the ROP should be modified to remove references to this scrubber since it is no longer installed.

Compliance Reporting

I reviewed the 2017 Annual and 2018 First Semiannual ROP deviation reports. Two deviations from 40 CFR Part 63, Subpart FFFF (MON MACT) were reported.

On 6/15/2017, due to a malfunction, a MON process operated without Group 1 control and therefore did not reduce OHAP emission by $\geq 98\%$. The vent stream passed through the 9208 scrubber, which is not a MACT control device. Estimated total emissions during the event were less than 1 lb of methanol. Reason for deviation was the vent blower shut down automatically for process safety reasons due to high pressure in the downstream, typically related to line plugging as well as fluctuations in header pressure from the various venting facilities. The plant complied with the MON SSM plan at the time of the event , therefore this is not a compliance issue.

On 6/26/2017, a similar event occurred to the cited event on 6/15/2017. When process was restarted it was venting to both the THROX and 9208 scrubber. 9208 scrubber is not an approved MON control device. Estimated total emissions during the event were less than 1 lb of methanol. Corrective action was to implement visual indicators to warn operations staff that the scrubber valve is still open and Group 1 process vents cannot be venting.

On 5/31/2018 the liquid flow indicator on scrubber 9208 failed when vents were diverted from the THROX to the scrubber. Proper liquid flow to the scrubber was visually confirmed. The transmitter was replaced.

On 4/30/2018 a drop in the site city water pressure caused a drop in water flow to scrubber 9390 A and B. Scrubber vent was redirected to the THROX within 3 minutes. This was also a CAM excursion. Alarm set point was raised for increased awareness.

EU2703-03

Chloropropyl trichlorosilane process. This emission unit is subject to the requirements of 40 CFR Part 63, Subpart FFFF and Subpart EEEE. EU2703-03 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. 920-84B.

- Vent compressor 22790. This device is a CAM subject unit for VOCs.
- Vent condenser 22795. This device is a CAM subject unit for VOCs.
Venturi scrubbers 9390 A and B (scrubbers alternate in operation and act as a backup for one another). These devices are CAM subject units for VOCs.
- FGTHROX

SC III.1. restricts the vent pressure control valve for vent compressor 22790 from opening unless the pressure exceeds 200 pounds per square inch (psi). SC VI.1.a. is the associated monitoring and recordkeeping requirement for the vapor outlet pressure for vent compressor 22790 to be monitored and recorded on a continuous basis. I reviewed records for January 1, 2018 through January 1, 2019. This compressor did not operate during this period. All vents were directed to the THROX.

SC III.2. restricts the exhaust gas temperature for vent condenser 22795 to less than 10C. SC VI.1.b. is the associated monitoring and recordkeeping requirement for the exhaust gas temperature for vent condenser

22795 to be monitored and recorded on a continuous basis. I reviewed records for January 1, 2018 through January 1, 2019, the plant appeared to be meeting this requirement.

SC III.3. proper operation of scrubbers 9390 A and B means the total scrubber water flow rate for scrubbers 9390 A and B shall not be less than 6.0 gpm, respectively. SC VI.1.c. is the associated monitoring and recordkeeping requirement for the exhaust gas temperature for vent condenser 22795 to be monitored and recorded on a continuous basis. I reviewed records for January 1, 2018 through January 1, 2019, the plant appeared to be meeting this requirement. I reviewed records for January 1, 2018 through January 1, 2019, the plant appeared to be meeting this requirement.

SC III.4. restricts operation of EU2703-03 unless the emission control train, consisting of vent compressor 22790, vent condenser 22795, and either scrubber 9390 A or B, is installed and operating properly. Vent compressor 22790 and vent condenser 22795 were not vented to in 2018. The plant has installed an interlock to vent to the THROX instead. The facility needs to resolve the language in this PTI to reflect actual conditions at the plant. Per the District Supervisor, a violation notice will not be written. Instead, we will request the plant to make the necessary modifications to its ROP, either by PTI revisions or ROP modifications.

SC III.5. restricts the plant from loading the allyl chloride storage tank unless the vent equalization system is installed and operating properly. During the inspection the process engineers stated the railcar vapor balance system is hooked up, to the railcar, balance system, and bulk tank when venting to the CPTC process. Rail station 15-G performs pressure checking.

SC IV.1. requires the plant to equip and maintain vent compressor 22790 with a vapor outlet pressure indicator. The relief valve was last serviced on 10/31/18 and the pressure transmitter calibrated on 10/15/18. The pressure indicator was last calibrated on 3/27/2017 and 3/19/2013.

SC IV.2. requires the plant to equip and maintain vent condenser 22795 with an exhaust gas temperature indicator. The temperature probe was last service and calibrated on 1/29/19 and 3/30/17. The temperature indicator was last calibrated on 3/27/2017 and 3/19/2013.

SC IV.3. requires the plant to equip and maintain scrubber 9390 A and B with a total scrubber flow rate indicator. The last maintenance activities performed on scrubber 9390 A and B were on 10/21/18 and 2/23/18.

SC IV.4. requires the plant to calibrate the pressure indicator for vent compressor 22790, the temperature indicator for condenser 22795, and the water flow indicator for scrubber 9390 A and B. Vent compressor 22790 was last calibrated on 10/15/2018 and the temperature probe serviced. The temperature probe for condenser 22795 was last serviced and calibrated on 1/29/2019 and 3/30/2017. The flow transmitter for scrubber 9390 A and B was last calibrated 6/20/2017 and 5/08/2013. The calibration cycle is set for a four-year period.

SC VI.2. requires the plant to keep records as required to demonstrate compliance with the 12-month rolling time period emission totals for VOCs, 9.0 ton per year (tpy). I reviewed emission record for the 12-month rolling time period ending December 31, 2018. VOC emissions were 0.1 tpy.

SC VI.3., VI.4. and VI.5. are CAM requirements. The compliance reporting section below references deviations and/or actions taken to mitigate excursions if applicable. The plant appeared to be in compliance for the CAM conditions referencing vent compressor 22790, vent condenser 22795 and scrubbers 9390 A and B.

Compliance Reporting

I reviewed the 2017 Annual and 2018 First Semiannual ROP deviation reports. Two deviations from 40 CFR Part 63, Subpart FFFF (MON MACT) were reported.

On 2/18/2018, it was discovered that the design evaluation for condensers 24697, 23967 and 22795 were

not included in the original NOCS and subsequent semi-annual reports. Difference was due to a MON rule interpretation by the consultants during implementation. Processes that have access to the site THROX will vent there until a performance test on the condensers can be performed.

EU2703-17

9025C dedicated waste tank in 2703 building. The most recent PTI for this emission unit is PTI No. 26-14.

- This emission unit vents to the site THROX and when the THROX is not operating, scrubbers 9390 A and B. Emission from transfers from the tank to tank trucks will be controlled by vapor balance back to the tank.

SC III.1. restricts water flow to scrubbers 9390 A and B to not less than 6.0 gallons per minute (gpm). SC VI.1. is the associated recordkeeping condition that requires the plant to monitor and record the total scrubber water flow rate for scrubber 9390 A and B, on a continuous basis, defined as an instantaneous data point recorded at least every 15 minutes. I reviewed water flow data to scrubbers 9390 A and B from January 1, 2018 through December 31, 2018. The flow was maintained above 6.0 gpm when the process was in operation.

SC III.2. restricts loading to any tank truck from EU2703-17 unless the vapor balance system is installed, maintained, and operated in a satisfactory manner. The plant provided the last two maintenance dates and associated activities as part of the records request. On 3/24/2017 they replaced covering and worked on flange connections. On 11/15/2016 the plant replaced the regulator on the vent system.

SC IV.1 restricts operation of EU2703-17 unless the emissions are routed to the THROX and the THROX is installed, maintained and operated in a satisfactory manner. The last inspection for FG-THROX occurred on 11/08/2017 and the last performance test occurred on 11/07/2018 for CO, PM10 and VOCs. Both reports indicate the THROX is operating in a satisfactory manner.

SC IV.2. limits hours of operation of EU2703-17 to 2,000 hours per 12-month rolling time period, as determined at the end of each calendar month, while the THROX is down or experiencing a malfunction. During operation without the THROX, the plant cannot operate this unit unless either scrubber 9390 A or B is installed, maintained, and operated in a satisfactory manner. SC IV.4. is the associated recordkeeping requirement to maintain monthly and 12-month rolling time period records of the number of hours that EU2703-17 vents to either scrubber 9390 A or B rather than the THROX. EU2703-17 operated while venting to scrubbers 9390 A or B for 781.77 hours, per the 12-month rolling time period ending December 31, 2018.

SC IV.3. requires the plant to equip and maintain scrubbers 9390 A and B with water flow rate indicators. The last maintenance activities performed on scrubber 9390 A and B were on 10/21/18 and 2/23/18. The flow transmitter for scrubber 9390 A and B was last calibrated 6/20/2017 and 5/08/2013. The calibration cycle is set for a four-year period.

SC IV.3. requires the plant to keep monthly and 12-month rolling time period records of the VOC emission rate from EU2703-17. VOC emissions were 0.91 tpy for the 12-month rolling time period ending December 31, 2018.

NAME 

DATE 31/19

SUPERVISOR C. Hale