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

A404337995

FACILITY: Dow Corning - Midland Plant		**SRN / ID:** A4043
LOCATION: 3901 S Saginaw Rd, MIDLAND		**DISTRICT:** Saginaw Bay
CITY: MIDLAND		**COUNTY:** MIDLAND
CONTACT: Mike Gruber , Air & Water Team Leader		**ACTIVITY DATE:** 12/06/2016
STAFF: Kathy Brewer	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MEGASITE
SUBJECT: EU321-01		
RESOLVED COMPLAINTS:		

EU312-01: The resin manufacturing process includes reactors, distillation, storage tanks, condensers, scrubber, separators and related equipment. A condenser controls all emissions leaving the reactor, a Venturi scrubber controls HCL emissions.

Dow Corning site contacts:
Michael Gruber, Mi Ops Silicone Plant, Air & Water Team Leader
Michelle Kendall, Dow Chemical, Air Delivery Specialist

The most recent PTI for this emission unit was PTI 174-12A issued on July 14, 2016. The emission unit is operated in conformity with the most recent PTI requirements. The emission unit is subject to the miscellaneous chemical manufacturing NESHAP in 40 CFR Part 63, Subpart FFFF. Air permit regulated emissions are controlled by the THROX, Site wide Scrubbers, condenser 24623, and scrubber 11472. Control devices are subject to CAM.

The compliance evaluation included a tour of the process including the reactor tank, feed lines, condenser, scrubber, metering devices, process control room, on site records, and AQD Saginaw Bay District file review. Information reviewed during the inspection indicated that the EU321-01 emission unit was in compliance with the requirements contained in the ROP and PTI.

An infrared (IR) camera was used to view the xylene tank, preheater, premix, and xylene tank. No emissions from the process were apparent when viewed with the IR camera.

Attachments
VOC 12 month rolling average values used to calculate VOC 12 month average for May and November 2015, January and August 2016
Parametric monitoring records of scrubber flow and condenser coolant return temperatures for May and November 2015, January 2016, and November 28 – December 5, 2016.
NIST Webbook infrared plot for o-xylene, m-xylene, and p-xylene

File Review
2015 Title V Annual deviation report
2016 Title V Semi Annual deviation report Jan 1 to Jun 30, 2016
PTI application and MDEQ EvalForm No. 174-12A, No. 174-12, No. 542-84E
2015 CAM summary Jan 1 to Dec 31, 2015
2016 CAM summary Jan 1 to June 30, 2016
2016 MON summary Jan 1 to June 30, 2016
Parametric monitoring records

DESCRIPTION
A resin manufacturing process that includes a reaction loop, capping reactor, 3 separators, 2 columns and ancillary equipment. Sodium silicate is diluted with water and neutralized with hydraulic acid in a reaction loop. The mixture is sent to a continuous feed reactor with IPA, chlorotrimethylsilane, Endblock B (EBB) followed by phase separation and water wash. Stored material is mixed with Xylene and distilled to separate EBB from the finished product. Recycle streams include IPA distillate and EBB distillate.

The process had previously been issued PTI No.542-84E on November 8, 1993. Some file information associated with PTI No. 174-12 series and No.542-84 series permit applications was reviewed as part of the compliance evaluation, including confidential business information

EMISSION LIMITS

Pollutant	12-month rolling time period ending on calendar month	Pounds VOC per year	Limit 2.3 Ton per Year after 7/14/2016
VOC	May 2015	1336.2	0.67
VOC	November 2015	381.3	0.2
VOC	January 2016	243.8	0.12
VOC	August 2016	229.3	0.12

Monthly Totals used for August 2016 12 month rolling time period

Month	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
LBS	16.7	18.7	20.6	18.4	16.4	23.2	22.7	22.0	26.0	18.5	22.0	4.1
Tons	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

The PTI No 174-12A reduced the VOC emissions to 2.3 TPY from 3.4 TPY, and added VOC 5.2 lb/hr and Hexamethyldisiloxane 4.8 TPY limits. The facility demonstrates compliance with all the emission limits by performing the PTI SC VI required monitoring and record keeping.

MATERIAL LIMITS
The ROP and PTI contain no material limits.

PROCESS/OPERATIONAL RESTRICTIONS
The permit requires that if the coolant return temperature of condenser 24623 exceeds 40C, the permittee shall implement corrective action. During the inspection the condenser No. 24623 coolant return temperature was 24.6 C. Onsite records review indicate that the facility monitored the condenser coolant return temperature and operated at less than 40 C.

Month	Condenser No. 24623 Temp ≤40 C(Celsius)	CAM Requirement
May 2015	>23, <27	Yes
Nov 2015	>16, <28	Yes
Jan 2016	>18, <26	Yes
Dec 1 – 6, 2016	>23, <26	Yes

The permit requires that if the liquid flow rate of the scrubber is less than 3.0 GPM, the permittee shall implement corrective action. During the inspection the scrubber 11472 flow was 4.2 GPM. Onsite records review indicates the facility monitored the scrubber flow and operated at greater than 3 GPM except as noted below.

The PTI issued in July of 2016 added a condition that limits scrubber maintenance hours to a maximum of 360 hours per year, and did not authorize adding material to storage tank DV4755 during periods of planned routine maintenance.

Month	Scrubber No. 11472 flow ≥3 GPM	CAM Requirement
May 2015	>3.9, <4.5	Yes
Nov 2015	>3.9, <4.5 except during scrubber upgrades for ~ 60 hours	Yes
Jan 2016	>4, <4.4	Yes
Dec 1 – 6, 2016	>4.1, <4.6	Yes

On November 2-3, 9-10, and 19-20, 2015, the scrubber underwent upgrades associated with MON requirements. The scrubber was shut down for a total of 60 hours. During the upgrades the DV4755 storage tank level continuously dropped to prevent emissions. The PTI 174-12A does now allow for process emissions to be discharged through vent SV321-069 when SV321-01 is unavailable due to maintenance.

DESIGN/EQUIPMENT PARAMENTS
The permit requires that the HCL scrubber (11472) have a liquid flow indication system and the condenser 24623 have a temperature indication system. The HCL scrubber flow and condenser coolant temperature had the required devices installed and maintained.

TESTING/SAMPLING
The ROP contains no testing or sampling requirements but does require that testing related records shall be maintained on file for a period of five years.

MONITORING/RECORDKEPING
The permittee is required to monitor and record the HCL scrubber (11472) liquid flow and the condenser 24623 coolant return temperature. The HCL scrubber flow and condenser coolant return temperature are both monitored at least once every 15 minutes. The facility maintains the data electronically. Records for the HCL scrubber and the condenser coolant return temperature for May and November 2015, January 2016, and November 28 – December 5, 2016 are attached.

According to the Title V 2015 Annual report, on March 25, 2015 there was a 15 minute period where data was not collected due to the building loss of Process Information (PI) connectivity.

REPORTING
Title V Annual and Semi Annual deviation reports for 2015 and for January through June 2016 contained the following:

Weekly inspections for an agitator were not conducted between Jan and May of 2016.

A 5 day first repair attempt was missed on a new closed vent system. The first repair attempt occurred on day 10 and final repair completed day 15.

Between February 2016 and May 2016, there were 5 instances when the process operated without going to a Group 1 control for a total of 5 hours and 23 minutes. No State emission limits were exceeded but it was reported that >98% removal was not achieved. In 4 of the occurrences the emissions were estimated to be <1 lb; for the remaining occurrence, the emissions were estimated to be less than 2 lbs.

According to the Semi Annual Title V for January – June 2016, there were two instances when the HCL scrubber was bypassed and the storage tank emissions were vented to SV321-069. Estimated VOC emissions were less than 1 pound during each event.

CAM
No CAM exceedances were reported in the reports reviewed.

MON
The Semi annual MON reported dated September 14, 2016 contained information on MCPUs associated with EU321-01. BP321-04 Group1 bypasses were addressed by automating the bypass valve vent stream to carbon beds while bypassing the THROX. (MPCUs 16, 116, and 40).

One SSM event on 6/14/2016 w/a duration of 11 minutes when maintenance on the THROX vent line caused the bypass valve to open.

The following instances were reported of times when a vent stream was diverted from a control device through a bypass line:

Eight instances of involving BP321-004 occurred. The emissions were vented to carbon beds and/or had no MON Group1 (G1) products being manufactured in most instances.

Two BP321-002 events while no G1 products were being manufactured.

BP321-003, BP321-006, and BP321-009 events were also reported. The ROP and PTI 174-12A EU321-01 process conditions do not contain stack or vent information on these vents.

The 9.5 hours that scrubber DV11472 was out of compliance on February 11, 2016 due to planned maintenance was reported.

The 144 hours of planned maintenance scheduled for August 2016 was also reported.

STACK/VENT RESTRICTIONS

The stack information below was confirmed during the inspection or recent modeling performed for the PTI 174-12A issued on July 14, 2016.

None of the stacks listed in the table below is required to discharge upwards:

Stack & Vent ID	Description	Maximum Exhaust Dimensions (inches)	Minimum Height Above Ground (feet)	40 CFR Part 63 MON MCPU	Underlying Applicable Requirements
1. SV321-001	Outlet of 11472 scrubber (Aqueous HCL tank)	2	53	MPCU-071	R 336.1225 40 CFR 52.21(c)&(d
2. SV321-002	Condenser 24623 Resin reactor outlet	2	82	MPCU-016 MPCU-116	R 336.1225 40 CFR 52.21(c)&(d
3. SV321-004	EBB Column vent	2	68		R 336.1225 40 CFR 52.21(c)&(d
4. SV321-005	EBB storage tank Vent to atmosphere	3	6	MPCU-116	R 336.1225 40 CFR 52.21(c)&(d
5. SV321-012	IPA feed tank Vents to atmosphere	1	4		R 336.1225 40 CFR 52.21(c)&(d
6. SV321-013	IPA recovery column (condenser prior to venting to atmosphere)	2	52	MPCU-025 MPCU-040 MPCU-087 MPCU-100 MPCU-120	R 336.1225 40 CFR 52.21(c)&(d
7. SV321-014	IPA feed tank	3	52	MPCU-025	R 336.1225 40 CFR 52.21(c)&(d
8. SV321-018	Xylene storage tank	2	45	MPCU-108 MPCU-109	R 336.1225 40 CFR 52.21(c)&(d
9. SV321-065	EBB storage tanks	1	25		R 336.1225 40 CFR 52.21(c)&(d
10.SV321-069	Consolidated building vent	2	46		R 336.1225 40 CFR 52.21(c)&(d

NAME _____ DATE 1/9/17 SUPERVISOR C. Hare