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

A404323746

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:** 11/26/2013
STAFF: Jennifer Lang	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MEGASITE
SUBJECT: EU508-01, FG334VENTRECOVERY & FG337SCRUBBER - Scheduled Inspection		
RESOLVED COMPLAINTS:		

Inspection date: 11/26/13
Inspection started: 9:00 am
Inspection ended: 12:30 pm

Dow Corning and MDEQ-AQD staff present during the inspection.

Jenny Lang (MDEQ-AQD, Environment Engineer Specialist)
Steve Moser (Dow Corning, Assistant General Council)
Rich Rausch (Dow Corning, Senior Manufacturing Consultant)

FG304VENTRECOVERY

Compliance Status: Compliance

Items noted during the inspection.

1. The 304 vent recovery (VR) system (FG304VENTRECOVERY) is comprised of two interchangers (HX1 2040 and HX2 2040) and two condensers (HX1 2044 and HX2 2044) which operate in series to remove air contaminants from process exhaust. The 304 VR system receives process exhaust from several emission units on site.

2. 304 VR typically vents to the THROX, but will vent to FGSITESCRUBBERS if the THROX is down. 304 VR will not be able to vent to the 337 scrubber under the MON (40 CFR Part 63, Subpart FFFF). Therefore, Dow Corning (DC) is not currently venting 304 VR to the 337 scrubber.

3. The 304 VR system is controlled in the 304 building control room. This system generally always operates in parallel.

4. Air Permit to Install (PTI) No. 84-08A covers FG304VENTRECOVERY and EU508-01. This permit was issued on 12/21/12. ROP modification application no. 201300027 was received by the MDEQ-AQD on 1/22/13. This application covers the addition of PTI 84-08A to ROP No. MI-ROP-A4043-2008 (hereinafter "ROP"). To date, the PTI has not been rolled into the ROP.

5. Condition no. V.1 of table FG304VENTRECOVERY of PTI 84-08A states, no later than 4/30/13, the permittee shall verify the VOC and benzene emission rates from FG304VENTRECOVERY by testing at owner's expense. On 11/27/13, DC provided me with a copy of their executive summary from the stack rest report from testing on 4/25/13 (see attached). According to the summary, VOC and benzene emissions measured during the test were 14.52 and < 0.01 lbs/hr, respectively. Condition nos. I.1 and 2 of table FG304VENTRECOVERY of the PTI limit VOC and benzene emissions to 30.0 pph and 0.46 pph, respectively.

6. Condition no. VI.1 of table FG304VENTRECOVERY of PTI 84-08A states, DC shall monitor and record, on a continuous basis (i.e., at least once every 15 minutes), the exit gas temperature of the refrigerated vent condensers (HX1 2044 and HX2 2044) with instrumentation acceptable to the AQD. Condition no. III.1 of the same table in the PTI states except as allowed by FGSITEBLOWER SC IV.1, DC shall not operate any

1 of 12

emission unit vented to the 304 VR system if the exit gas temperature of the refrigerated vent condensers (HX1 2044 and HX2 2044) exceeds -76 degrees C.

At 11:43 am, I observed the following operational parameters associated with 304 VR. This data was provided by Brad Phillips (DC, Manufacturing Engineer) at the 304 control room located in building 304.

HX1 2044 Exit Gas Temp.– instantaneous**	-104 degrees C
HX1 2044 Exit Gas Temp. – 15-minute avg.	-104 degrees C
HX2 2044 Exit Gas Temp. – instantaneous**	-105 degrees C
HX2 2044 Exit Gas Temp.– 15-minute avg.	-106 degrees C

**Alarm set points of -78 degrees C (high-high alarm) and -79 degrees C (high alarm) have been set for HX1 2044 and HX2 2044. Brad Phillips of DC believes these set points are based on instantaneous data values.

FG337SCRUBBER

Compliance Status: Compliance

Items noted during the inspection.

1. The 337 spray tower scrubber is used to remove HCl and chlorosilanes from process exhaust prior to discharge to the atmosphere. The 337 scrubber is comprised of two scrubbers (i.e., scrubber nos. 9950 and 9960) which typically alternate in operation but can operate in parallel. The 337 scrubber utilizes water from the venturi scrubbers at EU325-01 (trichlorosilane (TCS) vent recovery system) and city water as makeup.

2. The 337 scrubber vents directly to the atmosphere (i.e., emissions do not go to the THROX prior to discharge to the atmosphere). Most of the emissions going to the scrubber are coming from the methylchlorosilane tanks. DC typically vents the methylchlorosilane tanks to the THROX unless the TCS loading is high. In which case, DC will vent the tanks to the 337 scrubber.

3. Condition no. VI.1 of table FG337SCRUBBER of the ROP requires DC to monitor and record, on a continuous basis (i.e., at least once every 15 minutes), the liquid flow rate of scrubber nos. 9950 and 9960 with instrumentation acceptable to the AQD. Condition nos. III.1 and 2 of the same table in the ROP state, if the liquid flow rate of scrubber nos. 9950 or 9960 is less than 45 gpm (while emissions are passing through it), respectively, DC shall implement corrective action and maintain a record of action taken to prevent reoccurrence. At 10:30 am, Casey Kilts (DC, Team Leader, 325 building) and Matt Smith (DC, Senior Manufacturing Engineer) came to the conference room where we were meeting to provide real time liquid flow rate data for the scrubbers. At 10:31 am, I observed the following liquid flow rates for the scrubbers.

Scrubber No. 9950 (south)	90 gpm
Scrubber No. 9960 (north)	Not receiving vent emissions at the time of the inspection. Therefore, I did not ask to see a liquid flow rate.

According to Matt, DC normally switches scrubbers once a month, and the scrubber liquid flow rate is typically 60 – 115 gpm. Depending upon scrubber pressure, DC may switch them more frequently. Matt said he'd have to show me the alarm set points and the color camera and monitor system in the control room located at 325 building. Condition no. VI.2 of the same table in the ROP requires DC to install and maintain a color camera and monitor system to monitor the visual emissions from the 337 wet scrubber.

4. At 12:05 pm, I observed the color camera required by the ROP, and the scrubber flow rate alarm set points at 325 building (i.e., the control room for 337 scrubber). The following items were noted while I was in the control room.

   A. I observed the color camera for stack nos. SV337-001 and SV337-002, and no visible emissions were observed.

   B. The south scrubber (no. 9950) was running. The low alarm set point for each scrubber was 60 gpm. The low-low alarm set point for each scrubber was 45 gpm.

2 of 12

EU508-01

Compliance Status: Compliance

Items noted during the inspection.

1. EU508-01 covers the phenyltrichlorosilane and diphenyldichlorosilane recovery process, including reactors, columns, condensers, tanks, and related equipment. Included in this emission unit is the phenylchlorosilane distillation process. EU508-01 covers all PINTO vents associated with these processes. EU508-01 also includes a 60,000 gallon benzene storage tank (tank no. T-60).

2. Air Permit to Install (PTI) No. 84-08A covers FG304VENTRECOVERY and EU508-01. This permit was issued on 12/21/12. ROP modification application no. 201300027 was received by the MDEQ-AQD on 1/22/13. This application covers the addition of PTI 84-08A to the ROP. To date, the PTI has not been rolled into the ROP.

3. EU508-01 vents to a benzene absorber. The absorber vents to 304 VR. 304 VR vents to the THROX, but it will vent to FGSITESCRUBBERS if the THROX goes down. PTI No. 84-08A currently allows 304 VR to vent to the 337 scrubber, however, Rich Rausch said this is no longer an option due to the MON. Rich said that although DC believes the 337 scrubber could meet the requirements under the MON, they didn't want to do the required testing as they believe the THROX and its backup (FGSITESCRUBBERS) will suffice. Rausch indicated that 304 VR is a recovery device under the MON.

4. Condition no. VI.2 of table EU508-01 of PTI No. 84-08A requires DC to comply with the applicable requirements of 40 CFR Part 60, Subpart Kb, Section 60.116b (Monitoring of Operations) for tank T-60. According to Jim Peck of DC who temporarily joined the inspection at 10:55 am, 40 CFR Part 60, Subpart Kb is no longer applicable as it was superseded by the OLD MACT (40 CFR Part 63, Subpart EEEE). DC submitted a notification of compliance status report (NOCSR) for the OLD MACT on 10/4/07. The last semi-annual report for this MACT was received by the AQD on 9/16/13 and it covered reporting period 1/1/13 through 6/30/13. According to the report, there were no startup/shutdown/malfunctions, no leaking components, and no deviations reported for EU508-01.

5. Tank T-60 is a benzene tank. Rich Rausch stated that under the OLD MACT, DC is required to vent equalize when they're unloading from a railcar. He also stated that 304 VR is considered Group 1 control under the OLD MACT for this tank. Therefore, if 304 VR goes down, the THROX acts as Group 1 control for the tank.

6. Condition no. VI.3.a of table EU508-01 of PTI No. 84-08A requires DC to monitor and record, on a continuous basis (i.e., at least once every 15-minutes), the exit gas temperature of the benzene absorber. At 11:31 am, I observed the following parameters at the 304 VR control room located in 304 building. Brad Phillips was the Manufacturing Engineer on duty who provided me with the information.

Absorber 2043 exit gas temperature - instantaneous	-20 degrees C
Absorber 2043 exit gas temperature alarm set point - instantaneous	5 degrees C

Condition no. III.1 of table EU508-01 of the PTI states, DC shall not operate EU508-01 if the exit gas temperature from the benzene absorber exceeds 10 degrees C. On 11/27/13, DC provided me with 15-minute average temperature data for 10/31/13 (see attached). According to this data, the 15-minute average temperature was less than 0 degrees C on the 31st.

5. Condition no. VI.3.b of table EU508-01 of PTI No. 84-08A requires DC to monitor and record, on a continuous basis (i.e., at least once every 15-minutes), the coolant flow rate of condenser no. HX-10642. According to Brad Phillips, this condenser vents to atmosphere when it's used (i.e., it does not vent to the THROX). The condenser was not in use at the time of my inspection. It was further explained to me that DC will not be allowed to vent to this condenser under the MON. I requested that DC send me coolant flow rate data recorded on a day when this device was in use. I also requested that they include the alarm set point. On 11/27/13, DC provided me with the requested data (see attached). According to the data, the last time DC used the condenser was on 5/3/11 for 3 minutes, and the average liquid flow rate during that

3 of 12

time was 20.85 gpm. Condition no. III.2 of table EU508-01 of the PTI states, if the liquid flow rate of condenser no. HX-10642 is less than 5 gpm, the permittee shall implement corrective action and maintain a record of action taken to prevent reoccurrence.

6. Condition no. VI.4 of table EU508-01 of PTI No. 84-08A requires DC to keep monthly and 12-month rolling time period, as determined at the end of each calendar month, records of the hours that EU508-01 operated while 304 VR exhaust was not routed to the THROX. Condition no. IV.4 of table EU508-01 of the PTI states DC may operate EU508-01 for up to 1500 hours per 12-month rolling time period, as determined at the end of each calendar month, when the THROX is not operating in a satisfactory manner, as long as all of the following conditions are true.

   A. 304 VR and the benzene absorber are operating in a satisfactory manner.

   B. 304 VR exhaust is routed to the 337 scrubber or FGSITESCRUBBERS.

   C. The control device (FG337SCRUBBER or FGSITESCRUBBERS) is installed, maintained, and operated in a satisfactory manner.

   On 11/27/13, DC provided me with the monthly and 12-month rolling time period record of the hours that EU508-01 operated while 304 VR exhaust was not routed to the THROX (see attached). According to this record, the 12-month rolling total as of October 2013 was 297 hours.

7. Condition no. VI.5 of table EU508-01 of PTI No. 84-08A requires DC to maintain the following records for the phenylchlorosilane distillation process.

   A. For each calendar month, the number of hours of operation with 10642 control only.

   B. For the 12-month rolling time period, as determined at the end of each calendar month, the total number of hours of operation with 10642 control only.

   Condition no. VI.5 of table EU508-01 of the PTI states, in part, DC may operate the phenylchlorosilane distillation process for up to 800 hours in any 12-month rolling time period, as determined at the end of each calendar month, while the benzene absorber and 304 VR are not installed, maintained, and operated in a satisfactory manner, hereinafter "with 10642 control only."

   On 11/27/13, DC provided me with the monthly and 12-month rolling time period record of the hours that the phenylchlorosilane distillation process operated with 10642 control only (see attached). According to this record, the 12-month rolling total as of October 2013 was 0.0 hours.

8. EU508-01 is subject to 40 CFR Part 61, Subparts A, J (National Emission Standard for Equipment Leaks (Fugitive Emission Sources) of Benzene) and V (National Emission Standard for Equipment Leaks (Fugitive Emission Sources)). Per the requirements of the regulation, the AQD received the semi-annual report on 8/16/13 for reporting period 2/1/13 through 7/31/13. According to the report, several pieces of equipment were added and removed. According to Jim Peck of DC who temporarily joined the inspection at 10:55 am, building nos. 308 and 304 are covered by EU508-01. According to the report, there were no leaks detected in either of these buildings. Jim indicated that EU508-01 is subject to leak detection and repair (LDAR) under the MON, RCRA and the OLD MACT. DC stated they have implemented LDAR at DC per the requirements of the MON.

9. Condition no. VII.2 of table EU508-01 of PTI No. 84-08A states each semiannual report of deviations shall include summary information on the number, duration and cause of CAM excursions and/or exceedances and the corrective actions taken. Condition no. VII.3 of the same table states each semiannual report of deviations shall include summary information on the number, duration and cause (including unknown cause, if applicable) for CAM monitor downtime incidents (other than monitor downtime associated with zero and span or other daily calibration checks, if applicable). According to the latest ROP deviation report received on 9/16/13 for reporting period 1/1/13 through 6/30/13, there were no CAM excursions and/or exceedances or monitor downtime incidents for EU508-01.

4 of 12

NAME _____ DATE 12/3/13 SUPERVISOR _____

5 of 12

Lang, Jennifer (DEQ)

From: steve.moser@dowcorning.com
Sent: Wednesday, November 27, 2013 6:47 PM
To: Lang, Jennifer (DEQ)
Cc: mike.gruber@dowcorning.com; richard.rausch@dowcorning.com
Subject: Documents Requested during November 26 Inspection
Attachments: FG304VENTRECOVERY Condition V.1. April 2013 Test Summary.pdf; EU508-01 Condition VI.3.a. Benzene absorber temp.pdf; EU508-01 Condition VI.4. Hours to Scrubber.pdf; EU508-01 Condition VI.3.b. and VI.5. HX 10642 only.pdf

Jennifer,

Attached is the information you requested during your inspection yesterday. If we misunderstood your requests or if anything seems to be missing, please let us know. We will see you next week, on Thursday, December 5. Have a Happy Thanksgiving weekend.

Stephen V. Moser
Assistant General Counsel
Dow Corning Corporation
2200 W. Salzburg Rd. - CO1282
PO Box 994
Midland, MI 48686-0994
Phone: 989-496-5843
Fax: 989-496-6663
Email: steve.moser@dowcorning.com

BTEC Inc.

EXECUTIVE SUMMARY

BT Environmental Consulting, Inc. (BTEC) was retained by Dow Corning Corporation (Dow) to evaluate benzene and volatile organic compounds (VOCs) from one exhaust vent stream associated with Building 304 (EU508-01) at the Dow facility in Midland, Michigan. The emissions test program was conducted on April 25, 2013.

Testing of Vent 304 consisted of triplicate 60-minute test runs. The emissions test program was required by MDEQ Air Quality Division Permit No. 84-08A. The results of the emission test program are summarized by Table E-I.

Table E-I
Vent 304 VOC and Benzene Test Results Summary
Test Date: April 25, 2013

Pollutant	Average Emission Rate (lbs/hr)
VOC	14.52
Benzene	<0.01

Dow Corning INTERNAL

MDEQ-AQD
Rcvd by MDEQ-AQD
on 11/27/13

ROP Emission Unit EU508-01
Condition: Sec. VI.3.a.
Requirement The exit gas temperature of the benzene absorber
Limit 10 degree C (Sec. III.1.)

2043 Benzene Absorber	
Date and Time	Top Temperature, Deg C, 15 min avg
31-Oct-13 00:00:00	-19.33
31-Oct-13 00:15:00	-19.33
31-Oct-13 00:30:00	-19.33
31-Oct-13 00:45:00	-19.33
31-Oct-13 01:00:00	-19.33
31-Oct-13 01:15:00	-19.33
31-Oct-13 01:30:00	-19.33
31-Oct-13 01:45:00	-19.35
31-Oct-13 02:00:00	-19.52
31-Oct-13 02:15:00	-19.74
31-Oct-13 02:30:00	-19.95
31-Oct-13 02:45:00	-20.06
31-Oct-13 03:00:00	-19.88
31-Oct-13 03:15:00	-19.69
31-Oct-13 03:30:00	-19.50
31-Oct-13 03:45:00	-19.36
31-Oct-13 04:00:00	-19.36
31-Oct-13 04:15:00	-19.36
31-Oct-13 04:30:00	-19.36
31-Oct-13 04:45:00	-19.33
31-Oct-13 05:00:00	-19.22
31-Oct-13 05:15:00	-19.12
31-Oct-13 05:30:00	-19.01
31-Oct-13 05:45:00	-19.04
31-Oct-13 06:00:00	-19.14
31-Oct-13 06:15:00	-19.24
31-Oct-13 06:30:00	-19.33
31-Oct-13 06:45:00	-19.36
31-Oct-13 07:00:00	-19.36
31-Oct-13 07:15:00	-19.36
31-Oct-13 07:30:00	-19.35
31-Oct-13 07:45:00	-19.28
31-Oct-13 08:00:00	-19.18
31-Oct-13 08:15:00	-19.09
31-Oct-13 08:30:00	-19.00
31-Oct-13 08:45:00	-19.06
31-Oct-13 09:00:00	-19.15
31-Oct-13 09:15:00	-19.25
31-Oct-13 09:30:00	-19.33

DC 006038

Dow Corning INTERNAL

MDEQ-AQD

RCVD by MDEQ-AQD on 11/27/13

ROP Emission Unit EU508-01
Condition: Sec. VI.3.a.
Requirement The exit gas temperature of the benzene absorber
Limit 10 degree C (Sec. III.1.)

2043 Benzene Absorber	
Date and Time	Top Temperature, Deg C, 15 min avg
31-Oct-13 09:45:00	-19.27
31-Oct-13 10:00:00	-19.17
31-Oct-13 10:15:00	-19.07
31-Oct-13 10:30:00	-18.99
31-Oct-13 10:45:00	-18.98
31-Oct-13 11:00:00	-18.98
31-Oct-13 11:15:00	-18.98
31-Oct-13 11:30:00	-18.98
31-Oct-13 11:45:00	-18.98
31-Oct-13 12:00:00	-18.98
31-Oct-13 12:15:00	-18.98
31-Oct-13 12:30:00	-18.98
31-Oct-13 12:45:00	-18.98
31-Oct-13 13:00:00	-18.98
31-Oct-13 13:15:00	-18.98
31-Oct-13 13:30:00	-18.98
31-Oct-13 13:45:00	-18.98
31-Oct-13 14:00:00	-18.98
31-Oct-13 14:15:00	-18.98
31-Oct-13 14:30:00	-18.99
31-Oct-13 14:45:00	-19.08
31-Oct-13 15:00:00	-19.18
31-Oct-13 15:15:00	-19.28
31-Oct-13 15:30:00	-19.33
31-Oct-13 15:45:00	-19.24
31-Oct-13 16:00:00	-19.14
31-Oct-13 16:15:00	-19.04
31-Oct-13 16:30:00	-18.98
31-Oct-13 16:45:00	-18.98
31-Oct-13 17:00:00	-18.98
31-Oct-13 17:15:00	-18.98
31-Oct-13 17:30:00	-18.98
31-Oct-13 17:45:00	-18.98
31-Oct-13 18:00:00	-18.98
31-Oct-13 18:15:00	-18.98
31-Oct-13 18:30:00	-19.01
31-Oct-13 18:45:00	-19.10
31-Oct-13 19:00:00	-19.20
31-Oct-13 19:15:00	-19.30

DC 006039

MDEQ-AQD
Rcvd by MDEQ-AQD
on 11/27/13

ROP Emission Unit	EU508-01
Condition:	Sec. VI.3.a.
Requirement	The exit gas temperature of the benzene absorber
Limit	10 degree C (Sec. III.1.)

2043 Benzene Absorber	
Date and Time	Top Temperature, Deg C, 15 min avg
31-Oct-13 19:30:00	-19.36
31-Oct-13 19:45:00	-19.36
31-Oct-13 20:00:00	-19.36
31-Oct-13 20:15:00	-19.36
31-Oct-13 20:30:00	-19.36
31-Oct-13 20:45:00	-19.36
31-Oct-13 21:00:00	-19.36
31-Oct-13 21:15:00	-19.36
31-Oct-13 21:30:00	-19.36
31-Oct-13 21:45:00	-19.36
31-Oct-13 22:00:00	-19.36
31-Oct-13 22:15:00	-19.36
31-Oct-13 22:30:00	-19.32
31-Oct-13 22:45:00	-19.22
31-Oct-13 23:00:00	-19.12
31-Oct-13 23:15:00	-19.03
31-Oct-13 23:30:00	-19.04
31-Oct-13 23:45:00	-19.16

DC 006040

ROP Emission Unit EU508-01
Condition: Sec. VI.5. a) & b)
Requirement a) the hours of operation with 10642 only;
b) 12-month rolling hours of operation with 10642 only

Limit 800 hours per 12 month roling time period (Sec. IV.5.)

Month	Hours HX-10642 Vented directly to atmospere	Rolling 12 Month Average, Hours
Nov-12	0.0	0.0
Dec-12	0.0	0.0
Jan-13	0.0	0.0
Feb-13	0.0	0.0
Mar-13	0.0	0.0
Apr-13	0.0	0.0
May-13	0.0	0.0
Jun-13	0.0	0.0
Jul-13	0.0	0.0
Aug-13	0.0	0.0
Sep-13	0.0	0.0
Oct-13	0.0	0.0

****

ROP Emission Unit EU508-01
Condition: Sec. VI.3.b.

The most recent event of venting to atmosphere for HX-10642 was May 3, 2011. The event lasted approximately 3 minutes, from 10:32 to 10:35am. The average coolant flow to the condenser during this time period was 20.85 GPM. The flow rate alarm set point for this equipment is 10 GPM.

DC 006042

Dow Corning INTERNAL

MDEQ-AQD
Rcvd by MDEQ-AQD on 11/27/13

ROP Emission Unit	EU508-01
Condition:	Sec. VI.4
Requirement	Hours EU508-01 operated while FG304VENTRECOVERY exhaust was not routed to FGTHROX
Limit	1,500 hours per 12 month roling time period (Sec. IV.4.)

304 Vent Recovery		
Month	**To Scrubber, Hours**	**To Scrubber Rolling 12 Month Average, Hours**
Nov-12	17.0	409.0
Dec-12	11.0	420.0
Jan-13	95.0	515.0
Feb-13	0.0	515.0
Mar-13	0.0	515.0
Apr-13	40.5	555.5
May-13	0.2	555.7
Jun-13	4.0	559.7
Jul-13	0.0	559.7
Aug-13	0.0	559.7
Sep-13	124.0	466.7
Oct-13	5.3	297.0

DC 006041