

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

A404324329

| | | |
|---|-------------------------------|---------------------------|
| 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: 02/07/2014 |
| STAFF: Jennifer Lang | COMPLIANCE STATUS: Compliance | SOURCE CLASS: MEGASITE |
| SUBJECT: EU501-01, EU501-02 & EU501-49 - Scheduled Inspection | | |
| RESOLVED COMPLAINTS: | | |

Inspection date: 2/7/14
 Inspection started: 9:00 am
 Inspection ended: 11:20 am

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

Jenny Lang (MDEQ-AQD, Environment Engineer Specialist)
 Steve Moser (Dow Corning, Assistant General Council)
 Mike Gruber (Dow Corning, Air & Water Team Leader)

EU501-01

Compliance Status: Compliance

Items noted during the inspection.

1. EU501-01 covers the intermediate viscosity (IV) and very low viscosity (VLV) silicone fluid manufacturing process. FGLEAKDETECTION (40 CFR Part 61, Subparts J and V) is listed as an applicable flexible group i.d. in table EU501-01 of ROP No. MI-ROP-A4043-2008 (hereinafter "ROP"). According to Dow Corning, FGLEAKDETECTION does not apply to this emission unit, and this has been conveyed in the ROP renewal application. EU501-01 is equipped with the following air pollution control equipment: 5 carbon drums in series, however, the number of drums may vary. The last drum is placed on a scale and weighed periodically to prevent breakthrough.
2. Condition no. VI.1 of table EU501-01 of the ROP states, Dow Corning (hereinafter "DC") shall monitor and record, at least once per shift, the weight of the last carbon drum (i.e., drum prior to discharge to atmosphere) within the carbon drum system. Condition no. III.1 of the same table in the ROP states, the weight increase of the last carbon drum (i.e., drum prior to discharge) within the carbon drum system shall not exceed 45 pounds. At 10:25 am, Amy Abramczyk (DC Manufacturing Engineer) showed me the daily log for the carbon drum system in the 501 Building control room (see attached). According to the log, DC records the weight of the last drum every hour. Amy stated the last drum is changed out when it has gained 40 pounds. Based on the attached log, the last drum was changed out on 2/7/14 at 0600 hours when the weight of the last drum reached 39 pounds.
3. Condition no. VI.2 of table EU501-01 of the ROP states, a written record of the amount of material processed per 12-month rolling period shall be kept on file and made available to the AQD upon request. I did not request a copy of this information during my inspection as it's confidential, and it's my assumption that this information is included in the 12-month rolling time period emission calculations discussed in item no. 4 below. It should also be noted that there is no limit on the amount of material processed in the ROP for EU501-01.
4. Condition no. VI.3 of table EU501-01 of the ROP states, within 30 days following the end of each calendar month, permittee shall calculate and record emissions from the process for the previous month to demonstrate compliance with the 12-month rolling time period emission limits specified in the table. Condition nos. I.2 and 4 of the same table in the ROP limit VOC and methyl siloxane emissions from EU501-01 to 0.5 and 4.2 tpy, respectively (based on a 12-month rolling time period). During the inspection, I

asked for the 12-month rolling total VOC and methyl siloxane emissions through December 2013. On 2/12/14, I received the requested information. According to data provided by DC (see attached), the 12-month rolling total VOC and methyl siloxane emissions through December 2013 for EU501-01 were 0.32 and 1.08 tpy, respectively.

EU501-02

Compliance Status: Compliance

Items noted during the inspection.

1. EU501-02 covers the 1107 hydrolysis process. This process is equipped with the following air pollution control equipment: venturi scrubbers (4109, 7585). Scrubber no. 7585 is considered a Group 1 control device under the MON. As a result, stack testing for scrubber 7585 was completed on 8/21/13 and 8/22/13 at 2.0 and 1.5 gpm, respectively. According to the test report received by the MDEQ-AQD on 10/3/13, the scrubber demonstrated a HCl removal efficiencies of 99% and 100% on 8/21/13 and 8/22/13, respectively. The MON requires a HCl removal efficiency of 99%. Scrubbers 4109 and 7585 operate in series, with scrubber 7585 discharging to the atmosphere.

On 2/12/14, Mike and I discussed scrubber 4109 and whether or not it's subject to the MON. According to Mike, this scrubber was not tested on 8/21/13 and 8/22/13 as it was not operational during the test. Dow Corning was able to demonstrate compliance with the 99% HCl removal efficiency requirement while only running scrubber 7585.

2. Condition no. VI.1 of table EU501-02 of the ROP states, DC shall monitor and record, on a per shift basis, the liquid flow rate of venturi scrubber 7585. Condition no. III.2 of the same table in the ROP states, if the liquid flow rate of venturi scrubber 7585 is less than 1.5 gallons per minute (gpm), the permittee shall implement corrective action and maintain a record of action taken to prevent reoccurrence.

At 10:37 am, I observed the following operational parameter data for venturi scrubber 7585 in the control room for EU501-02 at Building 501. Matt Ludwick (DC Team Leader) provided the data. The process was running at the time of my inspection.

| Operational Parameter | Observed Value | Alarm Set Point |
|--|-------------------------|------------------------------|
| Venturi scrubber 7585 liquid flow rate | 2.0 gpm (instantaneous) | Lo ≤ 1.7 gpm (instantaneous) |

3. Condition no. VI.2 of table EU501-02 of the ROP states, during startup, shutdown, and emergency conditions, DC shall monitor and record, on a per shift basis, the liquid flow rate of venturi scrubber 4109. Condition no. III.1 of the same table in the ROP states, if the liquid flow rate of venturi scrubber 4109 during startup, shutdown and emergency conditions is less than 18 gpm, DC shall implement corrective action and maintain a record of action taken to prevent reoccurrence.

At 10:37 am, I observed the following operational parameter data for venturi scrubber 4109 in the control room for EU501-02 at Building 501. Matt Ludwick (DC Team Leader) provided the data. The process was running at the time of my inspection and was not in startup, shutdown or emergency operation. Therefore, during my inspection, the 18 gpm flow rate requirement did not apply.

| Operational Parameter | Observed Value | Alarm Set Point |
|--|-------------------------|---|
| Venturi scrubber 4109 liquid flow rate | 4.7 gpm (instantaneous) | DC has not established an alarm set point during normal operation. During a startup, shutdown or emergency situation, the Lo alarm set point is ≤ 19 gpm (instantaneous). |

4. Condition no. VI.3 of table EU501-02 of the ROP states, within 30 days following the end of each calendar month, DC shall 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 table EU501-

02. Condition no. I.3 of the same table in the ROP limits VOC emissions from EU501-02 to 4.2 tpy (based on a 12-month rolling time period). During the inspection, I asked for the 12-month rolling total VOC emissions through December 2013. On 2/12/14, I received the requested information. According to data provided by DC (see attached), the 12-month rolling total VOC emissions through December 2013 for EU501-02 were 2.9 tpy.

5. Condition no. VI.4 of table EU501-02 of the ROP states, DC shall maintain a log of each startup, shutdown and emergency operation condition. The log shall include the following information: date, time, duration and cause. During my inspection, I observed DC's daily log for venturi scrubber nos. 4109 and 7585. Based upon the log (see attached), a process shutdown occurred on 9/12/13 at 0900 hours (9 am). The process remained down until startup on 10/3/13 at 10:35 am. According to the log, the water flow rate to scrubber 4109 was greater than 18 gpm on the midnight shift ("MID"), but not during the day shift ("DAY"). I questioned this in an email to Mike Gruber on 2/13/14 (see attached). During an unrelated inspection on 2/18/14, Mike and I discussed my email. As a result, Mike Kohn (DC Manufacturing/Reliability Engineer for EU501-02) discussed this issue with us on 2/18/14. Mike was able to show us scrubber flow rate data on 9/12/13 for scrubber 4109 that demonstrated the flow rate of the scrubber was greater than 18 gpm during the shutdown on 9/12/13 at 9 am. According to Mike Kohn, there is an automatic interlock to increase the water flow rate to the scrubber during startup, shutdown and emergency conditions. DC also explained the plant was shutdown on 9/12/13 due to a planned maintenance outage.
6. Condition no. VII.4 of table EU501-02 of the ROP 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.5 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 EU501-02.

EU501-49

Compliance Status: Compliance

Items noted during the inspection.

1. EU501-49 covers the low viscosity fluids and 3-component fluids process including reactors, tanks, condensers and a vacuum system. This process is equipped with the following air pollution control equipment: condensers (15091 & 4358). Condenser no. 15091 controls emissions from the low viscosity fluids process, and condenser no. 4358 controls emissions from the 3-component fluids process (namely kettle no. 4361). The low viscosity fluids process was starting up at the time of my inspection, and the 3-component fluids process was down.
2. Condition no. VI.1 of table EU501-49 of the ROP states, DC shall monitor and record, on a continuous basis (i.e., at least once every 15-minutes), the exit gas temperature of condenser no. 15091. Condition no. III.1 of the same table in the ROP states, proper operation of the refrigerated vent condenser (15091) means the exit gas temperature will not exceed 2 degrees C or 36 degrees F.

At 10:53 am, I observed the following operational parameter data for condenser no. 15091 in the control room for EU501-49 at Building 501. A DC operator at 501 Building provided the data. Condenser no. 15091 controls emissions from the low viscosity fluids process. The low viscosity fluids process was starting up at the time of my inspection.

| Operational Parameter | Observed Value | Alarm Set Point |
|--------------------------------------|---------------------------------|---|
| Condenser 15091 exit gas temperature | 23.49 degrees F (instantaneous) | Hi \geq 32 degrees F (instantaneous) Hi - Hi \geq 34 degrees F (instantaneous) |

3. Condition no. VI.1 of table EU501-49 of the ROP states, DC shall monitor and record, on a continuous basis (i.e., at least once every 15-minutes), the service water return temperature of condenser no. 4358. Condition

At 10:53 am, I observed the following operational parameter data for condenser no. 4358 in the control room for EU501-49 at Building 501. A DC operator at 501 Building provided the data. Condenser no. 4358 controls emissions from the 3-component fluids process (namely kettle no. 4361). The 3-component fluids process was down at the time of my inspection.

| Operational Parameter | Observed Value | Alarm Set Point |
|---|--------------------------------|--|
| Condenser 4358 service water return temperature | 18.3 degrees C (instantaneous) | Hi \geq 35 degrees C (instantaneous) |

- During the inspection, I asked for the 12-month rolling total VOC, hexamethyldisiloxane, linear dimethylsiloxane, and cyclic dimethylsiloxane emissions through December 2013. On 2/12/14, I received the requested information. According to data provided by DC (see attached), the 12-month rolling total emissions through December 2013 for EU501-49 were as follows.

VOC: 0.31 tpy
Hexamethyldisiloxane: 2.2 tpy
Linear Dimethylsiloxane: 0.06 tpy
Cyclic Dimethylsiloxane: 0.04 tpy

- CAM excursion on 1/3/13: Condenser 15091 was plugged due to frozen material resulting in reduced flow through the condenser. The interlock activated and shut down the feeds and heat to the process after 12 minutes. The condenser temperature exceeded the 36 degree C limit, reaching 38 degrees C. The duration of the event was 15 minutes. The condenser was cleaned prior to being returned to service. A project is being implemented to lower the activation time on the interlock to 5 minutes instead of 12 minutes. Dow Corning does not believe there was any impact on emissions due to the event.

- CAM excursion on 5/29/13: Condenser 15091 was plugged due to frozen material resulting in reduced flow through the condenser. The interlock activated and shut down the feeds and heat to the process after 12 minutes. The condenser temperature exceeded the 36 degree C limit, reaching 41 degrees C. The duration of the event was 15 minutes. The condenser was cleaned prior to being returned to service. A project is being implemented to lower the activation time on the interlock to 5 minutes instead of 12 minutes. Dow Corning does not believe there was any impact on emissions due to the event.

NAME

DATE _____

SUPERVISOR

Lang, Jennifer (DEQ)

From: steve.moser@dowcorning.com
Sent: Wednesday, February 12, 2014 5:18 PM
To: Lang, Jennifer (DEQ)
Cc: mike.gruber@dowcorning.com
Subject: Information Requested During February 7 Inspection
Attachments: DC006075 - DC006076 EU501-01 Condition VI.1 Drum Weight Log for 2-7-2014.pdf; DC006077 EU501-02 Condition VI.4 Operating Log for Sept - Oct 2013.pdf; DC006078 EU501-01, -02, -49 12-month rolling Emissions as of Dec 2013.pdf

Dow Corning Confidential - PROPRIETARY
Attorney-Client Privilege

[Handwritten signature] MDEQ-AQD

Jennifer,

Attached is the information you requested during your inspection last week. Please note that, for convenience, we have included the requested emissions data for all emission units on the same page (DC006078). Please let me know if you have any questions. See you next week.

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

Authorized by: Amy Abramczyk
Effective Date: 8/19/2013
Change Log:

IV and VLV Vent Stream Carbon Treatment Hourly Reading Form

| Date | Summary of Change | Changed By |
|------------------------|--|-----------------|
| Version 2 Date Unknown | Only one date required, times filled in | Gary Putt |
| 5/10/2007 | Inserted log, formatting changes, change pallet of drums to tote | Paul Geisthardt |
| 5/6/2008 | Added check of PAH-23198 | Randy Huss |
| 8/14/2008 | Changed from proprietary to internal | Randy Huss |
| 8/19/2013 | Updated formatting and examples | Amy Abramczyk |

| Date | Time | Operator Initials | IV FLUIDS | VLV FLUIDS | Carbon Drum Data | | | | |
|---------|------|-------------------|-------------------------------|-------------------------------|--------------------------------------|--|--------------------------------|--------------------------------|---|
| | | | Product and Flow Rate (lb/hr) | Product and Flow Rate (lb/hr) | Net weight of the on-line drum (lbs) | Accumulated weight of the drum (lb/hr) | Was the drum changed? (yes/no) | Was the tote changed? (yes/no) | Bullseye of on-line frangible checked. PAH-23198 Tripped? |
| Example | 0700 | AMA | | | 260 | N/A | No | No | OK |
| Example | 0800 | AMA | | | 270 | 270-260 = 10 | No | No | OK |
| 2-7-14 | 0000 | SO | Redacted | | 27 | 23 | N | N | OK |
| | 0100 | SO | | 29 | 25 | N | N | OK | |
| | 0200 | SO | | 31 | 27 | N | N | OK | |
| | 0300 | SO | | 33 | 29 | N | N | OK | |
| | 0400 | SO | | 35 | 31 | N | N | OK | |
| | 0500 | SO | | 37 | 33 | N | N | OK | |
| | 0600 | SA | | 43 | 39 | -YES- | -YES- | OK | |
| | 0700 | SK | | 1 | 0 | N | N | OK | |
| | 0800 | JA | | 1 | 0 | N | N | OK | |
| | 0900 | JA | | 1 | 0 | N | N | OK | |
| | 1000 | JA | | 1 | 0 | N | N | OK | |
| | 1100 | | | | | | | | |
| | 1200 | | | | | | | | |
| | 1300 | | | | | | | | |
| | 1400 | | | | | | | | |
| | 1500 | | | | | | | | |
| | 1600 | | | | | | | | |
| | 1700 | | | | | | | | |
| 1800 | | | | | | | | | |
| 1900 | | | | | | | | | |
| 2000 | | | | | | | | | |
| 2100 | | | | | | | | | |
| 2200 | | | | | | | | | |
| 2300 | | | | | | | | | |

6 of 10

501 Building

MONTH SeptYEAR 2013

| DATE | 1107 Air Permit EG501-02 Record Log | | | | | | | | COMMENTS |
|------|-------------------------------------|-----|--------------------|-----------------------------|-----------|-----------------------------|-----------|-------------------------------|----------|
| | 1107 Operating Condition | | | Water Flow to Scrubber 4109 | | Water Flow to Scrubber 7585 | | | |
| | Running (R), Down (D) S/U, S/D | | | > 18 gpm | | > 1.5 gpm | | | |
| | DAY | MID | Time of S/U or S/D | DAY (Y/N) | MID (Y/N) | DAY (Y/N) | MID (Y/N) | | |
| 1 | R | R | | N | N | Y | Y | | |
| 2 | R | R | | N | N | Y | Y | | |
| 3 | R | R | | N | N | Y | Y | | |
| 4 | R | R | | N | N | Y | Y | | |
| 5 | R | R | | N | N | Y | Y | | |
| 6 | R | R | | N | N | Y | Y | | |
| 7 | R | R | | N | N | Y | Y | | |
| 8 | R | R | | N | N | Y | Y | | |
| 9 | R | R | | N | N | Y | Y | | |
| 10 | R | R | | N | N | X | Y | | |
| 11 | R | R | | N | N | Y | Y | | |
| 12 | R | D | S/D 0900 | N | Y | Y | Y | 11:00 am | |
| 13 | D | D | | N | N | N | N | Shut down scrubber with 10:30 | |
| 14 | D | D | | N | N | N | N | | |
| 15 | D | D | | N | N | N | N | | |
| 16 | D | D | | N | N | N | N | | |
| 17 | D | D | | N | N | N | N | | |
| 18 | D | D | | N | N | N | N | | |
| 19 | D | D | | N | N | N | N | | |
| 20 | D | D | | N | N | N | N | | |
| 21 | D | D | | N | N | N | N | | |
| 22 | D | D | | N | N | N | N | | |
| 23 | D | D | | N | N | N | N | | |
| 24 | D | D | | N | N | N | N | | |
| 25 | D | D | | N | N | N | N | | |
| 26 | D | D | | N | N | N | N | | |
| 27 | D | D | | N | N | N | N | | |
| 28 | D | D | | N | N | N | N | | |
| 29 | D | D | | N | N | N | N | | |
| 30 | D | D | | N | N | N | N | | |
| 31 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | | |

Redacted

501 Building

MONTH OctoberYEAR 2013

| DATE | 1107 Air Permit EG501-02 Record Log | | | | | | | | COMMENTS |
|------|-------------------------------------|-----|--------------------|--------------------------------------|-----------|---------------------------------------|-----------|--|----------|
| | 1107 Operating Condition | | | Water Flow to Scrubber 4109 > 18 gpm | | Water Flow to Scrubber 7585 > 1.5 gpm | | | |
| | Running (R), Down (D) S/U, S/D | | | | | | | | |
| | DAY | MID | Time of S/U or S/D | DAY (Y/N) | MID (Y/N) | DAY (Y/N) | MID (Y/N) | | |
| 1 | D | D | | N | N | N | N | | |
| 2 | D | D | | N | N | N | N | | |
| 3 | SU | R | 10:35 | Y | N | Y | Y | | |
| 4 | R | R | | N | N | Y | Y | | |
| 5 | R | R | | N | N | Y | Y | | |
| 6 | R | R | | N | N | Y | Y | | |
| 7 | R | R | | N | N | Y | Y | | |
| 8 | R | R | | N | N | Y | Y | | |
| 9 | R | R | | N | N | Y | Y | | |
| 10 | R | R | | N | N | Y | Y | | |
| 11 | R | R | | N | N | Y | Y | | |
| 12 | R | R | | N | N | Y | Y | | |
| 13 | R | R | | N | N | Y | Y | | |
| 14 | R | R | | N | N | Y | Y | | |
| 15 | R | R | | N | N | Y | Y | | |
| 16 | R | R | | N | N | Y | Y | | |
| 17 | R | R | | N | N | Y | Y | | |
| 18 | R | R | | N | N | Y | Y | | |
| 19 | R | R | | N | N | Y | Y | | |
| 20 | R | R | | N | N | Y | Y | | |
| 21 | R | R | | N | N | Y | Y | | |
| 22 | R | R | | N | N | Y | Y | | |
| 23 | R | R | | N | N | Y | Y | | |
| 24 | R | R | | N | N | Y | Y | | |
| 25 | R | R | | N | N | Y | Y | | |
| 26 | R | R | | N | N | Y | Y | | |
| 27 | R | R | | N | N | Y | Y | | |
| 28 | R | R | | N | N | Y | Y | | |
| 29 | R | R | | N | N | Y | Y | | |
| 30 | R | R | | N | N | Y | Y | | |
| 31 | R | R | | N | N | Y | Y | | |

Redacted

Data Requested During 02/07/2014 Inspection**A. EU501-01 (ROP Mark-up Condition VI.3.)**

VOC Emissions (12-month rolling total as of end of December 2013):

0.32TPY (633.4 lbs/yr)

Methyl Siloxane Emissions (12-month rolling total as of December 2013):

1.08 TPY (2,165.3 lbs/yr)

B. EU501-02 (ROP Mark-up Condition VI.3.)

VOC Emissions (12-month rolling total as of end of December 2013):

2.9 TPY (5,581 lbs/yr)

C. EU501-49 (ROP Mark-up Condition VI.2.)

VOC Emissions (12-month rolling total as of end of December 2013):

0.31 TPY (612.6 lbs/yr)

Hexamethyldisiloxane Emissions (12-month rolling total as of end of December 2013):

2.2 TPY (4,375.6 lbs/yr)

Linear Dimethylsiloxane Emissions (12-month rolling total as of end of December 2013):

0.06 TPY (114.1 lbs/yr)

Cyclic Dimethylsiloxane Emissions (12-month rolling total as of end of December 2013):

0.04 TPY (83.2 lbs/yr)

Lang, Jennifer (DEQ)

From: Lang, Jennifer (DEQ)
Sent: Thursday, February 13, 2014 11:07 AM
To: mike.gruber@dowcorning.com
Subject: EU501-02 - Question from Inspection on 2/7/14
Attachments: DC006075 - DC006076 EU501-01 Condition VI.1 Drum Weight Log for 2-7-2014.pdf

Mike,

With regard to the attached scrubber log that Steve emailed me on 2/12/14 (which I think was mislabeled in its file name), can you answer the following questions for me?

1. For the S/D which occurred on 9/12/13, did the S/D happen at 0900 hours or 0100 hours? I assume it's "0100" hours, otherwise it would have occurred during the day shift, and the log indicates the S/D occurred on the midnight shift. The "1" looks like a "9" so I thought I should ask.
2. Also, what was the cause of the S/D event? The log does not describe the cause and it's required by condition no. VI.4 of table EU501-02 of the ROP. I'd suggest modifying the log so that it includes a column for the "cause" of the event.

That's it. Once we get these items straightened out, I'll be ready to final my report.

Jennifer Lang, P.E.
Environmental Engineer Specialist
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