

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

A404324192

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: 01/13/2014
STAFF: Jennifer Lang	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MEGASITE
SUBJECT: Scheduled Inspection - EU356-01, EU356-02, EU356-03 & FGHCMACT		
RESOLVED COMPLAINTS:		

Inspection date: 1/13/14
Inspection started: 10:00 am
Inspection ended: 11:35 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)
Jim Peck (Dow Corning, Air Quality Engineer)

EU356-01

Compliance Status: Compliance

Items noted during the inspection.

- EU356-01 is the hydrochloric acid (HCl) production plant with a packed bed scrubber (no. 24388), capable of producing either anhydrous HCl or aqueous HCl. Production and storage of liquid HCl product at a concentration of 30 weight percent or greater during normal operations is subject to the requirements of the Hydrochloric Acid Production NESHAP, 40 CFR Part 63, Subpart NNNNN (HCl MACT). The process was shutdown due to maintenance at the time of my inspection. Dow Corning was expecting to be producing anhydrous HCl later that day.
- Air Permit to Install (PTI) No. 29-07B covers EU356-01. This permit was issued on 3/26/13. ROP modification application no. 201300077 was received by the MDEQ-AQD on 5/3/13. This application covers the addition of PTI 29-07B to ROP No. MI-ROP-A4043-2008 (hereinafter "ROP"). To date, the PTI has not been rolled into the ROP.
- Condition no. VI.1 of table EU356-01 of PTI 29-07B states, Dow Corning (hereinafter "DC") shall monitor the liquid flow rate of scrubber no. 24388 on a continuous basis. Condition no. VI.2 of the same table in the PTI states, DC shall keep records of the flow rate for the scrubber. Condition no. IV.1 of the same table in the PTI states, DC shall not operate EU356-01 unless the scrubber is installed, maintained and operated in a satisfactory manner. Satisfactory operation includes maintaining a minimum liquid flow rate of 1,000 pounds per hour (lbs/hr) in the scrubber. At 11:01 am, I observed the following operational parameter data for the scrubber (24388) in the control room for EU356-01 at Building 316. Dan Theimer, DC Manufacturing Engineer, provided the data.

Operational Parameter	Observed Value	Alarm Set Point
Packed bed scrubber (24388) liquid flow rate	1300 lb/hr (instantaneous)	≤ 1000 lbs/hr (every 9000 seconds = 2.5 hours)
Packed bed scrubber (24388) pH	-0.2 (instantaneous)	According to DC, there is no alarm set point for the pH monitor. See comments pertaining to pH in item no. 5 below.

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4. EU356-01 is subject to the HCl MACT when they're producing 30% aqueous HCl. As a result, DC conducted stack testing at the outlet of scrubber 24388 on 10/21/13. The results of this test were received by the MDEQ-AQD in the Notification of Compliance Status Report (NOCSR) on 1/10/14. According to the NOCSR, the average water flow rate to scrubber no. 24388 during the stack test was 1000.57 lbs/hr. Therefore, under the HCl MACT, the liquid flow rate of the scrubber shall not be less than 1000.57 lbs/hr based on a daily average. DC stated they'd adhere to the 1000 lb/hr liquid flow rate limit regardless of whether they're running production subject to the HCl MACT or not.
5. The HCl MACT also requires DC to monitor and record the daily average scrubber effluent pH. According to the NOCSR, the average effluent pH of scrubber no. 24388 during the stack test on 10/21/13 was 4.96. However, DC set a pH limit of less than 8.5 as this limit represents the maximum pH of industrial grade water used in the scrubber. On 1/29/14, Mike Gruber and I discussed the requirements of 63.9020(e)(1)(ii) which state, "You must establish the minimum and maximum values as the operating limits for scrubber effluent pH. The minimum and maximum values shall be based on the scrubber effluent pH values measured during the performance test." According to Mike, DC is going to submit a request to EPA to excuse them from the pH requirement under the HCl MACT. Mike expects DC to submit the request by the end of this week or next. DC submitted a similar request under the MON (40 CFR Part 63, Subpart FFFF) for a water scrubber, and it was approved. Therefore, DC fully expects this request to be approved. Given this information, it's my assumption that the pH limit for scrubber no. 24388 is a moot point since it will likely not exist in the near future. DC stated they do not adhere to the pH limit when they're running production that's not subject to the HCl MACT.

EU356-02

Compliance Status: Compliance

Items noted during the inspection.

1. EU356-02 covers the rail car transfer station no. 9E with packed bed scrubber (no. 24401), capable of either loading rail cars with aqueous HCl or unloading aqueous HCl from rail cars. Loading rail cars with liquid HCl product at a concentration of 30 weight percent or greater during normal operations is subject to the requirements of the HCl MACT. DC was not loading or unloading rail cars with aqueous HCl at transfer station no. 9E during the inspection.
2. Air Permit to Install (PTI) No. 29-07B covers EU356-02. This permit was issued on 3/26/13. ROP modification application no. 201300077 was received by the MDEQ-AQD on 5/3/13. This application covers the addition of PTI 29-07B to the ROP. To date, the PTI has not been rolled into the ROP.
3. Condition no. VI.1 of table EU356-02 of PTI 29-07B states, DC shall monitor the liquid flow rate of scrubber no. 24401 on a continuous basis whenever EU356-02 operates. Condition no. VI.2 of the same table in the PTI states, DC shall keep records of the flow rate for the scrubber. Condition no. IV.1 of the same table in the PTI states, DC shall not operate EU356-02 unless the scrubber is installed, maintained, and operated in a satisfactory manner. Satisfactory operation includes maintaining a minimum liquid flow rate of 2,500 lbs/hr in the scrubber. At 11:11 am, I observed the following operational parameter data for the scrubber (24401) in the control room for EU356-02 at Building 316. Dan Theimer, DC Manufacturing Engineer, provided the data.

Operational Parameter	Observed Value	Alarm Set Point
Packed bed scrubber (24401) liquid flow rate	3820 lb/hr (instantaneous)	≤ 3250 lbs/hr (did not inquire as to the averaging period for the alarm set point during the inspection)
Packed bed scrubber (24401) pH	1.3 (instantaneous)	According to DC, there is no alarm set point for the pH monitor. See comments pertaining to pH in item no. 4 below.

4. EU356-02 is subject to the HCl MACT when they're loading rail cars with liquid HCl product at a concentration of 30 weight percent or greater. As a result, DC performed a design evaluation in accordance

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with 63.9020(c) to establish the minimum scrubber liquid flow rate limit. According to the NOCSR and its associated design evaluation received by the MDEQ-AQD on 1/10/14, the liquid flow rate of the scrubber shall be greater than 2500 lbs/hr, based on a daily average. DC also set a scrubber effluent pH limit of less than 8.5 as this limit represents the maximum pH of industrial grade water used in the scrubber. DC is going to submit a request to EPA to excuse them from the pH requirement under the HCl MACT. According to DC, they submitted a similar request under the MON (40 CFR Part 63, Subpart FFFF) for a water scrubber, and it was approved. DC suggested they'd submit this request with their next semi-annual MACT report.

EU356-03

Compliance Status: Compliance

Items noted during the inspection.

1. EU356-03 covers rail car unloading station no. 10E with packed bed scrubber no. 24344, capable of unloading aqueous HCl from rail cars. This emission unit is not subject to the HCl MACT. DC was not operating unloading station no. 10E at the time of the inspection.
2. Air Permit to Install (PTI) No. 29-07B covers EU356-03. This permit was issued on 3/26/13. ROP modification application no. 201300077 was received by the MDEQ-AQD on 5/3/13. This application covers the addition of PTI 29-07B to the ROP. To date, the PTI has not been rolled into the ROP.
3. Condition no. VI.1 of table EU356-03 of PTI 29-07B states, DC shall monitor the liquid flow rate of scrubber no. 24344 on a continuous basis whenever EU356-03 operates. Condition no. VI.2 of the same table in the PTI states, DC shall keep records of the flow rate for the scrubber. Condition no. IV.1 of the same table in the PTI states, DC shall not operate EU356-03 unless the scrubber is installed, maintained, and operated in a satisfactory manner. Satisfactory operation includes maintaining a minimum liquid flow rate of 2,500 lbs/hr in the scrubber. At 11:19 am, I observed the following operational parameter data for the scrubber (24344) in the control room for EU356-03 at Building 316. Dan Theimer, DC Manufacturing Engineer, provided the data.

Operational Parameter	Observed Value	Alarm Set Point
Packed bed scrubber (24344) liquid flow rate	0 lb/hr (instantaneous)**	≤ 3250 lbs/hr (did not inquire as to the averaging period for the alarm set point during the inspection)
Packed bed scrubber (24344) pH	NA – EU356-03 is not subject to the HCl MACT. Therefore, the requirement to monitor and record pH is not required.	NA

**Process not operating at the time of the inspection (i.e., no emissions from the process). Therefore, the observed scrubber flow rate is acceptable.

FGHCLMACT

Compliance Status: Compliance

Items noted during the inspection.

1. FGHCLMACT cover the HCl production facility which is the collection of unit operations and equipment associated with the production of liquid HCl product at a concentration of 30 weight percent or greater during normal operations that is located at, or is part of, a major source of hazardous air pollutant emissions.
2. Air Permit to Install (PTI) No. 29-07B covers FGHCLMACT. This permit was issued on 3/26/13. ROP modification application no. 201300077 was received by the MDEQ-AQD on 5/3/13. This application covers the addition of PTI 29-07B to the ROP. To date, the PTI has not been rolled into the ROP.
3. Condition no. III.1 of table FGHCLMACT of PTI 29-07B states, DC shall submit to the AQD District Supervisor, for comment, a leak detection and repair (LDAR) plan for FGHCLMACT, as required by 40 CFR 63.9000. The permittee shall not produce liquid HCl product at a concentration of 30 weight percent or greater during normal operations in FGHCLMACT unless the LDAR plan is implemented and maintained. The LDAR plan for the HCl MACT was received by the MDEQ-AQD along with the NOCSR on

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1/10/14. According to 63.9000(a) and Table 1 of the HCl MACT, the plan shall be submitted to the Administrator for comment only with the NOCSR. Therefore, approval of the plan is not required by the AQD. I compared DC's LDAR plan to Dow Chemical's plan for the HCl MACT, and they're similar in that both companies have chosen to use audio, visual, or olfactory methods for determining leaks. At this time, I have no further comments or questions pertaining to DC's plan.

According to section no. 5 of the LDAR plan, DC will monitor all subject equipment on an annual basis. Monitoring will consist of an audio, visual, and olfactory inspection of each piece of equipment. According to DC, the last annual monitoring event occurred during the HCl MACT stack test on 10/21/13. During the inspection, I requested a copy of the results of monitoring. On 1/15/13, I received the requested information (see attached). According to the monitoring record, no leaking equipment was discovered.

4. Condition no. III.2 of table FGHCLMACT of the PTI states, DC shall submit to the AQD District Supervisor, with the NOCSR, a monitoring plan for FGHCLMACT, as required by 40 CFR 63.9025. Following submittal of the monitoring plan, DC shall not produce liquid HCl product at a concentration of 30 weight percent or greater during normal operations in FGHCLMACT unless the monitoring plan is implemented and maintained. The monitoring plan for FGHCLMACT was received by the MDEQ-AQD along with the NOCSR on 1/10/14. According to 63.9025, you must submit the plan to the Administrator, however, it does not appear approval of the plan is required by the AQD. I compared DC's monitoring plan to Dow Chemical's plan for the HCl MACT, and they're similar. DC's plan appears to meet the requirements specified under 63.9005(d)(1) through (6) and 63.9025. At this time, I have no further comments or questions pertaining to DC's plan.
5. Condition no. IV.1 of table FGHCLMACT of the PTI states, while producing liquid HCl product at a concentration of 30 weight percent or greater during normal operations in FGHCLMACT, DC shall equip and maintain scrubber no. 24388 and scrubber no. 24401 with the equipment listed below.
 - a. For each scrubber, a device to monitor the liquid flow rate to the packed bed.
 - b. For each scrubber, a device to monitor the scrubber effluent pH, unless an alternative is approved pursuant to 63.8(f).

See discussion above in EU356-01 and EU356-02, item no. 3 for each emission unit, regarding compliance with this requirement.

6. Condition nos. IV.2 and 3 of table FGHCLMACT of the PTI state, DC shall not produce liquid HCl product at a concentration of 30 weight percent or greater during normal operations in FGHCLMACT unless scrubber nos. 24388 and 24401 are installed, maintained, and operated in a satisfactory manner. Satisfactory operation includes maintaining the liquid flow rate to the scrubbers and the scrubber effluent pH within the ranges identified in the monitoring plan. As mentioned above, the AQD received the monitoring plan in conjunction with their NOCSR on 1/10/14. The monitoring plan does not identify acceptable ranges for scrubber liquid flow rate and effluent pH. However, these limits are identified in the NOCSR, and stating these ranges in the plan does not appear to be a requirement of the HCl MACT.
7. Condition no. V.1 of table FGHCLMACT of the PTI states, in part, within 180 days after initial startup of production of liquid HCl product at a concentration of 30 weight percent or greater during normal operations in equipment in FGHCLMACT, the permittee shall verify HCl emission rates from FGHCLMACT, by testing at owner's expense, in accordance with the HCl MACT. No less than 30 days prior to testing, DC shall submit a complete test plan to the AQD Technical Programs Unit (TPU) and District Office. The AQD must approve the final plan prior to testing. DC shall submit a complete report of the test results to the AQD-TPU and the District Office within 60 days following the last date of the test.

The AQD received the required test plan on 9/26/13. AQD approved the plan in a letter dated 10/9/13. The test was performed on 10/21/13. A complete test report was received by the AQD in conjunction with the NOCSR on 1/10/14. Results of the test indicate HCl and Cl₂ emissions from scrubber no. 24388 were 11 and 1 ppmv, respectively, based on the average of three test runs. Table 1 of the HCl MACT limits emissions from an HCl process vent at a new source to the following:

- a. Reduce HCl emissions by 99.4 percent or greater or achieve an outlet concentration of 12 ppm by volume or less; and

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- b. Reduce Cl₂ emissions by 99.8 percent or greater or achieve an outlet concentration of 20 ppm by volume or less.

It should be noted that for HCl, the emissions during run #1 of the test were 30.1 ppmv, while emissions during run nos. 2 and 3 were 1.6 and 0.7 ppmv, respectively. On 1/29/14, Mike Gruber and I discussed the results of run #1. Mike said that DC looked into this issue, and they couldn't see any fluctuation in the process that would have caused the increase in emissions during run #1. Mike said they also asked BTEC to check their equipment to make sure everything was operating properly. BTEC did not report any problems with sampling equipment.

8. Condition no. V.2 of table FGHCLMACT of the PTI states, DC shall conduct periodic performance tests while producing liquid HCl product at a concentration of 30 weight percent or greater during normal operations in equipment in FGHCLMACT, as required in 40 CFR 63.9015. According to 63.9015(a), DC must conduct all applicable performance tests according to the procedures in 63.9020 on the earlier of your title V operating permit renewal or within 5 years of issuance of your title V permit.
9. Condition no. V.3 of table FGHCLMACT of the PTI states, for an emission stream from an HCl transfer operation in FGHCLMACT that meets the requirements of 40 CFR 63.9020(c), DC may submit a design evaluation to the AQD in lieu of any performance test required by condition nos. V.1 or 2 of the PTI. The design evaluation shall meet the requirements of 40 CFR 63.9020(c). DC shall submit the design evaluation to the AQD District Supervisor no later than the date by which the performance test is required to be completed. The AQD received a design evaluation for scrubber no. 24401 (EU356-02) in conjunction with the NOCSR on 1/10/14. Based upon 63.9020(c), it does not appear the design evaluation needs to be approved by the AQD. DC completed the design evaluation using Aspen Plus Modeling software, and the model resulted in greater than 99% control efficiency for HCl. Table 2 of the HCl MACT requires DC to reduce HCl emission by 99 percent or greater or achieve an outlet concentration of 120 ppmv or less. Finally, the design evaluation appears to contain all of the necessary information required in 63.9020 (c).
10. Condition no. VI.1 of table FGHCLMACT of the PTI states, DC shall keep a record of the time periods during which liquid HCl product at a concentration of 30 weight percent or greater during normal operations is produced in equipment in FGHCLMACT.

Prior to going to 316 Building where Mr. Theimer was located, DC staff stated that EU356-01 rarely makes this type of HCl. To date, they've only made it during the pre-stack test and the stack test on 10/21/13.

According to Dan Theimer (DC Manufacturing Engineer) at the 316 Building Control Room, DC can tell if they're producing 30 weight percent or greater aqueous HCl at EU356-01 by looking at the "acid rate" (FIC42066). With regard to EU356-02, DC can tell if they're transferring 30 weight percent or greater aqueous HCl by flow transmitters, valve positions and tank levels.

11. Condition no. VI.2 of table FGHCLMACT of the PTI states, DC shall monitor and record on a daily basis, all of the following operating parameters:
- The daily average liquid flow rate to the packed bed
 - The daily average scrubber effluent pH for both scrubber no. 24388 and scrubber no. 24401, unless an alternative is approved pursuant to 40 CFR 63.8(f).

During the inspection, I requested a copy of the daily records for scrubber nos. 24388 and 24401 for December 2013. On 1/15/14, DC emailed me the requested information (see attached). According to the information provided by DC:

- EU356-01: In December 2013, the daily average liquid flow rate and effluent pH for scrubber no. 24388 was in compliance with the limits.
- EU356-02: In December 2013, the daily average liquid flow rate for scrubber no. 24401 was less than 2500 lbs/hr on numerous occasions. On 1/29/14, I discussed this with Mike Gruber. According to Mike, DC was either not loading/unloading railcars during the times in question (i.e., no emissions from the process), or they were only loading/unloading railcars for small increments of time which would cause the daily average to drop below the limit. Mike also stated that loading/unloading

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operations are interlocked with the scrubber flow rate limit. Therefore, if the scrubber flow rate drops below the limit, loading/unloading operations will cease.

EU356-03: In December 2013, the daily average liquid flow rate for scrubber no. 24344 was less than 2500 lbs/hr on numerous occasions. On 1/29/14, I discussed this with Mike Gruber. According to Mike, DC was either not unloading railcars during the times in question (i.e., no emissions from the process), or they were only unloading railcars for small increments of time which would cause the hourly average to drop below the limit. Mike also stated that operations are interlocked with the scrubber flow rate limit. Therefore, if the scrubber flow rate drops below the limit, unloading operations will cease.

12. Condition no. VII.1 of table FGHCLMACT of the PTI states, no later than seven calendar days after start-up of production of liquid HCl product at a concentration of 30 weight percent or greater during normal operations in equipment in FGHCLMACT, the permittee shall notify the AQD District Supervisor in writing of the start-up date. According to DC, the notification was sent on 5/2/13. I confirmed following the inspection that the AQD received the required notification on 5/6/13.
13. Per the requirements of 63.9050, the AQD received DC's semi-annual compliance report for the HCl MACT on 7/31/13. This report covered the reporting period of 5/1/13 (i.e., process startup) through 6/30/13. According to the report, there were no known deviations from the emission limitations, there were no routine maintenance events that caused an HCl storage tank control device to exceed the emission limitations in Table 1 of the HCl MACT, and there are no maintenance events planned that may cause an exceedance at this time.

NAME Jerry Gruber

DATE 1/30/14

SUPERVISOR C. Ware

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