

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

403347961

FACILITY: The Dow Chemical Company U.S.A., Midland		SRN / ID: A4033
LOCATION: 1790 Building, MIDLAND		DISTRICT: Saginaw Bay
CITY: MIDLAND		COUNTY: MIDLAND
CONTACT: Jennifer Kraut ,		ACTIVITY DATE: 02/21/2019
STAFF: Kathy Brewer	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MEGASITE
SUBJECT: EU85 & EU93-S1.		
RESOLVED COMPLAINTS:		

EU85 and EU93 inspection and record review

Dow Chemical contact Jennifer Kraut, Air Specialist

EU85

EU85 includes an anhydrous hydrogen chloride (HCL) distribution process and aqueous HCL (32%) distribution process at 954 Building. The aqueous HCL production in building 948 has been shut down since October 2016.

This emission unit is subject to the requirements of 40 CFR Part 63, Subparts A, and NNNNN. The most recent PTI for EU85-S1 is PTI 78-03. A PTI application has recently been submitted to split EU85 into two emission units and a flexible group for the E-101 adsorber and the T-101 scrubber and back up venturi scrubber. EU05 will be for the 32% HCL storage and distribution process and EU06 for the anhydrous HCL storage and distribution process and the T-101 scrubber and HAT venturi scrubber.

Based on the site visit and records review the facility appears to be in compliance with the ROP Special conditions for EU85 and FGHCMACT.

On site records reviewed

Sept 2017, June 2018, Dec 2018

HCL emissions and calculations

T-101 operations screen

HAT Venturi operations screen

HCL distribution operations screen

October 2018 HAT Venturi liquid flow observations

Process block flow diagram and vent locations

AQD Files reviewed

March 2018, September 2018, March 2019 Semi Annual ROP Deviation Report

March 2018, September 2018, March 2019 Semi Annual HCL MACT reports

2018 MAERS Submittal

AQD Release reports June 2017 – December 2018

Anhydrous HCL system receives material via tube trailers and railcars. High purity anhydrous HCL is vaporized and distributed to end users as a gas. Low purity anhydrous HCL receives refrigerated liquified gas that is offloaded into two insulated storage tanks V-2901 and V-2902. The storage tanks feed a vaporizer. After the vaporizer the anhydrous HCL is distributed to the plant via pipeline.

The anhydrous storage tanks are pressurized vessels that have the potential to vent to the E-101 absorber and T-101 scrubber or the 954 THROX Absorber and 954 THROX Scrubber if T-101 is down. Railcars and tube trailers vent to the E-101 absorber and T-101 scrubber or the 954 THROX Absorber/scrubber if T-101 is down. The HCL FFAB Absorber (E-101) is not considered air pollution control equipment.

The 32% aqueous HCL asst consists of a recirculation system, a railcar off-loading system, two truck loading stations, and a storage and distribution system. Aqueous HCl is now brought in via railcar. The aqueous HCl is stored in two 40x40 storage tanks (V-2126 & V-2127) used for offloading aqueous railcars and then distributed. These tanks can also receive excess 32%HCL produced by EU11 in 941 building (An assest of Dow AgroSciences SRN P1028). Five 25,000 gallon storage tanks (V-201, V-202, V-203, V-204, and V-205) can be filled via railcar. Stored Aqueous HCl is no longer loaded into rail cars but can be loaded into trucks from tank nos. V-2126 & V-2127, or V-201, V-202, V-203, V-204 & V-205.

Vents on aqueous HCl storage tanks, rail cars, and tank trucks are connected to the FFAB Scrubber (T-101) prior to venting to the atmosphere. The HAT Venturi Scrubber is used as a back-up if the T-101 scrubber is down. The T-101 scrubber ris usually down less than 10 days per tear including annual maintenance

The loading to the T-101 scrubber is significantly less than when the aqueous HCL production occurred.

The emissions reported to MAERS in 2018 were the following:

Pollutant	Amount
PM10	9.1 pounds

Supporting documentation for the emission calculations was provided as an attachment in the MAERS submittal

EMISSION LIMITS

Review of on site records indicate the facility is in compliance with ROP emission limits.

Parameter			
HCl	2.2 pph	Last performance test (2016)	> 99.9% removal equated to < 2.2pph
HCl	8.9 tpy	Sept 2017	1.1 Lbs/yr
HCl	8.9 tpy	June 2018	0.2 Lbs/yr
HCl	8.9 tpy	Dec 2018	0.2 Lbs/yr

MATERIAL LIMITS

There are no material limits specific to EU85-S1 in the EU85-S1 Special Conditions of the ROP.

PROCESS/OPERATIONAL RESTRICTIONS

There are no process/operational limits specific to EU85-S1 in the EU85-S1 Special Conditions of the ROP. The HCL MACT testing established a minimum T-101 scrubber flow of 12 gpm.

Design/Equipment Parameters

SC IV.1 prohibits operation of the portions of EU85 associated with aqueous HCL handling, that vent to the T-101 venturi scrubber unless the control devices are operating satisfactorily.

Review of records during first week of September 2017, June 2018, December 2018 containing aqueous distribution status and T-101 and HAT Venturi scrubber status how adequate operation of scrubbers during HCL distribution activities. HCL production no longer occurs since October 2016 when 948 building process shutdown.

Parameter	Limit/operating parameter	Date	Date	Date	Date (instantaneous)
T-101 scrubber	< 6% HCL by weight	Sept 4-11, 2017	June 4 - 11, 2018	Dec 3 -10, 2018	Feb 21, 2019
% HCL by weight	< 6% HCL by weight	0.12 to 0.9	0.1 to 4.0	0.09 - 1.75	0.1
Liquid flow gpm	>12 gpm	>20 gpm	>23 gpm	>22 gpm	22 gpm

SC IV.2 prohibits operation of the portions of EU85 associated with anhydrous HCL handling, that vent to the T-101 venturi scrubber or the 954THROX, unless the control devices are operating satisfactorily.

Review of records for the first week of September 2017, June 2018, December 2018 containing distribution pressure and railcar offloading show the scrubber T-101 is operating adequately during periods of depressurization.

SC IV.3 requires the T-101 scrubber have a density meter to determine the weight % HCL. Review of records and equipment indicate the facility is in compliance with this requirement.

Testing/Sampling

There are no testing requirements specific to EU85-S1 in the EU85-S1 Special Conditions of the ROP. 40 CFR Part 63 Subpart NNNNN (HCL MACT) requires stack testing of the control device HCL FFAB Scrubber (T-101). The most recent test occurred in 2016.

Monitoring/Recordkeeping

SC VI.1 requires the permittee to record the weight% HCL in the liquid phase at the top of the T-101 scrubber. %HCL is recorded every 5 minutes and averaged over a 24 hour period. Additionally, T-101 flow is maintained above 12 gpm.

The HCL density meters are inspected every 12 months and replaced every 72 months. Calibration records from October 2017 are attached

SC VI.2 requires the liquid flow to the HAT Venturi scrubber be verified when the scrubber is in use. The site has a procedure and checklist for operations personnel to complete each day that the HAT venturi scrubber is in use.

Visible observation records and venturi scrubber water flow valve status were provided for October 1 through 8, 2018 during T-101 maintenance. Required records were maintained and available.

SC VI.3 requires the facility calculate emissions for a 12 month rolling time period. A detailed emission calculation for December 2018 was reviewed while on site. Max peak fill rate is 40scfm. HCL is displaced during material handling and vented to T-101. Only continuous venting is from V2126 and 2127 tanks. The number of tanks in service, and the number of railcars and trucks filled during a month are tracked. Vents from storage tanks V2901 and 2902 are sent to the absorber then to scrubber feed tank. The HCL is in in solution post scrubber feed (V-103) and the V-103 fluid is either sent to the sewer or recirculated back to the absorber (E-101) with no emissions to T-101. Established emissions by activity are applied and the calculated emissions recorded.

In 2005 the EPA approved an alternative monitoring method for the T-101 scrubber eliminating the need for pH monitoring and allowing scrubber water flow rate to be used. The HCL MACT Site Specific Monitoring Plan states that the T-101 scrubber water flow will be monitored at least once every 15 minutes and recorded.

The HCL MACT Leak Detection and Repair Plan (LDAR Plan) describes the equipment, leak detection and repair procedures, and record and reporting requirements.

Reporting

CL MACT Periodic reports included no excess emissions or periods of monitoring downtime and no deviations of or changes to LDAR plan. Annual routine maintenance occurs each fall. No startup/shutdown or malfunction events that caused or had the potential to cause an exceedance of an emission standard occurred.

ROP Deviation reports reviewed found no deviations reported for EU85. Some fugitive releases were reported for equipment and activity in the 954 Building.

Stack/Vent Restrictions

The following vent information was confirmed during the inspection.

Stack & Vent ID	Maximum Exhaust Dimensions (inches)	Minimum Height Above Ground (feet)	Description
SVFFAB-01	6	60	HCL FFAB Scrubber (T-101)
SVHAT-01	12	2	HCL HAT Venturi Scrubber

EU93

The EU93-S1 major activity is unloading from railcars, material storage, and distribution to on site users. The emission unit includes transfer racks, compressors, pumps, EUPOSTGTANK – a 50,000 gallon storage tank for storing propylene oxide. (PO), and EUVDCSPHERE– a 300,000 gallon storage sphere for storing vinylidene chloride (VDC).

This emission unit is subject to the requirements of 40 CFR Part 63, Subparts A, FFFF, UUUU, and the equipment leak provisions of the HON (40 CFR Part 63, Subpart H).

The most recent PTI for EU93-S1 is PTI 284-07.

Based on the site visit and records review the facility appears to be in compliance with the ROP Special conditions for EU93.

On site records reviewed

Sept 2017, June 2018, Dec 2018 EUPOSTGTANK and EUVDCSPHERE operating pressure
 June 2017 - Dec 2018 maintenance and calibration records for leak detection monitors
 Process block flow diagrams

AQD Files reviewed

March 2018, September 2018, March 2019 Semi Annual ROP Deviation Report
 March 2018, September 2018, March 2019 Semi Annual Part 63 Subpart UUUU and Subpart H
 MACT reports
 2018 MAERS Submittal
 AQD Release reports June 2017 – December 2018

The emissions reported to MAERS in 2018 were the following:

Pollutant	Amount
VOC	0.01 pound

Documentation for the VOC emissions reported describe that venting only occurs during infrequent periods of maintenance. No specific emission calculation was provided in the attachment to the MAERS submittal.

EMISSION LIMITS

There are no emission limits specific to EU93-S1 in the EU93-S1 Special Conditions of the ROP.

MATERIAL LIMITS

There are no material limits specific to EU93-S1 in the EU93-S1 Special Conditions of the ROP.

PROCESS/OPERATIONAL RESTRICTIONS

The permit requires that the operating pressure of the propylene oxide storage tank EUPOSTGTANK and the Vinylidene chloride storage sphere EUVDCSPHERE do not exceed 100 psig.²

On site records reviewed indicated the facility monitored and maintained pressure below 100 psig in the EUPOSTGTANK and EUVDCSPHERE tanks.

Date	EUPOSTGTANK (psig)	EUVDCSPHERE (psig)
Sept 4 -11, 2017	9.9 – 10.3	37 - 42
June 4 -11, 2018	10.1 -10.5	36 – 47.4
Dec 3 – 10, 2018	10 - 11	38 - 44
Feb 21, 2019 (instantaneous)	10.8	37.5

Design/Equipment Parameters

SC IV.1 requires the vapor equalization system be operated properly during unloading of PO or VDC. The closed loop system has the pressure equalized before each railcar is disconnected. Railcar and distribution loop are brought to established pressure for each system (PO or VDC).

SC IV.2 requires unloading lines be blown with nitrogen before disconnecting railcar unloading lines from a storage tank. For both PO and VDC systems, at the end of each offload the system is purged with nitrogen. When unloading lines are connected, a valve to allow nitrogen flow in is opened, a pressure test performed, and sample taken for QA/QC purposes before offloading is started. Once the railcar is emptied, the line is purged with nitrogen before disconnecting.

SC IV.3 requires leak detectors for PO and VDC are operated properly. The LELs are set to have an initial alarm when a 10% LEL is observed and a process shutdown sequence initiated when a 20% LEL observation occurs. Leak detection calibration/testing and maintenance records for June 2017 – December 2018 were reviewed. Calibrations are performed once/3 months. During the inspection the LEL meters viewed had readings below 1%. On site observations and records reviewed indicated the facility is in compliance with this requirement.

SV IV.4 prohibits maintenance on storage tanks and associated piping unless the system is vented to a properly operating 954Throx. The EUVDCSPHERE has the ability to vent to the 954Throx. Procedures are in place to verify when 954Throx is operating. The 954Throx will automatically close the vents from VDC if VDC is venting to 954Throx when 954Throx goes offline. The valve to 954Throx is maintained in a closed and locked position. Operators follow a locked valve policy which would require a plant leader to approve opening the locked valve. Since installation approximately 10 years ago no maintenance has been performed on EUVDCSPHERE

EUPOSTGTANK is closed loop and operates without a vent. If maintenance is required the equipment will be isolated and evacuated to 954Throx.

Testing/Sampling

There are no testing requirements specific to EU93-S1 in the EU93-S1 Special Conditions of the ROP.

Monitoring/Recordkeeping

The permit requires that the operating pressure of the propylene oxide storage tank EUPOSTGTANK and the Vinylidene chloride storage sphere EUVDCSPHERE is monitored and recorded on a continuous basis. Records view and on site observations indicate the facility is in compliance with this requirement.

Reporting

The MACT required reporting for EU93 is from Subpart H and is included in EUB2 (Methocel) MACT Subpart H reports. No S/S/M or deviations were found for EU93.

ROP Deviation reports reviewed found no deviations reported for EU93.

Stack/Vent Restrictions

There are no stack/vent restrictions specific to EU93-S1 in the EU93-S1 Special Conditions of the ROP.

NAME *KLB*

DATE 10-18-2019

SUPERVISOR *C. Hare*