

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

A403336204

FACILITY: The Dow Chemical Company U.S.A., Midland		SRN / ID: A4033
LOCATION: 1790 Building, MIDLAND		DISTRICT: Saginaw Bay
CITY: MIDLAND		COUNTY: MIDLAND
CONTACT: Kayla Peacock, Environmental Specialist		ACTIVITY DATE: 08/23/2016
STAFF: Kathy Brewer	COMPLIANCE STATUS: Non Compliance	SOURCE CLASS: MEGASITE
SUBJECT: EU85-S1; Partial HCL MACT VN sent		
RESOLVED COMPLAINTS:		

8/23/2016 Compliance evaluation for EU85-S1, Dow Chemical Company (Dow):

Participants

Megan Feil – Production Engineer
Brad Kischnick – Environmental Specialist
Jeremy McKeon – Production Leader
Jeff Tenwalde – Technical Advisor
Kayla Peacock (Dow Chemical, Air Delivery Specialist)
Kathy Brewer (MDEQ-AQD, EQA)

The EU85-S1 emission unit is an aqueous hydrogen chloride (HCL) production (32%-36%) and distribution process and an anhydrous HCL distribution system. The compliance evaluation included a tour of the process including distribution lines, storage tanks, HCL FFAB Absorber(falling film absorber E-101), HCl FFAB scrubber(T-101), HAT venturi scrubber, process associated valves, piping, compliance metering devices, on site records review, and, AQD Saginaw Bay District file review

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.

Information reviewed during the inspection indicated the EU85-S1 emission unit was not in compliance with the sites ROP requirements for %HCl monitoring on the HCl FFAB Scrubber (T-101). A NOV will be sent to Dow.

Attachments

EU85 process flowsheet (from stack test report)
Aug 2015, Feb 2016, Operations screen shot of recirculation loop %HCl for HCl FFAB scrubber (T-101).
Aug 23, 2016 Operations screen shot of flow (gpm) and recirculation loop %HCl for HCL FFAB scrubber (T-101).
June 4, 2016 24 hour average and 15 minute rolling average flow for HCl FFAB scrubber T-101).
Feb 2015, 2016, and Aug 2015, 12 month rolling HCl emissions for EU85
2015 Hours emissions sent to HAT Venturi
Sept 2015 HAT Venturi water flow verification checklist
March 16, 2015 24 hour avg flow (gpm) for HCl FFAB scrubber (T-101)
August 23, 2016 flow (gpm) and %HCl density for HCl FFAB scrubber (T-101)
HCl density Meter correspondence of 9/7/2016

AQD file review

Jan – Dec 2015 Annual Compliance certification
Jan – June 2016 Semi Annual ROP Deviation Report

Anhydrous ammonia from the 948 and 954 buildings is sent to aqueous HCl production. . The HCl FFAB scrubber (T-101) receives process and exhaust from the aqueous HCl production and distribution system, storage tanks, railcar and tank truck loading and unloading systems, and, anhydrous HCl distribution systems. The HCl FFAB absorber (E-101) is part of the aqueous HCl process and is not used for emission control. The aqueous HCl produced is stored in tanks V-201 through V-205, quality checked, then sent to larger tanks (V-2126 and V-2127) or to fill rail cars or trucks. Product in V-2126 and V-2127 is used for site process needs or to fill smaller tanks. For unloading, compressed air is used to increase air flow and pressure for unloading tanks and to purge lines. If the FFAB scrubber (T-101) is unavailable due to scheduled maintenance, the only emission unit exhaust is from tank breathing losses, which are sent to the HAT venture scrubber. During emergency or otherwise unplanned events, the anhydrous tanks can be directed to the 954 Throx absorber and scrubber. In a rare high pressure related event the anhydrous tanks can vent to the atmosphere. The HAT venture scrubber does not receive exhaust from the anhydrous HCl process.

EMISSION LIMITS.

Parameter	Limit	Date	Value
HCl	2.2 pph	Last performance test 2011	> 99.9% removal equated to < 2.2pph
HCl	8.9 tpy	Feb 2015	0.7 tpy
HCl	8.9 tpy	Aug 2015	0.7 tpy
HCl	8.9 tpy	Feb 2016	0.6 tpy

A detailed emission calculation for September 2015 was reviewed while on site. The amount of aqueous HCl produced, the number of tanks in service, and the number of railcars and trucks filled during a month are tracked. Established emissions by activity are applied and the calculated emissions recorded. Specifics of the tracked activity are not included in this report but available in on site records.

MATERIAL LIMITS

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

PROCESS/OPERATIONAL RESTRICTIONS

The permit requires that EU85-S1 comply with all provisions of the NESHAP specified in the HCl MACT 40 CFR Part 63, Subparts A and NNNNN, as they apply to EU85-S1. The HCl MACT requires >99% control efficiency of HCl emissions from the process. A performance test showed the T-101 scrubber demonstrated >99% HCl removal at 15.2 gpm flow. In November of 2005, the EPA approved the use of an operating restriction flow for the HCl FFAB scrubber (T-101). The T-101 scrubber flow is monitored once/15 minutes and a 24 hour flow average is used for compliance records.

I reviewed the on site records for HCl FFAB scrubber (T-101). On site records reviewed indicated the facility monitored and maintained the gpm flow >20 gpm flow as a 24 hour average.

The facility has submitted and implemented SSM and LDAR plans for the HCL MACT.

DESIGN/EQUIPMENT PARAMETER(S)

The permit requires that the aqueous HCl production and distribution portion of EU85-S1 (which includes but is not limited to loading/unloading of aqueous HCl, etc.) shall not be operated unless the FFAB Scrubber (or HAT Venturi Scrubber) is installed, maintained, and operated in a satisfactory manner. Satisfactory operation of the FFAB Scrubber includes, but is not limited to, maintaining a concentration of approximately 6% or less HCl by weight in the liquid phase at the top of the scrubber. In the event the HAT Venturi Scrubber for vent control (not production) is being used, satisfactory operation of this scrubber includes a visual verification that venturi water flow is on before use.

Parameter	Limit	Date	
%HCl by weight	SC IV.1 < 6%	Aug. 1 – Sept. 1, 2015	Monitoring records show % by weight HCL <6%
%HCl by weight	SC IV.1 < 6%	Sept. 2015 – July 2016	Monitoring records show % by weight HCL <6% but monitoring equipment damaged and sending in accurate information.
%HCl by weight	SC IV.1 < 6%	Aug 23, 2016	Monitoring records show % by weight HCL <6%
HAT Venturi Scrubber water flow	SC IV.2.a. Visual verification the water flow present before use	Sept. 15 -21, 2015	Operator records of water flow being present
Hours Hat Venturi scrubber	40 CFR Part 63 Subpart NNNNN, 240 hours/year	January – December 2016	155 hours

The HCl density meter was determined to be malfunctioning after the process startup following the September 16-22, 2015 scheduled shutdown for maintenance. Subsequent to the September 2015 startup, the HCl density meter was still sending a signal to the monitoring system. Operating staff speculate that the signal received was not accurate, possibly due to a bent or otherwise damaged electrical supply line that provided inadequate and inconsistent current to the monitoring device.

The %HCl monitoring device appeared to be monitoring %HCl as required after startup of the process. The %HCl readings were initially low. After several months, the %HCl values reported by the density meter remained lower than those from the same periods during previous operations. An internal inquiry determined that the reported %HCl values were unreliable.

After the discovery of the malfunctioning monitor, the %HCL density meter was replaced. A redundant % HCl density meter was also added and installed.

The facilities flow meter was functioning properly. During a performance test the T-101 scrubber was found to have a greater than 99% HCL removal efficiency at 15.2 gpm flow. In a September 9, 2016 email, the facility provided information to the AQD describing a mass balance evaluation of the HCl FFAB scrubber during the monitoring malfunction period. The mass balance assumed a worst case scenario (high HCl from process, high temperature, low flow in scrubber). The estimated %HIL during the monitoring malfunction period was calculated to be no more than 3.1% HCl. Based on the conservative mass balance assumptions the facility determined that the ROP HCl emission limit of 2.2 pph was not exceeded since the control device was operating within the parameters indicative of proper functionality.

TESTING AND SAMPLING REQUIREMENTS

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 2011. A stack test is schedule for November 2016. AQD staff requested that %HCl readings are recorded during the stack test and included in the test report.

MONITORING/RECORDKEEPING

The permit requires monitoring and recording of % HCl once per calendar day. Except for period of September 2015 to July 2016, records indicate adequate monitoring and record keeping of % HCL was performed. Records were also kept and available to show compliance with the liquid flow verification observation during days that HAT Venturi scrubber was used

On site records review indicate adequate monitoring & recording of gpm for scrubber T-101 was performed.

During the inspection the T-101 scrubber flow meter and the HCL density meter locations were viewed and appeared to be operating properly.

A review of the ROP Deviation reports found that on June 4, 2015, the T-101 scrubber flow 15 min average was reported for periods to be <20 gpm. On site records show that the 24 hour average gpm flow was > 20 gpm and in compliance.

On April 24, 2015 it was discovered that the % by weight HCl exceeded 6% periodically if the site records one reading per day rather than the average of the once every 15 minute readings. On a daily average basis all results were in compliance. The site has asked for the ROP condition to be changed to use the average of readings taken daily.

EU85-S1 had incomplete HCL LDAR records of audio, visual, or olfactory (AVO) repaired HCl leaking components to confirm repairs completed w/in timeframes required in HCL MACT LDAR monitoring plan. The deviation was reported in a voluntary environmental audit disclosure received on July 1, 2015. The site maintenance tracking database did require a work order for all leak repairs. The facility has implemented a work process to document all HCL leak & repair dates..

STACK VENT RESTRICTIONS

Stacks observed (SVFFAB-01 & SVHAT-01) appeared to be in compliance with the ROP listed requirements.

OTHER REQUIREMENT(S)

None in ROP conditions

NAME

DATE

10/18/2016

SUPERVISOR