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

A403348167

FACILITY: The Dow Chemical Company U.S.A., Midland		**SRN / ID:** A4033
LOCATION: 1790 Building, MIDLAND		**DISTRICT:** Saginaw Bay
CITY: MIDLAND		**COUNTY:** MIDLAND
CONTACT: Sara Bennett , Environmental, Health, & Safety Specialist		**ACTIVITY DATE:** 03/20/2019
STAFF: Kathy Brewer	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MEGASITE
SUBJECT: EUB5-S1 (future DDP asset 4-1-2019)		
RESOLVED COMPLAINTS:		

EUB5-S1 On site inspection portion of FCE March 20, 2019

Ethocel Dow Representative Sara Bennett, DDP

The ETHOCEL process involves rolls of paper sent through wet chopping with caustic addition, followed by reactor, filtration to remove salt and caustic, purification by stripping with steam process, washing, and neutralizing. Solvents and byproducts are sent to a distillation recovery process. The wet chopped, material is then dewatered and dried. After drying the material is densified by hammermill. Material is stored until it is blended and packaged.

Air contaminants generated by the process include Particulate Matter and VOCs. The most recent permit for this emission unit is PTI 83-13. EUB5-S1 was subject to the requirements of EPA Consent Decree No. 1:11-cv-13330-TLL-CEB which was terminated February 27, 2017.

Portions of this emission unit are subject to the requirements of 40 CFR Part 63, Subparts A, F, G, H, EEEE, and FFFF.

EUB5-S1 is a CAM subject emission unit subject to the requirements of 40 CFR Part 64. The CAM subject pollutant for this emission unit is PM-10.

The process has several control devices and vents. During the inspection we viewed the 297 Scrubber, 803 Packaging scrubber, 313 Blender cyclone, 802 Raw material scrubber, 803 Tote secondary filter, RTO, PSA, and Liquid ring compressors including associated monitors and operator process control information.

All equipment and records reviewed indicate the EUB5-S1 process was in compliance with the ROP requirements at the time of the inspection.

Attachments

General Process diagram

Operating records from May 2017, January 2018, and August 2018

liquid flow rate for the 297 fugitive dust scrubber
liquid flow rate for the 803 packaging scrubber
liquid flow rate for the 313 blender cyclone scrubber
liquid flow rate for the 802 raw material scrubber
differential pressure secondary inline filter for the 803 tote loading
exit bed PSA temperature
combustion chamber RTO temperature
visible emissions check of Vent No. SVB5015
hours the ETHOCEL Production Facility operates while bypassing the RTO and/or 954 THROX
vent emission totals

Instrument calibration records

liquid flow meter for the 297 fugitive dust scrubber
liquid flow meter for the 803 packaging scrubber
combustion chamber RTO temperature meters
exit bed PSA temperature meters

HON subject vent process list

MON subject vent process list

File review

ROP Semi annual deviation reports March 2019, September 2018, March 2018

CAM Excursion/Exceedance reports March 2019, September 2018, March 2018

CAM Monitoring Downtime reports March 2019, September 2018, March 2018

MACT FFFF (MON) and MACT Subpart G & H (HON) March 2019, September 2018, March 2018

Chemical release reports January 2017 through December 2018

EMMISSION LIMITS:

SC I.1 VOC emission limit of 49 TPY (12 month rolling average). MAERS reported emissions for total VOCs in 2017 were 9700 lbs and 7400 lbs for 2019. The Monitoring/Testing Method should be corrected for VOC 12 month rolling to include VI.4 (VOC 12 month rolling calcs) and remove SC VI.2.

Emission limits for Ethylene and daily total VOCs are in pph. PM limits 0.10 lbs/1000 lbs exhaust gas.

Batch vents are covered by MON, continuous vents covered by HON.

Testing of EUB5-S1 occurred in 2008 for batch process vents sent to the (PSA) (SVB5030) pre liquid compressors and to the RTO (SVB5031) to demonstrate compliance with the MON (SVB5030).

Ethanol and diethyl ethyl are coproducts. The drying step pulls out toluene. Tanks store separated materials and intermediates. PM emissions include particulate from handling caustic.

MATERIAL LIMITS: There are no Material Limits in the ROP

PROCESS/OPERATIONAL LIMITS:

Each control device has operational limits. Operational alarms or operating procedures are in place to maintain operating conditions within limits (request alarm). An alarm at the ROP permit limit initiates a process activity shutdown .

The following table summarizes inspection findings for operating conditions.

Requirement	Special Condition in permit	Emissions controlled	Actual control device and monitoring; last calibration date	SVB5 number	parameter	May 1 2017 -or closest date operated	January 30, 2018 -or closest date operated	August 15, 2018 -or closest date operated

The minimum liquid flow rate for the 297 fugitive dust scrubber (associated with Vent No. SVB5010) shall not be less than 2.5 gallons per minute (gpm), based on an hourly average, or any other liquid flow rate limit demonstrated during stack testing.	III.1, VI.1 a, IX.3	SC I.4.b: PM	297 fugitive dust scrubber hourly gpm Liquid flow indicator Calibration 10/19/2018 for two flow instruments	SVB5010	Liquid flow rate	5.7 gpm	5.3 gpm	5.2 gpm
The minimum liquid flow rate for the 803 packaging scrubber (associated with Vent No. SVB5011) shall not be less than 9 gallons per minute (gpm), based on an hourly average, or any other liquid flow rate limit demonstrated during stack testing.	III.2, VI.1.b, IX.4	SC I.4.c: PM	803 packaging scrubber Hourly gpm	SVB5011	Liquid flow rate	10.5 gpm	10.2 gpm	10.1 gpm
The minimum liquid flow rate for the 313 blender	III.3, VI.2, IX.5	SC I.4.h: PM SC I.2 VOC TPY for all EUB5	313 blender cyclone Hourly gpm	SVB5017	Liquid flow rate	10.3 gpm	10.5 gpm	August 16, 2018 9.8 gpm

cyclone (associated with Vent No. SVB5017) shall not be less than 6.0 gallons per minute (gpm), based on an hourly average, or any other liquid flow rate limit demonstrated during stack testing								
The minimum liquid flow rate of the 802 Raw Material Scrubber (associated with Vent No. SVB5014a) shall not be less than four gallons per minute, based on an hourly average, or any other liquid flow rate limit demonstrated during stack testing	III.4, VI.1.c, IX.7	SC I.4.d: PM	802 Raw Material Scrubber Hourly gpm	SVB5014a	Liquid flow rate	May 26, 2017 7.87 gpm	7.10 gpm	7.26
The minimum liquid flow rate of the 802 Raw Material Scrubber (associated with Vent No. SVB5014b)	III.4, VI.1.c, IX.4	SC I.4.e: PM	802 Raw Material Scrubber Hourly gpm Liquid flow indicator	SVB5014b	Liquid flow rate	May 26, 2017 2.97 gpm	2.07 gpm	2.3 gpm

shall not be less than 1.6 gallons per minute, based on an hourly average, or any other liquid flow rate limit demonstrated during stack testing.			Calibration 10/19/2018 for flow instrument					
The permittee shall conduct a daily visible emissions check of Vent No. SVB5015 during routine operating conditions.	VI.7	SC I.4.f: PM	Daily VE when operating	SVB5015	daily visible emissions (Any VE = Fail)	No VE (Pass)	Pass	Pass
The maximum pressure drop across the secondary inline filter associated with the 803 tote loading process (Vent No. SVB5016) shall not be more than five pounds per square inch, based on an hourly average, or any other pressure drop limit demonstrated	III.5, VI.1.d, IX 9	SC I.4: PM	803 Tote Loading secondary filter Hourly Pressure drop	SVB5016	Max pressure drop	0.4 PSI	0.5 PSI	0.6 PSI

during stack testing									
The minimum combustion chamber temperature of the Regenerative Thermal Oxidizer shall not be less than 1600°F (871°C) hourly	III.7, VI.3.b, IX.11	SC I.1, VOC tpy VI.4 (VOC 12 month rolling calcs); VI.6 (hours bypass RTO/954THROX)	Temp indicator Calibration 10/19/2018 for three temp instruments	SVB5031	Combustion chamber temperature	May 25, 2017 910 C	927 C	910 C	3/20/2019 15:30 1)927.1 (2)927.1 (3) 925.4
The maximum exit bed temperature of the Pressure Swing Adsorber shall not be more than 100°C hourly (two beds, each monitored for temp)	III.6, VI.3.a, IX.11	SC I.1, VOC tpy, SC I.3, VOC SVB5001 & SVB5030 combined	Temp indicator Calibration 10/19/2018 for two temp instruments	SVB5001	Pressure swing adsorber	V9050 10.5 C V9055 11.6 C	V9050 1.6 C V9055 -1.4 C	V9050 27 C V9055 27.C	3/20/2019 15:25 V9050 9.9 V9055 6.2

Requirements	SC IX.1	SVB5 number	Hours May 25 2017	Hours January 30, 2018	Hours August 15, 2018	Status 3/20/2019 12:30	Compliant
The permittee shall not operate the portions of the ethyl cellulose process designed to be vented to the PSA unless the emissions are sent to the PSA and the PSA is installed,	SC IX.1 Vent ethyl cellulose process to PSA (SVB5001)		Except for 1 hour for month to date Post PSA recovery and post liquid compressors, operating and venting to liquid compressors	Operating at noon and venting to liquid compressors	Operating at noon and venting to liquid compressors	Operating at noon and venting to liquid compressors	Yes
	SC IX.1 Vent routed to liquid ring		Operating at noon and venting to RTO	Operating at noon and venting to RTO	Operating at noon and venting to RTO	Operating and venting to RTO	Yes

maintained, and operated in a satisfactory manner or vents are directed to the TTU-954. Proper operation of the PSA includes routing the vent stream through a liquid ring compressor to the RTO or 954 THROX. In the event of failure of both liquid ring compressors, or in the event the RTO and 954 THROX are both unavailable, the PSA may vent to atmosphere for no more than 24 hours per event	compressor (SVB5030)						
	SC IX.1 Vent routed to RTO	SVB5031	At noon on line to RTO	At noon on line to RTO	At noon on line to RTO	on line to RTO	Yes
	SC IX.1 Vent routed to 954 THROX		No vent to Throx at noon	No vent to Throx at noon	No vent to Throx at noon	No vent to Throx	Yes
	SC IX.1 Vent routed to atmosphere	SVB5001	1 hour for month Post PSA recovery and post liquid compressors	0	0	0	Yes
		Reviewed process flow diagram showing status of valves to each vent and hours for each month that a valve was opened venting to each vent. Also records					
keep monthly (based on a calendar month) and 12 month rolling time period records of the number of hours the ETHOCEL Production Facility operates while bypassing the RTO and/or 954 THROX via vents SVB5001, SVB5030, SVB5006, SVB5007, SVB5008, and/or SVB5009	SC VI.6	Combined Vents	May 2017 12 month rolling	January 2018 12 month rolling	Aug 2018 12 month rolling		Yes
			0.48 hrs (0.2 days) to SVB5001	0.48 hrs (0.2 days) to SVB5001	0		
calculate and record the VOC emissions, including fugitive emissions (i.e., emissions from leaking valves, flanges, etc.) and including emissions due to the bypass of the RTO and/or 954 THROX, from EUB5-S1 for the previous calendar month	SC VI.4	Combined vents	May 2017 12 month rolling TPY	Jan 2018 12 month rolling TPY	Aug 2018 12 month rolling TPY	Feb 2019 provided	Yes SC I.1 VOC emission limit of 49 TPY (12 month rolling average)
			6.4	5.0	Detail by vent reviewed Total = 5.4	4.6 ton	
The permittee shall not operate the product washing process, the product washing	IX.13		May 2017 12 month rolling	Jan 2018 12 month rolling	Aug 2018 12 month rolling	30 day rolling tracked. February and March 2019 Graph shows 30 day rolling at	Yes
			4.7 Hours	0.9 Hours	0		

vacuum pumps, the 297 product centrifuge, or the product drying process unless the emissions are sent to the RTO and the RTO is installed, maintained, and operated in a satisfactory manner. In the event of failure of the RTO, the product washing process, the product washing vacuum pumps, the 297 product centrifuge, and the product drying process may vent to atmosphere for not more than 336 hours per 12 month rolling time period as determined at the end of each calendar month.						beginning and end of month	

SC III.1 All records reviewed and instantaneous values viewed during the inspection for the liquid flow rate for the 297 fugitive dust scrubber were all above 5 gpm and indicate the facility is in compliance with the process/operation restrictions. The operational records for individual dates in May 2017, January 2018, and August 2018 are attached.

SC III.2 All records reviewed and instantaneous values viewed during the inspection for the liquid flow rate for the 803 packaging scrubber were all above 9.7 gpm and indicate the facility is in compliance with the process/operation restrictions. The operational records for individual dates in May 2017, January 2018, and August 2018 are attached.

SC III.3 All records reviewed and instantaneous values viewed during the inspection for the liquid flow rate for the 313 blender cyclone scrubber were all above 10 gpm and indicate the facility is in compliance with the process/operation restrictions. The operational records for individual dates in May 2017, January 2018, and August 2018 are attached.

SC III. 4 All records reviewed and instantaneous values viewed during the inspection for the liquid flow rate for the 802 raw material scrubber were all above 7 gpm for SVB5014a and above 2 gpm SVB55014b and indicate the facility is in compliance with the process/operation restrictions. The operational records for individual dates in May 2017, January 2018, and August 2018 are attached.

SC III.5 All records reviewed and instantaneous values viewed during the inspection for the differential pressure were all below 1 PSI and indicate the facility is in compliance with the process/operation restrictions. The operational records for individual dates in May 2017, January 2018, and August 2018 are attached.

SC III.6 All records reviewed and instantaneous values viewed during the inspection for the PSA were below 10 C and indicate the facility is in compliance with the process/operation restrictions. The operational records for individual dates in May 2017, January 2018, and August 2018 are attached.

SC III.7 All records reviewed and instantaneous values viewed during the inspection for the RTO were above 900 C and indicate the facility is in compliance with the process/operation restrictions. The operational records for individual dates in May 2017, January 2018, and August 2018 are attached.

DESIGN/EQUIPMENT PARAMETERS

There are no design or equipment paraments listed in the ROP.

TESTING/SAMPLING

Verification of VOC and ethylene emissions rates can be requested by the AQD. No AQD request has been made.

MONITORING/RECORDKEEPING

SC VI.1 The permittee monitors and records liquid flow rate for the 297 fugitive dust scrubber, liquid flow rate for the 803 packaging scrubber, liquid flow rate for the 802 raw material scrubber, and the pressure drop across the secondary inline filter for the 803 tote loading process on an hourly basis or more frequently.
SC VI.2 The permitee monitors and records the liquid flow rate for the 313 blender cyclone (associated with Vent No. SVB5017)on an hourly basis or more frequently.

SC VI. 3 The permitee monitors and records exit bed PSA temperature and combustion chamber RTO temperature on an hourly basis or more frequently.

SC VI.4 Each calendar month the permittee calculates and record the VOC emissions, excluding fugitive emissions, to demonstrate compliance with the 12-month rolling time period VOC emission limit specified in SC I.1. During the PTI issuance process in 2013, many of the emission estimates were reviewed. The company Management of Change procedure is used to review process changes that impact current calculations.

The February 2019 12 month rolling calculation method was reviewed. Each month the totals from individual vents by pollutant is calculated. Each vent emissions recorded are based on throughput of each input into process steps including the number of batches by product and emission estimates by product. Depending on process vent emissions and which vent and/or control device emissions are vented to a pollutant control efficiency is applied. For example, PSA vent 1 does not remove ethylene but ethylene vented to the RTO has a 99.9% destruction rate applied.

For vents 2 through 9, (continuous vents), hours of process activity and venting are recorded. An emission lbs/hr rate is applied based on prior sampling. There are no recovery steps prior to being vented to the RTO where a destruction rate of 98% to >99% is applied depending on the VOC.

For dry vents (off blenders) no recovery occurs and capture efficiency is based on performance testing. Performance testing was conducted on the PSA in 2008.

SC VI.5 The permittee tracks control device malfunctions and operating parameter deviations.

SC VI.6 The permittee monitors and records the number of hours the ETHOCEL Production Facility operates while bypassing the RTO and/or 954 THROX via vents SVB5001, SVB5030, SVB5006, SVB5007, SVB5008, and/or SVB5009 on a monthly and 12 month rolling basis.

SC VI.7 The permittee conducts daily visible emissions check of Vent No. SVB5015 during routine operating conditions. Which is normally a 5 day a week daytime operation.

SC VI.8 Records reviewed found no VEs were detected during periods of operation when VE checks were conducted.

SC VI.9 Records reviewed indicate monitoring was conducted required intervals when the pollutant-specific emissions unit was operating.

SC VI. 10 No quality improvement plan is required.

REPORTING

Records review of Semi annual deviations found:

During August 2018 EHS Audit it was determined that reported quantities of certain chemicals under RMP (40CFR Part 63) did not fully address actual inventories. RMP documentation updated and will be sent to EPA.

Records review of CAM exceedance reports and Cam monitoring downtime found:

No CAM exceedances, excursions or CAM monitoring downtime

Records review of MACT FFFF (MON) found no deviations reported

Records review of MACT Subpart G & H (HON) found:

monitoring and repairs performed as required, no deviations, and no SSM events. The EUB5 HON subject chemical manufacturing process unit (CMPU) only has Group 2 emission points. Also no fugitive components ae routed to a closed vent system and control device.

One DOR 5/24/2018 on an agitator. Repaired and monitored 5/25/2018.

Records review of Release reports from January 2017 through December 2018 found:

5/23/2017 Approximately 35 minute Ethyl Ether release of 11 lbs total.

While investigating an in-plant alarm, operations personnel discovered a leak coming from a pipe. The process was immediately shutdown and the pipe was isolated, stopping the leak.

STACK/VENT RESTRICTIONS

The following stack information listed in the table below was reviewed during the inspection.

Stack & Vent ID	Maximum Exhaust Diameter/Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements

Stack & Vent ID	Maximum Exhaust Diameter/Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVB5001 PSA to Atmosphere post liquid compressors when RTO & 954THROX is unavailable	16[1]	70[1]	R 336.1225
2. SVB5002 (vertical discharge not required) ELIMINATED now vents to PSA	12[1]	10[1]	R 336.1225
3. SVB5006 (vertical discharge not required) Wash & Neutralization evaporative process to atmosphere when RTO is unavailable	24[1]	39[1]	R 336.1225
2. SVB5007 Wash & Neutralization vacuum pump to atmosphere When RTO is unavailable	8[1]	46[1]	R 336.1225
3. SVB5008 Dewater to atmosphere when RTO is unavailable	6[1]	26[1]	R 336.1225
4. SVB5009 (vertical discharge not required) Drying to atmosphere when RTO is unavailable	10[1]	31[1]	R 336.1225

Stack & Vent ID	Maximum Exhaust Diameter/Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
5. SVB5010 (vertical discharge not required) 297 Fugitve dust scrubber	6[1]	31[1]	R 336.1225 Vent from CAM subject device
6. SVB5011 (vertical discharge not required) 803 Packaging scrubber	8[1]	10[1]	R 336.1225 Vent from CAM subject device
7. SVB5013 Operator safety while sampling for process quality control	6[1]	58[1]	R 336.1225
8. SVB5014a (vertical discharge not required) 802 Raw Material Scrubber	12[1]	2[1]	R 336.1225 Vent from CAM subject device
9. SVB5014b (vertical discharge not required) 802 Raw Material Scrubber	12[1]	2[1]	R 336.1225 Vent from CAM subject device
10. SVB5015 (vertical discharge not required) 803 Building blender baghouse	10[1]	61[1]	R 336.1225 Vent from CAM subject device
11. SVB5016 (vertical discharge not required) 803 tote loading baghouse and packaging blower	6[1]	10[1]	R 336.1225 Vent from CAM subject device
12. SVB5017 313 blender cyclone	10[1]	64[1]	R 336.1225 Vent from CAM subject device

Stack & Vent ID	Maximum Exhaust Diameter/Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
13. SVB5030 (vertical discharge not required) Pre or post PSA to atmosphere when both liquid ring compressors unavailable & neither RTO or 954THROX available	3[1]	70[1]	R 336.1225
14. SVB5031 RTO	38[1]	60[1]	R 336.1225

OTHER REQUIREMENTS

Preventative maintenance records reviewed for the liquid flow meter for the 297 fugitive dust scrubber, liquid flow meter for the 803 packaging scrubber, combustion chamber RTO temperature meters, and exit bed PSA temperature meters show calibrations were conducted on the instruments in October 2018.

SC 1. Based on records review the permittee did not operate the portions of the ethyl cellulose process designed to be vented to the PSA for more than 24 hours when failure of both liquid ring compressors, or the RTO and 954 THROX were both unavailable.

SC 2. Based on records reviewed the permittee did not operate the 297 Densification System unless the 297 fugitive dust scrubber was installed, maintained, and operated in a satisfactory manner.

SC 3. The 297 fugitive dust scrubber (associated with Vent No. SVB5010) is equipped with a continuous liquid flow indication device that is maintained including calibrations.

SC 4. The 803 packaging scrubber (associated with Vent No. SVB5011) is equipped with a continuous liquid flow indication device that is maintained including calibrations.

SC 5. The 313 blender cyclone (associated with Vent No. SVB5017) is equipped with a continuous liquid flow indication device that is maintained including calibrations.

SC 6. Records indicate there was no transfer of raw materials which vent to the 802 Raw Material Scrubber without the 802 Raw Material Scrubber installed, maintained, and operated in a satisfactory manner.

SC 7. The 802 Raw Material Scrubber (associated with Vent Nos. SVB5014a and SVB5014b) is equipped with a continuous liquid flow indication device that is maintained including calibrations.

SC 8. Based on records review the permittee did not operate the 803 tote loading process with packaging blower unless the associated baghouse with secondary inline filter was installed, maintained, and operated in a satisfactory manner.

SC 9. The secondary inline filter associated with the 803 tote loading process (Vent No. SVB5016) is equipped with a pressure drop indication device that is maintained including calibrations.

SC 10. The Pressure Swing Adsorber is equipped with exit bed temperature indication devices.

SC 11. The Regenerative Thermal Oxidizer is equipped with a combustion chamber temperature indication device.

SC 12. The EPA Consent Decree No. 1:11-cv-13330-TLL-CEB was terminated on February 27, 2017. The facility complied with provisions of the enhanced leak detection and repair (LDAR) program (ELP) as outlined in EPA Consent Decree No. 1:11-cv-13330-TLL-CEB and Appendix 10-S1 of the ROP. Other LDAR regulations that may be applicable.

SC 13. Based on records review, when the RTO was not available, the product washing process, the product washing vacuum pumps, the 297 product centrifuge, or the product drying process did not vent to atmosphere for not more than 336 hours per 12 month rolling time period as determined at the end of each calendar month.

SC 14. No CAM plan modifications have been proposed

NAME JDB DATE 4/8/2019 SUPERVISOR C. Hare