

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

A403347127

FACILITY: The Dow Chemical Company U.S.A., Midland		SRN / ID: A4033
LOCATION: 1790 Building, MIDLAND		DISTRICT: Saginaw Bay
CITY: MIDLAND		COUNTY: MIDLAND
CONTACT: Steve Persyn , SK Saran Americas LLC		ACTIVITY DATE: 11/30/2018
STAFF: Kathy Brewer	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MEGASITE
SUBJECT: SK Saran EU35-S3, FGSARANTTU-S3, FGCOLDCLEANER-S3, FGMONMACT-S3		
RESOLVED COMPLAINTS:		

SK Saran Inspection 11-30-2018

SK Saran Contacts: Brad Blanchard EH&S Specialist; Steve Persyn, Site Leader

The facility manufactures polyvinylidene chloride, or PVDC, resins. The products are used in a variety of packaging applications, including monolayer extrusion, flexible and rigid multilayer extrusion and extrusion coating applications.

Emissions reported to MAERs for 2018 from EU35-S3 were 2700 lbs VOC and 900 lbs PM. For FGSARANTTU-S3 emissions were 0 lbs VOC, 72 lbs PM, 29 lbs CO, 1600 lbs NOx, and 67 lbs SO2.

The SK Saran site has processes subject to the requirements of 40 CFR Part 63, Subparts A and FFFF and the equipment leak provisions of 40 CFR Part 63, Subpart H. The facilities do not have any emission units subject to the 40 CFR Part 63 Subpart Q or FF contained in Section B., Source Wide Requirements of the ROP.

EU35-S3 and FGSARAN TTU are CAM subject emission unit subject to the requirements of 40 CFR Part 64. The CAM subject pollutants for this emission unit are VOC and HAPs. CAM requirements are under FGSARANTTU-S3.

On September 5, 2018, ROP revision 201800035 was issued to add Section 3 to the ROP to reflect that the assets associated with EU35-S1 and FGSARANTTU-S1 have been divested from Dow Chemical Company. SK Saran Americas LLC now owns and operates these assets, and they have been established in Section 3 of the ROP. The owner of SK Saran, SK Global, is based in Seoul, South Korea.

While on site I reviewed historical and instantaneous operating parameters required to be monitored by the ROP. Walkthrough included viewing control devices and the associated metering and operating control equipment. All areas evaluated indicate the facility is in compliance with the requirements of MI-ROP-A4033-2017b.

Attachments

April 4, 2018, July 18/19, 2018, October 17/18, 2018

- SARAN TTU Combustion temperature
- Water scrubber total liquid flow rate
- quench exit gas temperature
- water scrubber pressure drop
- liquid flow rate of caustic scrubber
- pH of caustic scrubber
- EU35-S3 scrubber flow
- January 22, 2109 release report

April, July, and October, 2018 Emission calculations for EU35-S3
2018 PM records for EU35-S3 Reaction/Mixer tank and stripper pressure relief system

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 H (HON) March 2019, September 2018, March 2018
Chemical release reports January 2017 through December 2018

EU35-S3: Compliant

EU35-S35 is the suspension resin polymerization and finishing processes in the SARAN polymer manufacturing plant with reactors, separators, dryers, storage tanks/silos and related equipment. Equipment located in 564, 590, 591, 967, 988, and 989 Buildings. Portions of this process vent to the SARAN TTU, FGSARANTTU-S3 located in 989 Building.

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

EU35-S3 is a CAM subject emission unit subject to the requirements of 40 CFR Part 64. The CAM subject pollutants for this emission unit are VOC and HAPs. CAM requirements are under FGSARANTTU-S3.

This emission unit was permitted in PTI 246-04 in 2004 and rolled into the ROP in 2009.

In 2018 some process activities were idled and older reaction vessels are not in use currently. There is no immediate need for operating the idled activities. There is also the possibility that there will need to be changes prior to the start up of idled activities.

During the inspection we reviewed the EU32-S3 process and associated emission control devices, monitoring, and ROP required records. Train 1 was demolished in 2008. Train 2 was decommissioned in 2014; vented to the TTU when operating. The process operates as a "batch " activity up to the slurry tank where it becomes a "continuous" activity. On the day of the inspection Train 4 was not receiving new material into the reaction vessel but the slurry tank and operations downstream were running.

Pollution Control Devices:

APC Equipment	Vent No.
Baghouse	A-1 (SVEG35001)
Cyclone and water scrubber in series. (Idle)	A-4 (SVEG35004)
Cyclone and water scrubber in series. (Idle)	A-5 (SVEG35005)
Baghouse (Idle)	A-8 (SVEG35008)
Cyclone and baghouse in series.	A-9 (SVEG35009)
Cyclone and baghouse in series.	A-10 (SVEG35010)
Two filters in series. (Idle)	A-12 (SVEG35012)
Two filters in series.	A-13 (SVEG35013)
Baghouse (Idle)	A-17 (SVEG35017)
Baghouse (Idle)	A-18 (SVEG35018)
Baghouse (Idle)	A-19 (SVEG35019)
Baghouse (Idle)	A-20 (SVEG35020)
Baghouse (Idle)	A-22 (SVEG35022)
Baghouse (Idle)	A-23 (SVEG35023)
Baghouse (Idle)	A-24 (SVEG35024)
Baghouse (Idle)	A-27 (SVEG35027)
Baghouse (Idle)	A-32 (SVEG35032)
Baghouse	A-33 (SVEG35033)
Baghouse	A-34 (SVEG35034)
Baghouse (Idle)	A-35 (SVEG35035)
Cyclone and water scrubber in series.	A-36 (SVEG35036)

The slurry tank does not exhaust to the TTU. Drying, blending, dry screening, and packaging operations are exhausted to cyclones or baghouses

EMMISSION LIMITS:

The process has several vent specific emission limits. Emission records indicate the facility was in compliance with permitted limits.

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	March 2018	July 2018	October 2018
1. VOC	9.3 tpy ²	12-month rolling time period**	EU35	1.156 tpy	1.239 tpy	1.21 tpy
2. Methyl Acrylate (MA)	0.002 pph ²	Test protocol	Vent A-2	Not operating	Not operating	Not operating
3. MA	0.023 pph ²	Test protocol	Vent A-5 IDLE			
4. MA	0.0067 pph ²	Test protocol	Vent A-30 (SVEG35101 - SARAN TM TTU)	0.0006 lbs/hr	0.0006 lbs/hr	0.0006 lbs/hr
5. MA	0.023 pph ²	Test protocol	Vent A-36	Not reviewed	Not reviewed	Not reviewed
6. MA	0.002 pph ²	Test protocol	Vent A-37	Not reviewed	Not reviewed	Not reviewed
7. Particulate Matter (PM)	17.9 tpy ²	12-month rolling time period**	Vent A-35 IDLE			
8. PM	0.13 pph ²	Test protocol	Vent A-1			
9. PM	0.68 pph ²	Test protocol	Vent A-4 IDLE			
10. PM	5050 lbs/yr ²	12-month rolling time period**	Vent A-4 IDLE			
11. PM	1.08 pph ²	Test protocol	Vent A-5 IDLE			
12. PM	7890 lbs/yr ²	12-month rolling time period**	Vent A-5 IDLE			
13. PM	0.001 pph ²	Test protocol	Vent A-8 IDLE			
14. PM	0.032 pph ²	Test protocol	Vent A-9	#Not reviewed	#Not reviewed	#Not reviewed
15. PM	0.056 pph ²	Test protocol	Vent A-10	#Not reviewed	#Not reviewed	#Not reviewed
16. PM	0.41 pph ²	Test protocol	Vent A-12 IDLE			

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	March 2018	July 2018	October 2018
17. PM	205 lbs/yr ²	12-month rolling time period**	Vent A-12 IDLE			
18. PM	0.41 pph ²	Test protocol	Vent A-13	#Not reviewed	#Not reviewed	#Not reviewed
19. PM	205 lbs/yr ²	12-month rolling time period**	Vent A-13	1.25 lbs/yr	1.305 lbs/yr	1.56 lbs/yr
20. PM	0.052 pph ²	Test protocol	Vent A-17 IDLE			
21. PM	0.028 pph ²	Test protocol	Vent A-18 IDLE			
22. PM	0.057 pph ²	Test protocol	Vent A-19 IDLE			
23. PM	0.057 pph ²	Test protocol	Vent A-20 IDLE			
24. PM	0.057 pph ²	Test protocol	Vent A-22 IDLE			
25. PM	0.057 pph ²	Test protocol	Vent A-23 IDLE			
26. PM	0.067 pph ²	Test protocol	Vent A-24 IDLE			
27. PM	0.090 pph ²	Test protocol	Vent A-27			
28. PM	0.06 pph ²	Test protocol	Vent A-32			
29. PM	0.0007 pph ²	Test protocol	Vent A-33	#Not reviewed	#Not reviewed	#Not reviewed
30. PM	0.006 pph ²	Test protocol	Vent A-34	#Not reviewed	#Not reviewed	#Not reviewed
31. PM	0.13 pph ²	Test protocol	Vent A-35 IDLE			
32. PM	85 lbs/yr ²	12-month rolling time period**	Vent A-35 IDLE			
33. PM	1.08 pph ²	Test protocol	Vent A-36	#Not reviewed	#Not reviewed	#Not reviewed
34. PM	7890 lbs/yr ²	12-month rolling time period**	Vent A-36	592 lbs/yr	855 lbs/yr	759 lbs/yr

*This condition only restricts emissions from vent A-47 to the extent that such emissions come from EU35-S3 operations.

**12-month rolling time period as determined at the end of each calendar month

#The following was recorded for ALL VENTS Particulate emission tons/year for a 12 month period.

March 2018	July 2018	October 2018
0.163	0.266	0.310

MATERIAL LIMITS: There are no Material Limits in the ROP

PROCESS/OPERATIONAL LIMITS:

Review of records show the EU35-S3 was operating within permit required conditions. The operating parameters are monitored continuously with hourly average values being recorded.

SC III.1 Review of records show the scrubber venting to A-36 was operating with a total liquid flow rate above the permit required 20 gpm with the lowest flow found above 40 gpm. The scrubber emitting to Vent No. A-4 or Vent No. A-5 are idle and receive no exhaust from process activities.

SC III.3 Review of records show the Reactor Train 1 (VDC/Copolymer Resin) was only operated when the SARAN TTU was installed, maintained and operating in a satisfactory manner. Facility staff explained that no matter what train is operating, the facility will verify that the SARAN TTU is operating.

DATE	SC III.1 Liquid flow rate water scrubber exhausting to vent A-36 (min flow - 20 gpm)	SC III.1 Liquid flow rate water scrubber exhausting to vent A-4	SC III.1 Liquid flow rate water scrubber exhausting to vent A-5	SC III.3 SARAN TTO status (temperature -min 964 C)
4/4/2018	>40, <48	Idle	Idle	>960, <1010
7/19/2018	>40, <48	Idle	Idle	>975, <1005
10/17/2018	>40, <48	Idle	Idle	>1002, <1022

DESIGN/EQUIPMENT PARAMETERS: There are no design or equipment parameters listed in the ROP.

TESTING/SAMPLING: There are no testing or sampling requirements listed in the ROP.

MONITORING/RECORDKEEPING

SC VI.1 On site observation and review of records show the scrubber venting to Vent No. A-36 monitored and recorded the water flow rate on a continuous basis. The scrubber emitting to Vent No. A-4 or Vent No. A-5 are idle and receive no exhaust from process activities.

SC VI.2 The facility is required to perform VEs quarterly. Review of records from November 2017 – November 2018 show VEs are conducted monthly on active process vents. The process has many idle vents as indicated below.

APC equipment	VENT NO.	Status/activity
Baghouse	A-1 (SVEG35001)	
Baghouse	A-8 (SVEG35008)	Idle Idle
Cyclone & baghouse in series	A-9 (SVEG35009)	Dry blend
Cyclone & baghouse in series	A-10 (SVEG35010)	Dry blend
Two filters in series	A-12 (SVEG35012)	Idle

APC equipment	VENT NO.	Status/activity
Two filters in series	A-13 (SVEG35013)	Additive makeup
Baghouse	A-17 (SVEG35017)	Idle
Baghouse	A-18 (SVEG35018)	Idle
Baghouse	A-19 (SVEG35019)	Idle
Baghouse	A-20 (SVEG35020)	Idle
Baghouse	A-22 (SVEG35022)	Idle
Baghouse	A-23 (SVEG35023)	Idle
Baghouse	A-24 (SVEG35024)	Idle
Baghouse	A-27 (SVEG35027)	Idle
Baghouse	A-32 (SVEG35032)	Idle
Baghouse	A-33 (SVEG35033)	Packaging 4 train
Baghouse	A-34 (SVEG35034)	Dry blend
Baghouse	A-35 (SVEG35035)	Idle

SC VI.3 The number of batches is used to calculate emissions from activities. Aspen tool is used in calculating emissions.

Review of records show the required calculations are performed and recorded for each calendar month to demonstrate compliance with the 12 month rolling time period emission limits in the emission limits table for EU35-S3.

REPORTING

No deviations were reported in the Annual and Semi-Annual ROP Deviation reports for March 2019, Sept. 2018, or March 2019

The MACT FFFF reports include sections for Subpart H, SS, and WW.

No Deviations were reported in the MON MACT March 2018, Sept 2018, or March 2019 submittals

Records review of Release reports from January 2017 through March 2019 found:

one release on January 22, 2019 from a leaking pump. The leak was reported as lasting 18 minutes and resulted in 65 pounds of biphenyl, 5 pounds of phenol, and 2 pounds of benzene being released. The process was shutdown, the pump isolated, and water applied to knock down any vapors.

CAM reporting requirements are listed in FGSARANTTU-S3

STACK/VENT RESTRICTIONS

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

Stack & Vent ID	Maximum Exhaust Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. Vent #A-2 (SVEG35002)	12 ¹	106 ¹	R 336.1225 Train 3 slurry tank
2. Vent #A-4 (SVEG35004)	20 x 24 ¹	106 ¹	R 336.1225 Dryer exhaust (idle)
3. Vent #A-5 (SVEG35005)	30 x 30 ¹	106 ¹	R 336.1225 (idle)
4. Vent #A-6 (SVEG35006)	12 ¹	106 ¹	R 336.1225
5. Vent #A-26 (SVEG35026)	6 ¹	50 ¹	R 336.1225
6. Vent #A-30 (SVEG35101)	See FGSARANTTU-S3 ¹	See FGSARANTTU-S3 ¹	R 336.1225
7. Vent #A-36 (SVEG35036)	36 x 36 ¹	106 ¹	R 336.1225 Cyclone and water scrubber in series
8. Vent #A-37 (SVEG35037)	6 ¹	40 ¹	R 336.1225 Train 4 Slurry Tank
9. Vent #A-38 (SVEG35038)*	8 ¹	20 ¹	R 336.1225
*Vent No. A-38 discharges vertically down **Vent No. A-36 discharges horizontally			

OTHER REQUIREMENTS

SC IX.1. Review of the procedure for tank trucks loading to the vapor system or container vent to the SARANTTU appear to comply with the requirements for controlling emissions of vinylidene chloride/methyl acrylate during transfer operations and upon disconnection. The loading requires a manual hookup and valve opening. If the SARAN TTU is offline, the pressure will build within the vents and shut a valve so no more loading can occur.

Review of records show the SARANTTU was operating with a combustion temperature above the permit required 964 C with the lowest temperature found being 975 C.

SC IX.2. Review of 2018 preventative maintenance (PM) records for Reaction/Mixer tank and stripper pressure relief system indicate the facility is implementing and documenting the requires PM.

FGSARANTTU-S3: Compliant

Comprised of a thermal incinerator and a vent gas holding system located at 989 Building. The vent gas holding system stores vent gases to be incinerated at the SARAN TTU (thermal treatment unit) and it is used routinely by SK Saran and Dow. In the event the thermal incinerator goes off-line for any reason (e.g., exit gas temperature of the thermal incinerator is less than 964°C, etc.), the vent gas holding system is used to prevent vent gases from entering the thermal incinerator.

The SARAN TTU burns natural gas and process waste (including process vents) from emission units at SK Saran, and, The Dow Chemical Company EU02-S1 process and some processes covered by the Rule 290 permitting exemption.

This TTU is subject to the requirements of 40 CFR Part 63, Subparts A and FFFF. FGSARANTTU-S3 is a CAM subject emission unit subject to the requirements of 40 CFR Part 64. The CAM subject pollutants for this emission unit are VOC and HAPs.

POLLUTION CONTROL EQUIPMENT

- Water quench
- Water scrubber: This is a CAM subject control device.
- Caustic scrubber: This is a CAM subject control device.

EMISSION LIMITS: There are no emission listed in the ROP.

MATERIAL LIMITS: There are no material limits listed in the ROP.

PROCESS/OPERATIONAL LIMITS:

Review of records show the SARANTTU was operating within permit required conditions. The operating parameters are monitored continuously with hourly average values being recorded.

SC III.1 Review of records show the SARANTTU was operating with a combustion temperature above the permit required 964 C with the lowest temperature found being 975 C.

SC III.2 Review of records show the water scrubber was operating with a total liquid flow rate above the permit required 35 gpm with the lowest flow found above 40 gpm.

SC III.3 Review of records show the quench was operating with a exit gas temperature below the permit maximum of 95 C with the highest temperature found being below 64 C.

SC III.4 Review of records show the water scrubber was operating with a pressure drop across between the permit required 0.05 to 9 inches H₂O with the lowest instantaneous differential pressure found being 0.05 and the highest differential pressure being 4.0.

SC III.5 Review of records show the caustic scrubber was operating with a total liquid flow rate above the permit required 24 gpm with the lowest flow found above 27 gpm

SV III.6 Review of records show the caustic scrubber was operating with a pH above the permit required pH of 8 except for brief periods but hourly averages reviewed were above a pH of 8.

<i>Date</i>	<i>SC III.1 Thermal oxidizer temperature (min 964 C)</i>	<i>SC III.2 Liquid flow rate of water scrubber (min 35 gpm)</i>	<i>SC III.3 Exit as temperature of quench (<95 C)</i>	<i>SC III.4 Pressure drop across water scrubber (0.5 to 9 in H₂O)</i>	<i>SC III.5 Liquid flow rate of caustic scrubber (min 24 gpm)</i>	<i>SV III.6 pH of caustic scrubber (≥ 8)</i>
4/4/2018	>960, <1010	>52, <56	>10, <40	>0.05, <2	>29.5, <30.5	>8, <10.5
7/18/2018			>22, <60	>0.05, <2	>29.5, <30.5	>8, <11
7/19/2018	>975, <1005	>52, <56				
10/17/2018	>1002, <1022	>52, <56				
10/18/2018			>22, <42	>0.5, <2	>29.5, <30.5	>8, <10.5
11-30-2018 (instantaneous 12:55)	1008	43.6	17.6	1.37	30	9.36

DESIGN/EQUIPMENT PARAMETERS: There are no design or equipment paraments listed in the ROP.

TESTING/SAMPLING

Performance tests on FGSARANTTU-S3 can be requested by the AQD. No AQD request has been made.

MONITORING/RECORDKEEPING

SC VI.1 On site observation and review of records show the SARANTTU monitored and recorded quench solution flow rate and quench exit gas temperature on a continuous basis.

SC VI.2 On site observation and review of records show the SARANTTU monitored and recorded water scrubber pressure drop on a continuous basis.

SC VI.3 On site observation and review of records show the SARANTTU monitored and recorded the exit gas temperature, water scrubber solution flow rate, caustic scrubber flow rate, and caustic scrubber solution pH on a continuous basis.

SC VI.4 On site observation and review of records show the SARAN TTU is equipped with an exit gas monitoring device that is maintained.

SC VI.5 On site observation and review of records show the water scrubber is equipped with a liquid flow rate and a pressure drop monitoring device that are maintained.

SC VI.6 On site observation and review of records show the caustic scrubber is equipped with a liquid flow rate and a pH monitoring device that are maintained.

SC VI.7 Review of records show the facility maintained records of monitoring data, monitor performance data, and corrective actions taken for SARAN TTU No written quality improvement plan has been required.

REPORTING

The facility had not consistently included CAM excursion/exceedance reports and CAM monitoring downtime reports. The CAM excursion/exceedance reports and CAM monitoring downtime reports were submitted for the July – December 2017 and July – December 2018 timeframe. SK Saran was informed that CAM reports are required semi annually.

Records review of CAM exceedance reports and CAM monitoring downtime found no CAM exceedances, excursions, or CAM monitoring downtime.

No Deviations were reported in the MON MACT March 2018, Sept 2018, or March 2019 submittals.

No deviations were reported in the Annual and Semi-Annual ROP Deviation reports for March 2019, Sept. 2018, or March 2019

STACK/VENT RESTRICTIONS

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

Stack & Vent ID	Maximum Exhaust Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVEG35101 Saran TTU Vent# A-30	18 ²	50 ²	R 336.1201

OTHER REQUIREMENTS

SC IX.1 Records review indicate the SARAN TTU is in compliance with the requirements of 40 CFR Part 63 Subpart A and Subpart FFFF

SC IX.2 , SC IX.3 Records review indicate the SARAN TTU is in compliance with the requirements of 40 CFR Part 64.

FGCOLDCLEANERS-S3: Compliant

Safety Kleen is contracted to empty and maintain cold cleaners. Monthly inspections are performed.

FGMONMACT-S3: Compliant

No Deviations were reported in the MON MACT March 2018, Sept 2018, or March 2019 submittals. An Annual inspection was conducted 5/22/2018 (closed vent system Subpart SS). For FGSARANTTU All required monitoring was performed and parameters were within limits. No downtime of the TTU.

For Subpart H of MON report: No DOR. No leaks detected. No Group 1 process wastewater excursions No SSM.

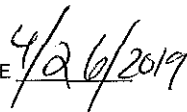
Miscellaneous:

The Appendix 2 Schedule of Compliance language is not correct due to editing errors. The language should reflect that there is no Schedule of Compliance for A4033 Section 2.

NAME



DATE



SUPERVISOR

