

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

A404360747

FACILITY: Dow Silicones Corporation		SRN / ID: A4043
LOCATION: 3901 S Saginaw Rd, MIDLAND		DISTRICT: Bay City
CITY: MIDLAND		COUNTY: MIDLAND
CONTACT: Amanda Karapas , Air Specialist		ACTIVITY DATE: 11/03/2021
STAFF: Gina McCann	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MEGASITE
SUBJECT: EU2501-12 and EU2501-16		
RESOLVED COMPLAINTS:		

DOW Silicones/EGLE-AQD staff present during the inspection:

- Gina McCann (EGLE-AQD, Senior Environmental Quality Analyst)
- Amanda Karapas (Air Specialist, DOW Silicones)
- Drew Jenkins, (Production Engineer for 2901 Building, DOW Silicones)

The plant was in compliance with the requirements of the associated permits at the time of the inspection.

EU2901-12

PTI 125-10A is the most recent issued PTI for this process which is described as a distillation pilot process consisting of distillation column and ancillary equipment.

On the front end of the process, material is received in 120 gallon cylinders. The plant pressure unloads the cylinders through a pressure phase separator and then through two sev beds to remove impurities. Depending on which bed they go through the material will go into one of two holding tanks. Trichlorosilane is in one tank and tetrachlorosilane is in the other. Both paths vent to a pre-cryogenic cooler and then to the cryogenic condenser.

In the back end of process, the material goes through a distillation column which separates overheads and bottoms. The overheads get taken off as waste. Product goes to a side draw where material is collected into three product tanks. Product is loaded into cylinders and headspace is vented to the pre-cryogenic cooler and then cryogenic condenser.

The permit restricts operation of EU2901-12 except during the phase separator cleanout operation. During this process an operator will get an audio and visual alert that valves need to be closed so that the process does not emit while performing the cleanout. This essentially holds emissions from being released.

Special condition (SC) I.1. limits VOC emissions to 7.5 tpy based on a 12-month rolling time period as determined at the end of each calendar month. SC VI.3. Is the associated monitoring and recordkeeping requirement to keep, in a satisfactory manner, monthly and 12-month rolling time period records of the VOC emission rate from EU2901-12. For the 12-month rolling time period ending September 2021, VOC emissions were 1.70 ton per year (tpy).

SC IV.1. restricts operation of EU2901-12 unless the cryogenic condenser coolant temperature is -40°F or less, except during the phase separator cleanout operation. SC VI.1. Is the associated monitoring and recordkeeping requirement to keep,

monitor and record, in a satisfactory manner, the cryogenic condenser's coolant temperature on a continuous basis. I reviewed condenser temperature from January 1, 2020 through November 2, 2021. The condenser operated in a satisfactory manner during this period of time. During periods when the condenser appeared to exceed the -40°F, I was able to verify the process was not in operation.

During the inspection the condenser was operating at -47C with a high alarm setpoint at -40C.

SC IV.2. requires the plant to equip and maintain the cryogenic condenser with a coolant temperature indicator. The temperature transmitter (TT-26983) was calibrated on March 18th of 2021 and 2020.

EU2901-16

PTI 180-15A is the most recent issued PTI for this process which is described as 2901 B Module Twin Screw Extruder located in the 2901 building.

The material can has two paths. The first path takes in raw material (starts as a slurry) into a feed tank with an agitator, which then goes through a pre-heater to a twin screw extruder which has a vacuum to take off the volatiles, i.e. xylene. The xylene contact condenser 16621 is the control device for this process.

Alternatively, the slurry can move into the screw extruder and then to a flaker then to hopper where it is a solid at this point (MQ-16XX). The solid product is then packaged. Baghouse 24455 torit baghouse is used in the packaging process and then to vented to atmosphere (SV2901-11). The baghouse has a magnahelic that operators check during rounds. The operators confirmed they check the pressure differential during daily rounds. The baghouse was identified in a deviation report in January 2018. The plant is currently preparing a PTI package and the baghouse will be included in the application.

SC III.1. restricts operation of EU2901-16 unless the condenser 16621 temperature is 35C or less. SC VI.2. Is the associated monitoring and recordkeeping requirement to keep, monitor and record, in a satisfactory manner, the condenser's temperature on a continuous basis. I reviewed condenser temperature from January 1, 2020 through November 2, 2021. The condenser operated in a satisfactory manner during this period of time. On April 24, 2020 and May 11, 2020 the condenser temperature exceeded 35C. However, the process was not in operation during these times.

SC I.1. limits VOC emissions to 9.9 tpy based on a 12-month rolling time period as determined at the end of each calendar month. SC VI.3. Is the associated monitoring and recordkeeping requirement to keep, in a satisfactory manner, monthly and 12-month rolling time period records of the VOC emission rate from EU2901-16. For the 12-month rolling time period ending September 2021, VOC emissions were 2.99 tpy.

SC IV.2. requires the plant to install, calibrate, maintain and operate in a satisfactory manner, a device to monitor and record the exhaust gas temperature of condenser 16621 on a continuous basis while EU2901-16 is operating. The temperature transmitter (TT-2322) was last calibrated on November 2, 2020 and December 10, 2019.

NAME *Mina J. Farn*

DATE 11/8/2021

SUPERVISOR *Chris Hare*