

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

A404330679

FACILITY: Dow Corning - Midland Plant		SRN / ID: A4043
LOCATION: 3901 S Saginaw Rd, MIDLAND		DISTRICT: Saginaw Bay
CITY: MIDLAND		COUNTY: MIDLAND
CONTACT: Mike Gruber , Air & Water Team Leader		ACTIVITY DATE: 08/18/2015
STAFF: Kathy Brewer	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MEGASITE
SUBJECT: EU108-01, EU212-01 & EU22-12		
RESOLVED COMPLAINTS:		

Inspection date: 8/18/2015  
Inspection started: 8:30 am  
Inspection ended: 12:30 pm

Dow Corning and MDEQ-AQD staff present during the inspection.

Kathy Brewer (MDEQ-AQD, Environmental Quality Analyst)  
Mike Gruber (Dow Corning, Air & Water Team Leader)  
Nathan Bussiere (Dow Corning, 100 Block Engineer --EU 108-01)  
Brian Nimmo (Dow Corning, 212 Bldg Manufacturing Engineer)  
Laura Lindgrin,(Dow Corning, Air Quality Engineer, Midland Site Services)

This inspection is part of a 3 year FCE compliance evaluation that began in September 2014.

Compliance was based in part on the conditions in PTI 622-92C, 63-14, and 48-14A that were issued in 2014 but not yet rolled into ROP MI-ROP-4042-2008. Dow Corning has submitted Modification requests to the AQD for the above PTIs.

**Attachments:**

Jan – June 2015 VOC 12 month rolling averages for all 3 EUs  
March 14, 2015 EU108-01 carbon drum weight records  
March 15, 2015 Glycol chiller supply (inlet) temperatures (EU 212-01 & EU212-12)  
2014 MAERS summary for site & RG-100 (108-01) & RG 212

**Documents reviewed:**

2014 and 2015 Annual & Semi Annual ROP deviation reports  
MAERS 2014 reported emissions

**EU108-01 (PTI 622-92C): Compliant**

EU108-01 is a batch platinum catalyst processing operation, used to produce platinum II catalysts and platinum IV catalysts. The emission control is a refrigerator condenser for platinum IV production, or a HCL scrubber for platinum II production, and, a two stage carbon drum adsorbtion system.

At the time of the inspection the 20729 condenser temperature thermocouple was installed and operating properly.

Per the first 2014 semi -annual ROP report, on 2/6/2014, the coolant inlet temperature on condenser 20729 exceeded -20F for 2 hours and 15 minutes due to a bad solenoid on the glycol compressor. Emission calculations performed at the increased temperature indicated that there were no excess emissions.

An October 2014 PTI modification (622-92C) addressed SC IV. 3. Requirement to operate a refrigerated condenser during platinum IV production. This requirement was changed to apply only during the reaction step of this process as it was identified as the only process step with significant emissions.

SC IV.1 regarding the carbon change-out procedure for the carbon adsorbtion system was also changed to be more consistent with the facilities change-out method of weighing both carbon drums and replacement of the first drum is triggered by total weight gain of both drums. The original condition referred to 1,3-butadiene loading. Total weight gain for the carbon adsorbtion drums, which would

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include all VOC captured by the carbon, is considered a conservative approach and not an underestimate of 1,3-butadiene loading.

The VOC emission limits for EU108-01 are 11.6 pph (test protocol averaging period) and 0.7 tons/year on a 12 month rolling average. Both limits are based on R 225 & R 702(a). The attached 12 month rolling average VOC emissions from January through June 2015 range from 600 to a maximum of 842 lbs./month or 0.3 to 0.42 tpy.

The attached March 14, 2014 EU108-01 carbon drum weights show a change out after the drums reach a weight gain of 17.7 kg (~39 lbs). The system threshold is (alarm) is set at 20.5 kg (~45 lbs).

There were two occasions reported in the Annual & Semi - Annual deviation reports when the EU108-01 carbon drums exceeded the 45 pound drum total weight gain limit. Between 12/14 and 12/16/2014, the combined drum weight gain was reported as 53 pounds. On 2/28/2015, the combined weight gain was 46 pounds for 2 hours. Dow Corning does not believe there were excess emissions as each drum is rated to control emissions up to a gain of 45 pounds.

During the inspection Dow Corning (DC) discussed that they would like to determine an increased drum gain weight based on demonstrated additional removal capacity of each drum. This would require DC to establish the break through point and maximum weight gain for the second stage drum from which a permit condition can be proposed through submittal of a PTI modification.

EU108-001 emissions are included in MAERS as part of the RG-100 emissions.

#### **EU212-01(PTI 63-14): Compliant**

EU212-01 covers a batch reaction process consisting of the 6054 Batch Kettle (an agitated, jacketed kettle), a heater, a receiver, and a service water cooled heat exchanger located in 212 building. Emissions controlled by chilled condenser 6060 exhaust to SV212-07. Uncontrolled emissions from drum off of final product are exhausted through SV212-08.

Condition no. VI.1 EU212-01 of PTI 63-14 states, in part, DC shall monitor and record, on a continuous basis (i.e., at least once every 15-minutes), the chilled condenser 6060 coolant temperature. Condition no. III.1 of the PTI states, while EU212-01 is venting to chilled condenser 6060, DC shall not operate EU212-01 unless the chilled condenser 6060 coolant temperature is -10 degrees C or less.

The condenser temperature is based on the monitored supply from the glycol chiller. A review of the attached glycol chiller supply temperatures for March 15, 2015 shows a range of temperatures from -10.90 to -11.81 C.

A PTI modification request to increase the condenser coolant temperature from -10 to 10 C was approved on August 27, 2015 (PTI 63-14A). The company demonstrated that the increased chiller temperature will maintain vent temperatures at <25 C which is the same vent temperature used to calculate emissions.

Condition no. VI.3 of PTI 63-14 states, DC shall keep monthly and 12-month rolling time period records of the VOC emission rate from EU212-01. Condition no. I.1 of the PTI limits VOC emissions from EU212-01 to 0.88 tpy. Limits are based on R 205(3) & R 702(a).

On August 24, 2015, M. Gruber provided me with the 12-month rolling total VOC emissions for Jan - June 2015. The attached 12 month rolling average VOC emissions from January through June 2015 range from 717 to a maximum of 955 lbs./month or 0.36 to 0.48 tpy.

EU212-01 emissions are included in MAERS as part of the RG-212 emissions.

EU212-01 also emits siloxanes at levels not specifically limited in the PTI.

#### **EU212-12 (PTI 48-14A): Compliant**

EU212-12 covers a batch reaction process consisting of the 20400 Batch Kettle (an agitated, jacketed kettle), a trap, a receiver, and two service water cooled heat exchangers located in 212

building. Reaction emissions are controlled by chilled condenser HX20407 vented to SV212-023. Emissions from manual additions to the kettle are vented to SV212-3. Emissions from product from off are vented to SV212-018.

Condition no. VI.1 of PTI 48-14 states, in part, DC shall monitor and record, on a continuous basis (i.e., at least once every 15-minutes), the chilled condenser HX20407 coolant temperature. Condition no. III.1 of the PTI states while EU212-12 is venting to chilled condenser HX20407, the permittee shall not operate EU212-12 unless the chilled condenser HX20407 coolant temperature is -10 degrees C or less.

The condenser temperature is based on the monitored supply from the glycol chiller. This is the same glycol chiller that supplies condenser 6060 of EU212-01. Every 15 minutes a summary of the temperature is automatically recorded. A review of the attached glycol chiller supply temperatures for March 15, 2015 shows a range of temperatures from -10.90 to -11.81 C.

A PTI modification request to increase the condenser coolant temperature from -10 to 10 C was approved on August 27, 2015. The company demonstrated that the increased chiller temperature will maintain vent temperatures at <25 C which is the same vent temperature used to calculate emissions.

Prior to issuance of PTI 48-14, emissions from EU212-12 were considered exempt and tracked as a R290 emission unit. DC updated vent calculations and emissions based on updated emission factors. Per the first semi-annual deviation report for 2014, when evaluated with the updated vent calculations, ethylbenzene emissions exceeded the R290 10 lb/month limit for Jan – April 2014 by 11.6, 10.3, 21, and 15.5 pounds respectively.

PTI 48-14 was issued on May 1, 2014. Condition no. I.1 of the PTI limits VOC emissions from EU212-12 to 4.05 tpy. Condition no. VI.3 of PTI 48-14 states, DC shall keep monthly and 12-month rolling time period records of the VOC emission rate from EU212-12. Limits are based on R 205(3) & R 702(a).

On August 24, 2015, M. Gruber provided me with the 12-month rolling total VOC emissions for Jan – June 2015. The attached 12 month rolling average VOC emissions from January through June 2015 range from 3481 to a maximum of 3884 lbs./month or 1.7 to 1.9 tpy.

EU212-12 emissions are included in MAERS as part of the RG-212 emissions.

EU212-12 also emits siloxanes at levels not specifically limited in the PTI.

Condition no. VI.4 of table EU212-12 of PTI 48-14 states, DC shall keep daily records of the time that EU212-12 vents through SV212-003. Condition no. IV.2 of the same table in the PTI states, DC may vent EU212-12 through SV212-003 while bypassing chilled condenser HX20407 for up to three hours per day. When the manway is opened, a switch is activated that records the length of time opened. An alarm occurs to notify the operators after the manway has been open for one hour. The daily log is reviewed to maintain manway open hours below 3 hours per day. On August 24, 2015, M. Gruber provided me with the attached daily bypass records for the month of March 2015. According to the records, DC did not vent through SV212-003 for more than 30 minutes a daily basis in March 2015.

#### General

Dow Corning uses generally Emission Master software for calculating emissions batch process emissions and ASPEN for continuous operations. Details of calculations are submitted with PTI application information and verified with testing where appropriate. Emission calculations are reviewed once/ 5 years or more frequent if warranted by process or control changes.

NAME



DATE

9/30/2015

SUPERVISOR

C. Pare

9/30/2015

