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

N304438451

FACILITY: EMERALD GRAPHICS INC		**SRN / ID:** N3044
LOCATION: 4949 GREENBROOKE DR SE, KENTWOOD		**DISTRICT:** Grand Rapids
CITY: KENTWOOD		**COUNTY:** KENT
CONTACT: Brian Dillon , Paint Manager		**ACTIVITY DATE:** 01/19/2017
STAFF: April Lazzaro	**COMPLIANCE STATUS:** Non Compliance	**SOURCE CLASS:** SM OPT OUT
SUBJECT: Unannounced, scheduled inspection.		
RESOLVED COMPLAINTS:		

Staff, April Lazzaro arrived at the facility to conduct an unannounced, scheduled inspection. Accompanying me was Phil Salinas, Program Manager for the Emergency Management and Homeland Security Training Center. Mr. Salinas is assisting the Air Quality Division on Safety Training, and was observing the inspection activities from a training perspective. Mr. Salinas and I met with Brian Dillon, Paint Manager and I informed him of my purpose as well as Mr. Salinas'.

FACILITY DESCRIPTION

Emerald Graphics is a plastic parts coating facility operating two coating lines, and is permitted pursuant to General Permit to Install (PTI) No. 401-08 and Opt-out PTI No. 91-12. The facility used to operate an electropolishing tank, however that was removed approximately five years ago. The AQD database has been updated to reflect the removal of this equipment. Emerald applies paint to plastic parts for the automotive and appliance industries. Very little plastic molding is conducted on-site, as most of it is customer owned/provided. During the pre-inspection meeting we discussed the catalytic oxidizer and the most recent catalyst testing which was sent to Megtec for evaluation in 2015. This is a honeycomb style catalyst and the 2015 results (attached) indicated a 95% control efficiency at 650°F.

COMPLIANCE EVALUATION

PTI No. 401-08

This is a General PTI for coating lines and covers volatile organic compound (VOC) emissions for both the EU-ROBOT line, which is controlled by a thermal oxidizer and consists of five booths; and the EU-BUTTON line, which exhausts uncontrolled and consists of three booths.

FG-COATING

Prior to the parts entering the EU-ROBOT line, each one is blown off and is wiped with a disposable cloth that comes pre-saturated with water and isopropyl alcohol, which is a VOC. Emissions from these wipes are currently unknown, and I asked for a Safety Data Sheet and the quantities used. The supplier of the wipes calculated the emissions from 2016 for Emerald and determined to be an additional 1.92 tons VOC per year. This needs to be added to the line as a monthly emission of VOC that is uncontrolled in association with EU-ROBOT. Due to the fact that these emissions have not been maintained, this is a violation of PTI No. 401-08, FG-COATING; Special Condition (SC) No. VI.3.d&e and FG-SOURCE SC No. I.VI.

Emission Limits

Emission limits for VOC's from each coating line (EU-BUTTON and EU-ROBOT) are 2,000 lb/month including all associated purge and clean-up operations, and 10 tons per year on a 12-month rolling time period. Emissions information for each line was provided and reviewed. The EU-ROBOT line uses a control factor for the use of the catalytic oxidizer while the EU-BUTTON line does not. Emissions information for the EU-ROBOT line was requested and received. Additionally, I gave Mr. Dillon a list of coatings that I would like an updated SDS for to review the data in the calculations. Emerald is maintaining a current and updated list of VOC and HAP containing material used.

The EU-BUTTON line is in operation with three booths and is used approximately three days a week. Emissions information for each line was provided and reviewed. Emissions from EU-BUTTON line are reported at 1,180 lbs in March of 2016 and 3.72 tons per 12-month rolling time period.

Current monthly emissions for EU-ROBOT are reported at a high in November 2016 at 564 pounds and the 12-month rolling total was highest in November at 2.863 tons. Currently, Emerald is not reporting monthly pounds, just monthly tons of emissions. It is recommended that the format be changed to identify monthly pounds of VOC as required by the permit.

Process/Operational Restrictions

In each of the five booths on the EU-ROBOT line, there is a purge can which the robot uses to dispose of purge MEK used in between color changes. Mr. Dillion has been recording that the facility disposes of 100% of this purge MEK. Both Mr. Salinas and I disagreed with this approach. Due to the airflow in the booth going across the top of the MEK containing can, it is certain that evaporation is occurring and that it is not all going out as waste. I asked Mr. Dillion to conduct an evaluation in order to see how much MEK is lost on average per can per booth per day. Then, add that loss information to his recordkeeping. He stated he would do that.

Design/Equipment Parameters

The lines have been considered non-fugitive enclosures with 100% capture efficiency. Based on the observations made during the inspection this appears accurate, with the comment being made that the areas with the paint distribution pots on the EU-ROBOT line must have the doors closed to claim 100% capture. Mr. Dillon agreed to ensure these stay closed. They also conduct "smoke" puff testing to ensure air flow is into the booths. Mr. Dillion confirmed that the robots utilize HVLP technology and have test caps available. The filtration on the booths consists of five stages of filters, starting within the booths as well as in the ductwork before the catalytic oxidizer. Each stage has a pressure drop gauge that is monitored and the filters are charged according to the maintenance routine.

We discussed the recordkeeping for the inlet and outlet temperature of the catalytic oxidizer. Mr. Dillon indicated that they installed a thermocouple for the outlet temperature after AQD staff's last visit to meet the permit requirements. Upon observation of the temperature, and information provided by Mr. Dillon the oxidizer inlet temperature was consistently above the 600°F permit requirement. Mr. Dillon stated that the setpoint is 650°F and if the temperature goes below that, the line will shut down. The outlet temperature of the oxidizer is between 300° and 400°F. The way

a catalytic oxidizer is supposed to work, is that the solvent laden gas enters and is heated to a minimum of 600°F. Upon traveling across the catalyst an exothermic chemical reaction occurs and the temperature should increase between 50° and 200°F, which demonstrates the solvent has been completely oxidized. Ten weeks of temperature charts are attached.

We went outside to conduct an inspection of the oxidizer itself. I asked Mr. Dillion when the last time a complete inspection had been conducted on the unit by a company that specializes in catalytic oxidizers and he indicated it had not occurred in the past five years or more. The oxidizer is actually enclosed in a trailer of sorts. There is an access door on one end, where the natural gas inlet area can be observed. We walked along the area between the building and the shell to the other access door at the other end where the outlet exhaust fan and base of stack was observed. Each area comprises a confined space type situation and due to that fact, neither area was accessed. We wanted to see where the thermocouple was located for the outlet temperature readout and it appeared to be located in an acceptable area, but again due to access that is not clear. We continued around the exterior shell in a circle, when I noted a loud noise near the inlet side of the unit. It was determined that air infiltration appeared to be occurring which was audible and tactile when I placed my hand by the seals. I informed Mr. Dillion that Emerald Graphics needs to get an oxidizer specialist out to conduct an inspection on this unit to determine what is going on. It was recommended that this occur ASAP but not later than 60 days.

Upon receipt of a report from the inspection, it is to be submitted to the AQD. At that time the emissions data will be revisited to ensure compliance. In addition to the formal inspection, the AQD requires that Emerald Graphics prepare a Malfunction Abatement/Preventative Maintenance Plan pursuant to Rule 911. This plan shall be submitted by March 31, 2017.

Since the inspection, Mr. Dillon stated that the thermocouple that is recording outlet temperature is the stack temperature, not the temperature following the catalyst. He indicated he will hook the correct thermocouple to the temperature chart. This information should be verified and documented during the oxidizer inspection.

Testing/Sampling

Testing of the coating formulations are not required at this time.

Monitoring/Recordkeeping

During the extensive recordkeeping review, AQD staff was unable to reproduce the emissions data that Emerald staff provided. It was determined that the company was double counting for the mix ratio of coating for Hazardous Air Pollutants (HAP), and the VOC in the raw data did not match the month information provided in the spreadsheets. When questioned in a phone call, Emerald staff confirmed this error. Therefore, emissions are not accurate for VOC. This is a violation of General PTI No. 401-08 Special Condition (SC) No. VI.3.d & e. Emerald should update the recordkeeping with the correct information so that there are five years of accurate information as required by the permits. This shall be submitted as part of the compliance plan to demonstrate that no emission limits have been exceeded.

As indicated above, Emerald is recording the stack gas temperature and not the outlet temperature of the catalyst bed. This is being remedied, and as indicated above

should be addressed in the Malfunction Abatement/Preventative Maintenance Plan and unit inspection.

Stack/Vent Restrictions

Staff did access the roof to observe the condition of the stacks. No issues were identified from a visual inspection, and no recent changes appeared to have taken place.

Other Requirements

There did not appear to be any replacement or modification of FG-COATING.

FG-SOURCE

Emission Limits

Emission limits for VOC's from all operations at the facility are limited to 30 tons per 12 -month rolling time period. Reported facility VOC emissions are at 6.533 tons per 12-month rolling time period ending in December 2016. Records were received; however, as indicated above the emissions are not being correctly calculated and not all VOC emissions are accounted for. Updated emissions shall be submitted as part of the compliance plan to demonstrate that no emission limits have been exceeded

PTI No. 91-12

This is an Opt-out PTI limiting the emissions of Hazardous Air Pollutants (HAP) to less than the major source thresholds.

FGFACILITY

Emission Limits

Each individual HAP is limited to less than 9.0 tons per 12-month rolling time period. The highest reported HAP is xylene at 0.154 tons per 12-month rolling time period ending in December 2016.

Aggregate HAPs are limited to less than 22.5 tons per 12-month rolling time period. The reported total facility HAP emissions are 0.26 tons per 12-month rolling time period ending in December 2016.

Testing/Sampling

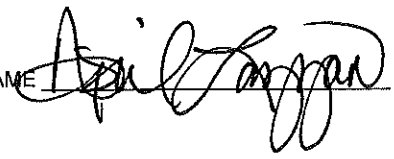
The facility had previously requested and received permission to utilize manufacturer's formulation data to determine HAP content of coatings. This is still being done.

Monitoring/Recordkeeping

HAP records were reviewed and it was determined that the company was double counting for the mix ratio of coating of HAPs in the spreadsheets for EU-ROBOT and EU-BUTTON. Therefore, emissions are not accurate for HAP, and are higher than reported. When questioned in a phone call, Emerald staff confirmed this error. This is a violation of Opt-out PTI No. 91-12 SC No. VI.2.d & e.

CONCLUSION

Emerald Graphics, Inc. was in non-compliance at the time of the inspection.

NAME  DATE 2-8-17 SUPERVISOR