

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

B300762805

FACILITY: THIERICA, INC.		SRN / ID: B3007
LOCATION: 900 CLANCY AVE., NE, GRAND RAPIDS		DISTRICT: Grand Rapids
CITY: GRAND RAPIDS		COUNTY: KENT
CONTACT: Daane Blouw , Engineering Manager		ACTIVITY DATE: 04/14/2022
STAFF: Michael Cox	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: Scheduled Unannounced Inspection		
RESOLVED COMPLAINTS: C-22-00658		

At 8:00 A.M. on April 14, 2022, AQD staff Michael Cox (MTC) arrived at the area of Thierica, Inc, to complete an odor evaluation due to a recent complaint received on April 8, 2022 by AQD staff and to complete a scheduled, unannounced inspection.

FACILITY DESCRIPTION

Thierica mainly coats small plastic parts for the automotive industry, home light switches, and parts for the aviation industry. The facility consists primarily of plastic injection molding machines, two stencil coating lines, various pad printers, some small paint booths, and laser etching equipment. The facility operates three short shifts, five to six days per week. The facility is considered a synthetic minor source for hazardous air pollutants (HAPs) and volatile organic compounds (VOCs).

COMPLIANCE EVALUATION

Prior to entering the facility, offsite odor and visible emission observations were completed. A slight solvent odor was noted at the intersection of Cedar Street, NE and Lafayette Avenue, NE, but was fleeting with an intensity of approximately 1. After spending some time in the area no other odors were observed and no visible emissions were noted. At approximately 9:00 A.M. MTC entered the facility to conduct an unannounced inspection of the facility. Mr. Daane Blouw, Engineering Manager, was contacted on site and was informed that the purpose of the inspection was to determine the facility's compliance with Permit to Install (PTI) No. 37-09A as well as state and federal air pollution regulations. Mr. Blouw provided a walk-through of the facility and records to AQD staff.

Opt-Out PTI No. 37-09A

FG-StencilCoatB:

FG-StencilCoatB is permitted under PTI No. 37-09A and consists of a corona treatment robot, four robot coating booths in series: EU-StencilCoatB1, EU-

StencilCoatB2, EU-StencilCoatB3, EU-StencilCoatB4, and an oven EU-IRBakeOvenB. In the process plastic parts are racked onto the conveyORIZED line, then go through a corona (or plasma) treatment which is a high frequency electric discharge that changes the surface energy of the plastic and improves coating adhesion. There are no air emissions with this process. Next basecoat paint is applied in the following three booths then a clearcoat is applied in the fourth booth. PTI No. 37-09A requires that high volume low pressure (HVLP) spray guns or similar technology with comparable or better transfer efficiency be used on the robot booths. The spray booths use an automatic recirculating pressure pot spray system and HVLP spray applicators. Each spray booth is equipped with a waterwash system to collect overspray, which were in operation during the site visit and appeared to be working properly. Parts are then cured in EU-IRBakeOvenB at less than 185°F.

The company uses two component coatings that are mixed by the supplier and metered at the booth. Coatings are mixed electronically to create an exact color match to the customer's product. Special colors used in smaller quantities are done in mixing pots prepared by hand.

Lines are flushed using acetone as the purge solvent, which is then drained into a bucket in the paint booth. The company uses acetone for other clean-up purposes as well. It was noted that all waste coatings and solvents were stored in closed containers. The facility appears to be handling all VOC and HAP containing materials appropriately to minimize fugitive emissions.

The company has been approved to use manufacturer formulation data to determine the VOC content of coatings. The facility maintains a list of the chemical composition of each coating and solvent. The facility is also maintaining records of coating, thinning and clean-up solvent usage as well as VOC and HAP emissions calculations. The facility uses spreadsheets to record and track emissions. FG-StencilCoatB is limited to 35 tons per year (tpy) per 12-month rolling total VOC emissions and 14 tpy per 12-month rolling total VOC emissions from any one emission unit contained in the flexible group (FG-SencilCoatB). Records were requested for the time period of January 2021 through March 2022. The highest 12-consecutive month VOC emission for the entire flexible group occurred during the 12-month period ending in March 2022, when 15.77 tons of VOC was emitted. The highest 12-consecutive month VOC emission from any one single emission unit in this flexible group occurred during the 12-month period ending in March 2022, when 5.98 ton of VOC was emitted from EU-StencilCoatB1. FG-StencilCoatB is also limited to 1.9 tpy of Acetone, 480 pounds per year (lbs/yr) of Hindered Amine (CAS No. 41556-26-7) emissions, 712 lbs/yr of Dimethyl Gluterate (CAS No.1119-40-0) emissions, and finally 786 lbs/yr of Benzotriazolv Dimethylpropyl Phenol (CAS No. 25973-55-1) emissions per 12-month rolling time periods. The highest Acetone emission occurred during the 12-consecutive month period ending in March 2022, when 0.50 ton of Acetone was emitted. After a review of the records, it was noted that Hindered Amine (CAS No. 41556-26-7) emissions, Dimethyl Gluterate (CAS No.1119-40-0)

emissions, and Benzotriazolyl Dimethylpropyl Phenol (CAS No. 25973-55-1) emissions were all recorded as 0 for all months covered by this inspection.

FG-StencilCoatB has a material limit of 6.15 pounds per gallon (lbs/gal) of VOC as applied (minus water) on an instantaneous basis for coatings used. Usage records as well as select MSDS were requested for the time period of January 2021 through March 2022. MSDS and vendor formulation data for Red Spot 318LE83 (Paint #: 10-1023), Red Spot 379S21654P Urethane Clear (Paint #: 10-1236), and Red Spot 4800FM111B (Paint #: 10-1061) were reviewed on-site and cross referenced to the facility's VOC content logs. The VOC content for each of the paints were below the "as applied" VOC content listed in the facility records. Mr. Blouw explained that the higher VOC content "as applied" was due to the addition of a catalyst to the paints. MSDS for the catalyst, Red Spot LE9425B Urethane Hardener (Paint #: 10-294) was reviewed, containing a VOC content of 4.768 lbs/gal. Mr. Blouw stated that the facility workbook determines the "as applied" VOC content to each material based on the ratio of catalyst added to the paint, which results in a higher VOC content "as applied" than the paints/coatings actual VOC content listed in the MSDS. A copy of the facility's workbook is attached to this inspection report. Based on a review of the records the "as applied" VOC content from all the materials is below the 6.15 lbs/gal limit.

Five stacks are listed in association with FG-StencilCoatB and were observed during the site inspection. The stacks appeared to be consistent with the dimensions listed in PTI No. 37-09A.

FG-StencilCoatC:

FG-StencilCoatC is permitted under PTI No. 37-09A and is essentially the same process as FG-StencilCoatB except on a smaller scale and with one less booth. This coating line consists of a corona treatment robot, three coating booths in series (EU-StencilCoatC1, EU-StencilCoatC2, EU-StencilCoatC3). Each booth applies a basecoat and the third booth can apply a clearcoat. This is a smaller line than the FG-StencilCoatB.

The company uses acetone for clean-up purposes for this flexible group as well. It was noted that all waste coatings and solvents were stored in closed containers. The facility appears to be handling all VOC and HAP containing materials appropriately to minimize fugitive emissions.

The company has been approved to use manufacturer formulation data to determine the VOC content of coatings. The facility maintains a list of the chemical composition of each coating and solvent. The facility is also maintaining records coating, thinning and clean-up solvent usage as well as VOC and HAP emissions

calculations. The facility uses spreadsheets to record and track emissions. FG-StencilCoatC is limited to 34 tpy per 12-month rolling total VOC emissions and 14 tpy per 12-month rolling total VOC emissions from any one emission unit contained in the flexible group (FG-SencilCoatC). Records were requested for the time period of January 2021 through March 2022. The highest 12-consecutive month VOC emission for the entire flexible group occurred during the 12-month period ending in March 2022, when 21.30 tons of VOC was emitted. The highest 12-consecutive month VOC emission from any one single emission unit in this flexible group occurred during the 12-month period ending in March 2022, when 8.14 tons of VOC was emitted from EU-StencilCoatC2. FG-StencilCoatC is also limited to 1.9 tpy of Acetone emissions and 591.4 lbs/yr of Dimethyl-2-heptanone emissions per 12-month rolling time periods. The highest Acetone emission occurred during the 12-consecutive month period ending in March 2022, when 0.56 ton of Acetone was emitted. After a review of the records, it was noted that Dimethyl-2-heptanone emissions were recorded as 0 for all months covered by this inspection.

FG-StencilCoatC has a material limit of 6.15 pounds per gallon (lbs/gal) of VOC as applied (minus water) on an instantaneous basis for coatings used. Usage records as well as select MSDS were requested for the time period of January 2021 through March 2022. MSDS and vendor formulation data for Red Spot 4800FM404 Dark Silver (Paint #: 10-1253), Red Spot 318LE557 Black Basecoat (Paint #: 10-1235), and Red Spot 4800FM371 Silver (Paint #: 10-1247) were reviewed on-site and cross referenced to the facility's VOC content logs. The VOC content for each of the paints were below the "as applied" VOC content listed in the facility records, which is due to an addition of the catalyst to the paint which is also used in FG-StencilCoatB. MSDS for the catalyst, Red Spot LE9425B Urethane Hardener (Paint #: 10-294) was reviewed, containing a VOC content of 4.768 lbs/gal. Mr. Blouw stated that the facility workbook determines the "as applied" VOC content to each material based on the ratio of catalyst added to the paint, which results in a higher VOC content "as applied" than the paints/coatings actual VOC content listed in the MSDS. A copy of the facility's workbook is attached to this inspection report. Based on a review of the records the "as applied" VOC content from all the materials is below the 6.15 lbs/gal limit.

Five stacks are listed in association with FG-StencilCoatC and were observed during the site inspection. The stacks appeared to be consistent with the dimensions listed in PTI No. 37-09A.

FG-Facility:

This flexible group is for all process equipment source-wide including equipment covered by other permits, grandfathered equipment and exempt equipment.

This flexible group is subject to individual and aggregate HAP emission limits of less than 9.0 tons per year (tpy) and less than 22.5 tpy respectively per a 12-month rolling

time period. Records were requested and provided for the time period of January 2021 through March 2022. Upon review of the records provided, the highest 12-consecutive month single HAP emission occurred during the 12-month period ending in March 2022, when 0.63 ton of Xylene was emitted. The highest 12-consecutive month rolling aggregate HAP emission occurred during the 12-month period ending in March 2022 when 1.11 tons of aggregate HAPs were emitted. Previous 12-month rolling time period records were reviewed and were within permitted limits. FG-Facility is also subject to a VOC emission limit of 90.0 tpy per 12-month rolling time period. The highest 12-consecutive month VOC emission occurred during the period ending in December 2021 when 38.90 tons of VOC was emitted.

Per SC II.1, Thierica, Inc. is limited to a usage rate of 29,268 gallons per 12-month rolling time period of VOC containing stencil coatings and associated solvents (material) on the stencil coating lines in FG-Facility. Records for the time period of January 2021 through March 2022 were requested and reviewed. The highest 12-consecutive month rolling usage rate occurred during the 12-month period ending in December 2021, when 14,166 gallons of VOC containing coatings and solvents were used.

Per SC VI.2.a-e, Thierica, Inc. shall keep records of gallons or pounds of HAP containing material used, and reclaimed, if applicable, and HAP contents of each HAP containing material used, and monthly/12-month rolling time period of individual/aggregate HAP emissions. Based on the records reviewed, it appears that Thierica, Inc. is adequately keeping track of materials used, HAP contents and individual/aggregate monthly/12-month rolling time period emission records.

Per SC VI.3.a-f, Thierica, Inc. shall keep records of gallons or pounds of VOC containing material used, and reclaimed, if applicable, and VOC contents of each VOC containing material used, and monthly/12-month rolling time period of VOC emissions. Based on the records reviewed, it appears that Thierica, Inc. is adequately keeping track of materials used, VOC contents and monthly/12-month rolling time period emission records.

Additional Observations

Plastic Injection Molding Machines:

The company has 16 plastic injection molding machines, used to create automotive dials, which are exempt from permitting under Rule 286(2)(b).

Laser Etching:

There are 8 laser etch stations where a low power laser is used to cut through a thin layer of paint on the surface of a part allowing the under coat to be visible and allowing light to shine through the part. These stations are externally vented and emissions from these sources is minimal. There are two separate exhaust systems that vent outside the plant. Fabric filter collectors were noted to be installed and in use. These units are exempt from permitting under Rule 285(2)(l)(vi)(C).

Pad Printing:

There are 5 various pad printing stations used to stamp parts. These operations are exempt from permitting under Rule 285(2)(l)(ix).

EU-RoboticSpray2A:

EU-RoboticSpray2A (also known as Robot #2) is located on the second floor. This booth is considered exempt from permitting under Rule 287(2)(c). The highest usage for this emission unit occurred during the month of December 2021 when 86 gallons of coating was used.

EU-Manual:

There are two small booths also on the second floor that are used to test coatings and color matching. These are exempt from permitting under Rule 283(2)(a).

EU-Aviation1&2:

Located on the third floor are 5 small tabletop booths with dry filters and two small associated ovens that are used to paint aviation parts. These booths are exempt under Rule 287(2)(c). EU-Aviation1&2 and EU-Aviation3&4 had a total yearly usage of 75.65 gallons during the 2021 calendar year.

EU-Aviation3&4:

Also located on the third floor are two telephone booth sized rooms with one small tabletop coating booth in each and two small ovens outside of the rooms used to paint aviation parts. Each of these booths use a small amount of coating and is considered exempt under Rule 287(2)(c). EU-Aviation1&2 and EU-Aviation3&4 had a total yearly usage of 75.65 gallons during the 2021 calendar year.

Solvent Recovery Unit:

There is a small solvent distillation unit used to recover spent solvents. This unit is considered exempt from permitting under Rule 285(2)(u).

Boilers:

The company has two small 750,000 Btu/hour natural gas-fired, low NOx boilers which are exempt under Rule 282(2)(b)(i).

Conclusion

Based on the review of the records provided and the facility walk through, Thierica, Inc. appears to be in compliance with PTI No. 37-09A.

NAME Michael T. Cox

DATE 5/6/2022

SUPERVISOR HH