

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

N148948226

FACILITY: Mahindra Automotive North America Manufacturing		SRN / ID: N1489
LOCATION: 275 Rex Blvd., AUBURN HILLS		DISTRICT: Southeast Michigan
CITY: AUBURN HILLS		COUNTY: OAKLAND
CONTACT: Robert Post , Manufacturing Operations Manager		ACTIVITY DATE: 02/05/2019
STAFF: Adam Bognar	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Scheduled Inspection		
RESOLVED COMPLAINTS:		

On February 5, 2019, Michigan Department of Environmental Quality – Air Quality Division (MDEQ-AQD) Staff, I, Adam Bognar, Sebastian Kallumkal, and Kaitlyn Leffert conducted an unannounced targeted inspection of Mahindra Automotive North America Manufacturing (“facility” or “Mahindra”) located at 275 Rex Blvd, Auburn Hills, MI 48326. The purpose of the inspection was to determine the facility’s compliance with the requirements of the federal Clean Air Act; Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451); Michigan Department of Environmental Quality-Air Quality Division (MDEQ-AQD) Administrative Rules; and General Permit to Install (PTI) No. 58-18 (“Permit”).

Contact: Robert Post (Manufacturing Operations Manager)

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MahindraAutomotiveNA.com

Mahindra Automotive North America Manufacturing began operating at this location in March 2018. At the time operations began, Mahindra operated four coating booths pursuant to MDEQ-AQD exemption Rule 287 (2)(c) by restricting coating usage to below 200 gallons per month per booth and equipping the booths with dry fabric filters. Mahindra continued to operate pursuant to Rule 287 (2) (c) until Permit to Install No. 58-18 was issued to Mahindra Automotive North America Manufacturing on April 11, 2018 as a general PTI for coating booths. Mr. Post explained that the original plan was to continue to operate the paint spray booths pursuant to MDEQ-AQD exemption Rule 287 (2)(c); however, as production increased Mahindra decided that they may need less restrictive coating usage limits.

This inspection is the first time an AQD inspector has seen this facility since the change in ownership. The previous occupant of this facility had a permit for a dry filter paint booth that was voided in 2007. It appears that no regulated activity occurred on this site for the past 10 years before Mahindra began operating at this facility.

We arrived at the facility at around 10 am and met with Mr. Robert Post. We identified ourselves, provided credentials, and stated the purpose of the inspection. Before going on a facility inspection, we held a pre-inspection meeting where we reviewed records and gathered information about the facility.

Inspection

Mahindra is an India based multi-national automobile manufacturer. This facility in Auburn Hills manufactures the Mahindra “Roxor”. The Roxor resembles a small Jeep, but with very few modern amenities. It is not authorized for on-road use because it cannot comply with modern safety and

emission regulations. Also, the top speed of the Roxor is 45 miles per hour which further limits its on-road use potential. In addition to manufacturing the Roxor, concept vehicles are occasionally assembled at this facility. There are around 70 employees on the manufacturing floor that generally operate Monday through Thursday from 6 am to 4:30 pm. This facility also functions as an engineering office for Mahindra's global operations. There are approximately 200 engineers working at this facility.

Only final assembly and painting occurs at this facility. This facility receives the stamped body parts, drivetrain, and other components from India. In contrast to many other automobile assembly plants, all assembly and painting is done manually. There are no industrial robots or automated assembly steps. Workers follow a step-by-step video that guides them through the assembly process. In this way, approximately 100 Roxors are produced each week.

There are a total of four spray booths in operation. Two of these booths are used to apply colored production paint for the Roxor. These booths are downdraft "spovens" because they function as both a spray booth and a curing oven. The body panels of the Roxor are manually spray painted using HVLP applicators and then cured at 190°F for 20 minutes in the same room. Approximately ½ gallon of paint is used on each vehicle.

The stamped body panels for the Roxor arrive from India with a fair amount of dirt/grime on them. Before the Roxor is painted, all the body panels must be cleaned. Cleaning is done directly outside of the spray booths. To clean the panels, they are first wiped down with Acetone and then wiped down with DX330 – a degreaser (Safety Data Sheet (SDS) Attachment 5). Acetone usage was 939 gallons for the one-year period ending on January 31, 2019. Usage of DX330 was 120 gallons for the same time period. DX330 is comprised of 100% VOC with up to 1.5% of the HAP toluene.

There is a paint mix room located between the two color spray booths. The paint mix area was clean and organized during this inspection. All paint cans had their lids closed. The paint mix station includes a scale and a computer. Individual paint components are weighed to create the correct mixture for the job. Each time an amount of paint is added to a mixture, that amount is entered into the computer. In this way, Mahindra has a record of all paint used at the facility.

There is a 5-gallon pail in this area used to store waste thinner/paint. The funnel lid on this 5-gallon pail was broken off. I asked Mr. Post to equip the 5-gallon pail with a functioning lid and to keep the funnel lid closed at all times when not in use. Mr. Post stated that he would provide me with a photo once he resolves this issue. Per my request, Mr. Post provided me with a photo via email on February 22, 2019 showing a new funnel lid on the pail (Attachment 6).

Located just outside the paint mix room, there is one parts washer (cold cleaner) used to clean paint applicators. During my inspection, proper usage instructions were posted and the lid was closed. Lacquer thinner is used as the cleaning solvent. The air/vapor interface is approximately 2'x2'. This cold cleaner appears to be exempt from Rule 201 requirements pursuant to Rule 281 (2)(h) because it has an air/vapor interface smaller than 10 square feet.

Adjacent to the two color paint booths, there is a booth used to apply bed liner to the interior of the Roxor. The bed liner starts as a two-part urethane, Part A and Part B, that is mixed in the applicator immediately before application. The material quickly hardens into a hard, gritty, and rubbery black substance. Nearly the entire interior of the Roxor is coated in this rugged material. The SDS (Attached) indicates that Part A contains up to 57% of the HAP Methylenediphenyl Diisocyanate (MDI) as well as a polyurethane prepolymer. It is likely that most of the MDI will polymerize and become

part of the bed liner rather than be emitted to the atmosphere. The Part B of the epoxy contains the solid components as well as up to 24% aromatic amine (VOC). As stated in the SDS, the Part A material will react with any material containing active hydrogens, such as water, alcohol, ammonia, amines, alkalis, and acids.

There is a fourth paint booth that is used as needed for maintenance/repair activities (non-production). This maintenance/repair booth was equipped with fabric filters in the floor. Near this fourth booth there is another maintenance/repair room that is used for welding and other activities as needed. This welding room has an exhaust system equipped with a dust collector. The dust collector is left over from the previous tenant of the building and is larger than what is needed for the current application. The dust collector appeared to be in working order. Welding/machining operations in this room appear to be exempt from Rule 201 requirements pursuant to Rule 285 (2)(l)(vi).

After the Roxor is assembled and painted, each vehicle is placed on a dynamometer to test for horsepower, torque, and other important characteristics. This is done on every vehicle for quality assurance purposes. The dynamometer is equipped with exhaust hoses so that vehicle exhaust can be ducted outdoors. This dynamometer station and associated engines appear to be exempt from Rule 201 requirements pursuant to Rule 285 (2)(g) because the engines have a heat input less than 10MM Btu/hr. Each Roxor is currently equipped with a 62 hp (approximately 157,000 Btu/hr) engine. Each vehicle is run on this test station for approximately four minutes.

There is another dynamometer station where fully assembled engines can be tested outside of the vehicles. The engine control unit (ECU) can be adjusted to optimize important engine characteristics by varying fuel and oxygen flow. This dynamometer is used for research and development purposes and is not directly associated with the manufacturing process at this facility. This R&D dynamometer appears to be exempt from Rule 201 requirements pursuant to Rule 283 (2)(a).

We observed a chemical storage area where various automotive fluids are stored in totes. All of the containers appeared to be closed and labeled. AQD staff Sebastian Kallumkal noted that there was no containment area to contain a chemical spill should it occur. There is a floor drain located near the chemical storage area. Any chemical spill would likely enter that floor drain. Mr. Post investigated this issue and later stated that this drain is not tied to any outfall (storm or sanitary sewer).

Emergency Generator

Mahindra operates one Cummins natural gas fired, spark ignition, reciprocating internal combustion engine for emergency electrical power generation. This unit is located outside of the facility. The engine has an output of 250 kW (335 hp). Mr. Post provided me with the manufacturer's specifications for this generator (Attachment 7). Mr. Post also provided me with the EPA document that certifies this engine's compliance with NSPS Subpart JJJJ – New source performance standards for stationary spark ignition internal combustion engines (Attachment 7). This engine appears to be exempt from Rule 201 requirements pursuant to Rule 285 (2)(g) because it has a maximum heat output less than 10MM Btu/hr.

Permit to Install No. 148-06

Before the facility inspection, AQD staff met with Mr. Post in a conference room and reviewed the conditions of Permit to Install No. 58-18.

Section I – S.C. 1&2: Limits VOC emissions from each coating line to 2000 lb/month and 10 tons/year. Mr. Post provided me with records detailing combined VOC emissions from all coating lines (Attachment). These records indicate that during the 12-month period ending on January 31, 2019, the total VOC emissions were approximately 6.18 tons. Since combined emissions from all coating lines still fall below the limit for each coating line it is not necessary for Mahindra to create separate records that show emissions from each line individually.

Calculating Potential to Emit (PTE) for HAPS: In General PTI No. 58-18, Mahindra has a facility-wide VOC emission limit of 30 tons per 12-month rolling time period. The actual VOC emissions based on current usage is 13891 lbs (6.94 tons) if the amount of VOC/HAP hauled away as hazardous waste is not taken into account. If it is assumed that this 30 tons per year limit is the current PTE for VOC, then it is possible to approximate the potential to emit Hazardous Air Pollutants (HAPs). See Attachment 8 for a spreadsheet detailing this PTE approximation. At current usage levels the total actual HAP emissions are reported at 2516 lbs.

If usage of each VOC containing material is scaled up by approximately 4.32x, then the total VOC's emitted would be approximately 30 tons per year ($4.32 \times 13,891 = 60,000$). This scale up seems reasonable since the usage level of each material is largely dependent on the usage levels of the other materials. If the usage is scaled up by 4.32x, this brings the total potential HAP emissions to 10,872 lbs (5.43 tons) per year. The most abundant HAP is Toluene. At this scaled up usage the approximate potential Toluene emissions would be 6,379 lbs (3.19 tons) per year.

These calculations show that if usage of every VOC/HAP containing material was scaled up by 4.32x such that VOC emissions total 60,000 lbs per year, then HAP emissions would still be below the major source thresholds of 25 tons per year (total HAPs) and 10 tons per year (individual HAP). Based on these approximations Mahindra is a true minor source for HAPs. These calculations/approximations only apply if the current formulations of VOC/HAP containing materials do not change.

Section III – S.C. 1: Requires Mahindra to capture all purge/clean-up solvents and waste coatings and dispose them in an acceptable manner. Waste paint and clean up solvent generated from the paint booths are kept in a 5-gallon pail in the paint mix room. This 5-gallon pail is transferred to a closed 55-gallon drum as needed. This waste is taken as needed by Safety-Kleen Systems Inc. and transported to Clean Harbors El Dorado, LLC. See attached hazardous waste manifests (Attachment 4).

Section IV – S.C. 1: Requires Mahindra to equip all booths with high-volume low-pressure (HVLP) spray applicators or comparable technology. All applicators at Mahindra are HVLP style applicators. Mr. Post stated that pressure caps are available for pressure testing. I did not request a pressure test during my inspection.

Section IV – S.C. 2: States that Mahindra shall not operate any spray applicator unless the particulate control device is installed. Mahindra utilizes dry filters for particulate control. I was able to observe that the dry filter was in place in one of the two color paint booths. The filter appeared to be installed correctly with no gaps. The other booth was functioning as an oven so I was unable to enter the booth to observe the filter.

I observed that the bed-liner booth is equipped with a dry filtration system located on the wall of the booth. The filter was covered in bed-liner material but appeared to be functioning properly with no gaps in the filter media. The maintenance paint booth is also equipped with a dry filter located in the floor. The dry filter in the maintenance paint booth appeared to be installed correctly with no gaps in the filter media.

Section V – S.C. 1: States that verification of VOC emissions and VOC content via federal reference test Method 25A, Method 24, or other EPA approved method may be required. AQD is not requesting any testing at this time. Mr. Post provided me with manufacturers data for the VOC/HAP containing materials used at this facility in the form of safety data sheets (Attachment 5).

Section VI – S.C. 3: Requires Mahindra to keep the following records:

- a) Purchase orders and invoices for all coatings, reducers, and purge/clean-up solvents. These records are maintained in both raw form and in an electronic database. Mr. Post provided me with these records during my inspection (Attachment 3).

- b) VOC content of each coating, reducer, or cleanup/purge solvent. Mr. Post provided me these records via email on February 22, 2019 (Attachment 1).
- c) Usage, in gallons, of each coating, reducer, or cleanup/purge solvent. Mr. Post provided me these records via email on February 22, 2019 (Attachment 1).
- d) VOC mass emission calculations for each coating line on a monthly and 12-month rolling basis. Mr. Post provided me these records via email on February 22, 2019 (Attachment 1). During the 12-month period ending on January 31, 2019, the reported VOC emissions were 12,373 lbs.

Section VI – S.C. 4: Requires Mahindra to keep a current listing of the chemical composition of each coating used at the facility. Mr. Post provided me these records via email on February 22, 2019 (Attachment 5).

Section VIII – S.C. 1: Specifies stack/vent restrictions. AQD staff did not climb to the roof to verify stack parameters. The stacks appeared to be discharged vertically.

Section IX – S.C. 1: States that Mahindra shall inform AQD 10 days before any new coating lines or other regulated equipment is installed. Mahindra shall comply with all conditions of their permit to install after installing/modifying equipment. Mahindra has not installed any new regulated equipment at this time.

FG-SOURCE – Source-wide VOC emissions are limited to 30 tons per year based on a 12-month rolling time period. Based on the records provided to me by Mr. Post, it is unlikely that this limit will be exceeded unless the number of vehicles manufactured more than triples. Currently the total facility-wide VOC emissions are around 6 tons per year.

I left the facility at around 11:30 am.

Compliance Determination

This facility appears to be in compliance with the requirements of the federal Clean Air Act; Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451); Michigan Department of Environmental Quality-Air Quality Division (MDEQ-AQD) Administrative Rules; and Permit to Install No. 58-18.

NAME

Adam Bagot

DATE

4/1/2019

SUPERVISOR

SK