

M3833
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DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

M383368661

FACILITY: ROUSH INDUSTRIES		SRN / ID: M3833
LOCATION: 12068 MARKET STREET, LIVONIA		DISTRICT: Detroit
CITY: LIVONIA		COUNTY: WAYNE
CONTACT: Vince Anderson , EHSS Manager. Facilities		ACTIVITY DATE: 08/17/2023
STAFF: Samuel Liveson	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Inspection of a synthetic minor source.		
RESOLVED COMPLAINTS:		

1.0. Introduction, Arrival, and Facility Overview

On Thursday August 17, 2023, AQD staff Sam Liveson conducted an unannounced, scheduled inspection of synthetic minor source Roush Industries with SRN M3833 (Roush), located at 12068 Market Street in Livonia, Michigan.

The purpose of this inspection was to determine the facility’s compliance with the federal Clean Air Act; Part 55, Air Pollution Control, of the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended; the Michigan Air Pollution Control Rules (Rules); and Permit to Install (PTI) No. 6-22.

1.1. Arrival

The inspection was unannounced. I arrived at the facility at about 9:30 AM. At the facility, I met with Mr. Vincent Anderson, EHSS Manager, Facilities; and Mr. Jeffrey Carter, Dynamometer Supervisor. I provided by state-issued identification and stated the purpose of my visit. We had a pre-inspection meeting prior to walking through the facility.

1.2. General Facility Overview

Roush facility M3833 is comprised of buildings 7, 12, 13, 28, and 87. The facility primarily conducts motor vehicle prototype and creative services, including Roush CleanTech. During this inspection I visited buildings 13 and 28. Emission units include paint booths, engine test stands, machining equipment, and emergency engines.

Roush Separate Stationary Sources M4780 and M3833

For air quality purposes, the Roush Industries Livonia campus of buildings is considered two stationary sources, because the definition of a stationary source depends upon the source’s Standard Industrial Code (SIC) major groups. The State Registration Number (SRN) of each source and its associated buildings are shown below.

Roush Industries Facility SRN:	M4780	M3833
Buildings:	1, 2, 3, 4, 6, 15, 16	7, 12, 13, 28, 87

This inspection report discusses stationary source M3833.

For hazardous air pollutant (HAP) purposes, M4780 and M3833 are considered one source. This is because the definition of a HAP major source doesn’t differentiate sources based on their SIC major groups per 42 US Code 7412(a)(1). For this reason, PTI 6-22 FGFACILITY conditions limit the combined total of HAP emissions from both Roush Industries M3833 and M4780 to below major source thresholds.

Changes since Previous Inspection

According to staff, there have not been changes to the facility within the past year.

1.3. Compliance Background

Roush facility M3833 has no outstanding violation notices.

2.0. Facility Walkthrough and Compliance Status

2.1 Permit 6-22 Conditions – Flexible Group FGFACILITY

PTI 6-22 includes one flexible group FGFACILITY, which contains all the special conditions for the permit. Below is a summary of special conditions from FGFACILITY, and an explanation of the facility's compliance status.

<p>SC I.1, I.2, VI.1, and VI.2: HAP emission limit of less than 9 tons per year (tpy) individual HAP and less than 22.5 tpy total HAPs. Calculate HAP emissions.</p> <p>COMPLIANCE. Roush provided individual and total HAP calculations for combined HAP source M3833 and M4780 for May 2022 through May 2023, including 12-month rolling values for April 2023 and May 2023. The facility's highest individual HAP and total HAP emissions are provided below.</p>				
Special Condition	Pollutant	Emission Limit	Maximum 12-Month Rolling Facility Emissions	Last Month of 12-Month Rolling Facility Maximum
I.1	Individual HAP	Less than 9 tpy	0.91 tpy	May 2023
I.2	Total HAPs	Less than 22.5 tpy	2.43 tpy	April 2023

2.2. Paint Booths – Rule 287(2)(c)

I observed the five paint booths in buildings 13, and the single paint booth in building 28. Paint booths appear to be exempt from obtaining a Permit to Install per Rule 287(2)(c) for surface coating lines.

In building 13, paint booths appear to be numbered 1 through 5. Booths 3 and 5 were operating during the inspection. I observed the paint kitchen, where quart containers of paint were closed. Staff explained that rags are collected and sent to Safety Kleen.

In building 28, the one paint booth was not operating, and has not been used since August 2022 according to facility records.

Rule 287(2)(c) Requirements and Compliance Status

Below is a summary of Rule 287(2)(c) conditions, and an explanation of whether the facility met those conditions.

<p>Rule 287(2)(c)(i): Coating use rate not more than 200 gallons minus water per month.</p> <p>CONDITION MET. Paint usage records provided for January 2022 through July 2023 indicate the most quarts used in the five paint booths in building 13 total was 759.25 quarts (189.8 gallons) in May 2022. This is below 200 gallons, so the facility appears to be in compliance with the 200 gallon limit for any one paint booth. The most quarts used for this time period in the building 28 paint booth is 96 quarts (24 gallons) in May 2022.</p>
<p>Rule 287(2)(c)(ii): Any exhaust system is supplied with dry filter or water wash control installed, maintained, and operated properly.</p> <p>CONDITION MET. In building 13, I observed mesh filters in place. Booths appear to have either cross draft or downdraft systems in place. According to staff, filters are generally changed every 2 weeks as they are used, and the filters are changed if the pressure across the filters is out of range. I observed that new filters are stored on site to be changed in as needed. Each paint booth appeared to have a pressure gauge which generally had a range indicated of 0 to 0.05 inches water. I observed a pressure of 0.01 inches water on booth 5. I observed a high-volume low pressure (HVLP) applicator.</p> <p>In building 28, there appears to be a cross draft filter and pressure gauge to measure pressure across the filter when it is operating.</p>
<p>Rule 287(2)(c)(iii): Maintain monthly coating use records.</p>

CONDITION MET. Staff explained that coating use is tracked per project for financial purposes. On August 28, 2023, Vince provided monthly coating use records for January 2022 through July 2023.

2.3. Building 28 – 7 Engine Test Stands – Rule 291(2)

I visited seven (7) engine carts or engine test stands located in one large room at building 28. Vince explained that engines are loaded onto these test stands to conduct end-of-line hot tests. Each test stand appeared to have exhaust piping leading to ambient air. No nameplate absorption capacity was indicated on the engine carts. Carts were not operating during the facility inspection. The facility asserts that engine carts are exempt from obtaining a Permit to Install per Rule 291 for emission units with “de minimis” emissions.

Rule 291 Requirements and Compliance Status

Below is a summary of requirements of permit to install exemption Rule 291, and an explanation of building 28 engine test stands’ compliance status.

Rule 291(1): Meet the requirements of Rule 278 and 278a.

COMPLIANCE. The facility appears to meet these requirements as discussed below.

Rule 278a: Provide information demonstrating the applicability of the exemption.

On August 28, 2023, Roush provided a technical memorandum dated April 8, 2021, which includes information demonstrating the applicability of exemption Rule 291(2).

Rule 278(1)(a): The exemption does not apply to activities subject to prevention of significant deterioration (PSD) or new source review of major sources in nonattainment areas.

A Potential to Emit calculation provided in the technical memorandum indicates that potential emissions are below 250 tons per year of regulated pollutants, which appears to be the applicable emissions limit above which a facility is a PSD major source per Rule 1801(cc).

Due to the facility recently being located in an ozone nonattainment area, the installation of engine carts would be subject to nonattainment new source review (NANSR) for VOC and NOx per Rule 1901(u). Calculations indicate PTE is below 100 tons per year for VOC and NOx.

Rule 278(2): The exemption does not apply to activities resulting in construction or reconstruction of a major source of hazardous air pollutants (HAPs).

Calculations indicate the engine carts are not a major source of HAPs.

Rule 278(3) and (4): The exemption does not apply to activities resulting in construction or modification per 40 CFR Part 61; or to any other requirements.

Per the provided analysis, the engine carts are not subject to any Part 61 standards, or to any other requirements.

Rule 291(2): Potential emissions less than Table 23 and parts (a)-(f).

COMPLIANCE. Potential emissions are based on a maximum fuel usage of 8.4 gallons diesel per hour, which is 73,584 gallons diesel per year. Vince explained via email that 8.4 gallons per hour was reached by the throughput of each of the 7 engines being 0.6 gallons per test, which is the potential fuel use during the prescribed testing program. This is relatively low compared to engines loaded on dynamometers, because these engines are “unloaded” (there is nothing attached to the engines to absorb power, so the engines spin up easily) and essentially idling during the test program. Each test lasts about 20 minutes, which includes a test, a cooldown, and a second test, with 10 minutes of setup and 10 minutes of teardown in between. While this would generally mean 3 engines every 2 hours or 1.5/hour, the facility used 2 engines/hour as a worst-case scenario. So, the 8.4 gal/hour was reached by: 0.6 gal/engine test x 2 tests/hour = 1.2 gallons/hour, and 1.2 gallons/hour x 7 stands = 8.4 gallons/hour. The facility considers that this is a conservative estimation as rarely were more than 4-5 stands are staffed at any given time; but were more staff available, the potential is there.

Table 1 of Roush's exemption demonstration memo indicates that potential emissions of the seven combined engine carts are less than emission limits in Table 23, as shown below.

Table 23 Air Contaminant	Table 23 Emission Limit (TPY)	Emission Factor (lbs/hour)	Engine Cart PTE (TPY)
CO2	75,000	2.26E+1	831
CO	100	2.74E-03	0.10
NOx	40	6.90E-03	0.25
SO2	40	1.38E-02	0.51
PM	25	7.80E-03	0.29
PM10	15	7.80E-03	0.29
PM2.5	10	7.80E-03	0.29
VOC	40	4.00E-03	0.15
Pb	0.6	--	0

Additionally, the PTE of toxic air contaminants with any screening level not listed in Table 23 is 1.80E -3 tons per year, which is below the limit of 5 tons per Rule 290(2). The facility indicated there are no non-carcinogenic air contaminants with no screening level. The PTE of the other air contaminants in Table 23 (fluorides, sulfuric acid mist, etc.) is 0 tons per year.

Rule 291(2)(a): Combined PTE < 0.12 tpy for contaminants with SL < 2 ug/m3 and ≥ 0.04 ug/m3.

COMPLIANCE. Table 3 of Roush's exemption demonstration indicates PTE of these contaminants is 0.003 tpy, as shown below.

Chemical	Screening Level (ug/m3)	Diesel Emission Factor (lbs/gal)	PTE (tpy)
acetaldehyde	0.5	1.05E-04	3.86E-04
acrolein	0.16	1.10E-06	4.05E-06
benzene	1	4.48E-04	1.65E-03
formaldehyde	0.8	1.50E-04	5.52E-04
naphthalene	0.08	1.16E-05	4.28E-05
phenanthrene	0.1	4.03E-06	1.48E-05
TOTAL			0.003

Rule 291(2)(b): Combined PTE < 0.06 tpy for contaminants with SL < 0.04 ug/m3 and ≥ 0.005 ug/m3.

COMPLIANCE. Table 3 of Roush's exemption demonstration indicates PTE of these contaminants is 0.009 tpy, as shown below.

Chemical	Screening Level (ug/m3)	Diesel Emission Factor (lbs/gal)	PTE (tpy)
1,3-Butadiene	0.03	2.50E-03	0.009
TOTAL			0.009

Rule 291(2)(c): Combined PTE < 0.006 tpy for contaminants with SL < 0.005 ug/m3.

COMPLIANCE. Table 3 of Roush's exemption demonstration indicates PTE of these contaminants is 8.48 E -5 tpy, as shown below.

Chemical	Screening Level (ug/m3)	Diesel Emission Factor (lbs/gal)	PTE (tpy)
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PAHs as benzo(a)pyrene	0.001	2.30E-05	8.47E-05
benzo(a)pyrene	0.002	2.58E-08	9.48E-08
TOTAL			8.48E-05

Rule 291(2)(d): No potential emissions of asbestos of subtilisin proteolytic enzymes.
 NOT EVALUATED. The exemption analysis memo does not indicate whether these asbestos or subtilisin proteolytic enzymes are emitted; however it appears these pollutants are not applicable for engine test stands.

2.4. Machining Equipment – Rule 285(2)(l)(vi)(B) and (C)

In building 13, in addition to paint booths, woodworking including sanding controlled by filters appears to occur. In building 28, sand blasting appears to occur in two blast booths which are controlled by baghouses and exhaust to the in-plant environment.

Building 28 has two laser metal cutting machines which are controlled by a Torit downflow baghouse before exhaust to ambient air out the side of the building. AQD did not determine if there is mechanical precleaning prior to the baghouse.

Machining equipment appears to be exempt from obtaining a PTI per Rule 285(2)(l)(vi)(B) and (C) for sanding and sand blast cleaning equipment, and for cutting equipment that has externally vented emissions controlled by a fabric filter and for metal operations is preceded by a mechanical precleaner.

2.5. Three Emergency Engines – Rule 285(2)(g) – 40 CFR Part 63 Subpart ZZZZ

There are three emergency engines at the facility between buildings 28 and 7. Engine information is below. Information provided for emergency engine B indicates the power output is 130 KW. An engine efficiency is needed to convert the power output to heat input; if the engine were 100% efficient, the heat input for the 130 KW power output is 0.48 million Btu (MMBtu) heat input considering that 1 KW is 3414 BTU. The two other emergency generators were a similar size to engine B. AQD did not request power or heat input for the other engines. Engines appear to be exempt from obtaining a PTI per Rule 285(2)(g) for internal combustion engines with a heat input less than 10 million Btu (MMBtu)/hour.

Emergency engine	Building	Fuel	Install Date	Power
A	7	Natural gas	1999	Similar size to engine B
B	28	Natural gas	Manufactured in 2003	130 KW (0.48 MMBtu/hr)
C	28	Natural gas	1995	Similar size to engine B

3.0. Conclusion

Based on the AQD inspection and records review, Roush M3833 appears to be in compliance with the federal Clean Air Act, Michigan NREPA, the Michigan Air Pollution Control Rules, and facility PTI No. 6-22.

NAME 

DATE 11/15/23

SUPERVISOR 