

M4768

MANILA

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

M476859407

FACILITY: FLAT ROCK METAL INC		SRN / ID: M4768
LOCATION: 26601 W HURON RIVER DR, FLAT ROCK		DISTRICT: Detroit
CITY: FLAT ROCK		COUNTY: WAYNE
CONTACT: Gregory Zang , Operations Manager		ACTIVITY DATE: 08/17/2021
STAFF: Samuel Liveson	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: Scheduled inspection. Additional follow-up with the facility is necessary as indicated in this activity report.		
RESOLVED COMPLAINTS:		

On Tuesday, August 17, 2021, AQD staff (Sam Liveson) conducted an announced, scheduled inspection of Flat Rock Metal (FLM), located at 26601 W Huron River Drive in Flat Rock, 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; the conditions of Permit to Install (PTI) No. 71-98; and the conditions of PTI 59-09.

AQD arrived on site at 9:28 AM. The temperature was 70 °F. Wind was north by northeasterly (headed south by southwesterly) at 2 miles an hour according to weather station KMIFLATR22, three quarters of a mile north of the facility (from wunderground.com). Weather was partly cloudy.

To ensure AQD was able to follow any COVID-19 related safety protocols, this inspection was announced. AQD talked with facility contacts on August 16 about visiting the following day.

Pre-Inspection Meeting and Facility Overview

AQD met with Mr. Greg Zang, Vice President of Operations. AQD showed their employee ID badge and stated the purpose of their visit.

1. General Facility Overview

Flat Rock Metal is a steel processing facility. FLM specializes in processing the steel used in bumpers for pickup trucks. At FLM, finished steel coils from the steel mill are made into sheets. These sheets are cured, machined, stacked, and sent to a tier 1 company for stamping. The facility has been operating for over 40 years.

The facility has four main lines where steel is cleaned, lubricated, and coated with zinc phosphate. Three of these four lines have dry and wet polishing stations, where sheets destined to be chrome bumpers are polished via grinders. The fourth line does not contain any dry polishing (also referred to as rough lines or dry grinding) or wet polishing (also referred to as finish lines). PTI No. 71-98 permits two dry grinding lines at the facility (EUROUGHLINE1 and EUROUGHLINE2).

2. Rough Line 3 Installation and R278a Analysis

The facility's third dry grinding line was installed in March of 2018. Six dry polishing heads were added to the third finishing line (also referred to as a wet polishing line). During the inspection, AQD requested the permitting status of rough line 3. FLM provided a memo from Mr. Lemley, Project Engineer with TRC, indicating that the third grinding line is exempt from obtaining a PTI under Michigan Air Pollution Control Rule (Rule) 285(2)(l)(vi)(C) for surface grinding of metals where external emissions are controlled by a fabric filter that, for all specified operations with metal, is preceded by a mechanical precleaner.

To be eligible to use an exemption, the construction must meet the requirements of Rule 278. Rule 278 (1)(a) and Rule 278(1)(b) are discussed below. Regarding Rule 278(2), it appears that Rough Line 3 would not be a new major source of HAP emissions. Regarding Rule 278(3), it appears the Rough Line is not subject to 40 CFR part 61, national emission standards for hazardous air pollutants. Therefore, the third line installation does not appear to be excluded from using applicable PTI exemptions.

2.1. Rough Line 3 - Rule 278(1)(a)

On August 31, 2021, Mr. Lemley, Project Engineer with TRC, provided a calculation of uncontrolled PTE from the dry section of the third rough line. Assuming a control efficiency of 95%, uncontrolled PTE from the third rough line is 210.24 tons of particulate matter (PM) per year. This is below the major source new source review threshold of 250 tons per year. This appears to meet the requirement of Rule 278(1) (a).

2.1.1. Facility Title V Status due to Rough Line 3

Further evaluation is needed to determine whether the facility is subject to Title V due to its PTE appearing to exceed the major source threshold of 100 tpy of PM10 and PM2.5. If the facility is a Title V major source, rough lines may also be subject to 40 CFR Part 64 – Compliance Assurance Monitoring (CAM). AQD will follow up with FLM to determine the facility’s Title V status.

2.2. Rough Line 3 - Rule 278(1)(b)

The TRC memo indicates the following actual emissions from Rough Line 3.

Pollutant	Actual Emissions	Rule 119 (e) Significance Level
PM	7.7 tons per year	25 tons per year
PM10	7.7 tons per year	15 tons per year
PM2.5	7.7 tons per year	10 tons per year

Per the TRC memo, actual emissions appear to be below the significance levels of these air contaminants per Rule 119(e).

2.2.1. Alternative Rough Line 3 Actual Emissions Calculation

An alternative emissions calculation using an emissions estimate method in the Flat Rock Metal PTI 71-98 file provides a similar final result. From the PTI 71-98 file, it appears that facility stack test results for rough line 2 were used in emissions calculations. The permit file indicates the stack test was conducted with 4 grinding heads, at 350 sheets per hour, and with emissions of 1.3 lb PM/hour after the dust collector. Calculations using these parameters indicate actual emissions are 8.15 tons PM/year. This is within the same order of magnitude as the facility-estimated actual emissions of 7.7 tons PM/year. Calculations are below.

- $(1.3 \text{ lb PM/hr}) / (350 \text{ sheets/hr}) / (4 \text{ grinding heads}) = 0.000929 \text{ lb PM/sheet*grinding head}$
- From the PTI 71-98 permit file, the maximum operating capacity is 3900 sheets per 8 hours, or 487.5 sheets per hour.
- Considering 6,000 actual operating hours per the memorandum regarding Rough Line 3 from February 8, 2018, and six heads operating as Rough Line 3 has, an alternative way to calculate actual PM emissions may be: $(487.5 \text{ sheets/hour}) * (0.000929 \text{ lb/sheet*grinding head}) * (6000 \text{ operating hours/year}) * (6 \text{ grinding heads}) * (2000 \text{ lb/1 ton}) = 8.15 \text{ tons PM/year}$.

3. Status of General PTI No. 59-09

During the facility inspection, Mr. Zang explained that the facility received general PTI No. 59-09 for a VOC coating operation. The coating operation has been moved offsite. A June 2016 AQD activity report indicates “The general PTI No. 59-09 regulating coating line operations at the FRM facility were discontinued and dismantled in 2013. Therefore the permit is no longer required and is void.” AQD will follow up with FLM to void general PTI No. 59-09.

Facility Walkthrough and Compliance Status

1. Cut to Length (CTL) Lines – R 285(2)(l)(vi)(B)

AQD visited the two cut-to-length lines at the facility. These two lines unroll steel coils and perform a sheer cut to create steel sheets of a specified length. The facility also has the ability to edge trim by cutting the entire coil if needed. No grinding occurs. No chemicals are involved. The edge trim and some full-size unusable sheets are sold as scrap. AQD observed bins containing edge-trimmed pieces of sheet metal. Pieces appeared to be narrow and long (several inches in length). It does not appear that

particulate matter is generated from CTL lines. The two CTL lines appear to be exempt from obtaining a PTI via Rule 285(2)(l)(vi)(B) for equipment for cutting metals where emissions are released into the general in-plant environment.

2. Four Polishing and Coating Lines – PTI No. 71-98

The facility has four main lines where steel is cleaned, lubricated, and coated with zinc phosphate. Three of these four lines include dry and wet polishing via grinders. Only sheets destined to be chrome bumpers are polished via grinders. Sheets off of this fourth line will go to another facility to be painted rather than chrome plated. So, the fourth line does not contain any polishing, either wet or dry (also referred to as rough lines and finish lines respectively).

AQD visited line #1, which was running (and line 3 during lunch, so it was not operating). On line 1, AQD observed a robot arm as it transferred individual sheets from a stack onto the line. An electronic sign displayed a tally of 1231. A productivity report is generated from this tracking.

Polishing and coating lines have three main steps, which are described in further detail below.

2.1. Step 1 - Steam and Pressure Rinse

The first part of the line is a steam and pressure rinse. This uses hot water and pressure to cause impingement to knock particulate into the water. Particles are dragged out via a belt several feet long and wide and into a hopper. These semi-dry cakes of particulate are sold to a scrap company. Oil that was on the sheets from delivery is separated into a tote to be removed off site.

No potassium hydroxide or sodium hydroxide appears to be used with this hot water rinse.

The fourth line appears to be comprised of the steam and pressure rinse only.

2.2. Step 2 - Dry Polishing (Rough Lines) – FGROUGHLINES – PTI No. 71-98

After the rinse, one flat sheet is loaded into the rough line at a time. The rough line is a dry grinding line. The facility refers to dry grinding as dry polishing.

Rough lines 1 and 2 are permitted under PTI No. 71-98. Rough line 3 was installed (added to polishing line 3) in March of 2018, according to MAERS. The facility asserts that this line is exempt from obtaining a PTI per Rule 285(2)(l)(vi)(C) for equipment with externally vented equipment controlled by a fabric filter. The line is controlled by a water spray type wet collector.

Rule 285(2)(l)(vi)(C) reads, in part:

(l) The following equipment and any exhaust system or collector exclusively serving the equipment:

...

(vi) Equipment for carving, cutting, routing, turning, drilling, machining, sawing, surface grinding, sanding, planing, buffing, sand blast cleaning, shot blasting, shot peening, or polishing ceramic artwork, leather, metals, graphite, plastics, concrete, rubber, paper board, wood, wood products, stone, glass, fiberglass, or fabric which meets any of the following:

...

(C) Equipment that has externally vented emissions controlled by an appropriately designed and operated fabric filter collector that, for all specified operations with metal, is preceded by a mechanical precleaner.

The TRC memo states, in part:

Additionally, while part (C) requires the operation of “an appropriately designed and operated fabric filter collector”, TRC understands, based on discussions with MDEQ-AQD, that use of appropriately designed and operated control equipment of any type may be considered acceptable under this rule. As such, the use of spray type wet collectors that have been in use at the facility and deemed acceptable by the MDEQ for control of particulates and metal HAP from

similar processes is considered “appropriately designed and operated” control equipment for this operation.

Further evaluation is necessary to understand the reasoning and discussions with MDEQ-AQD that formed the basis for having water spray type wet collectors use Rule 285(2)(l)(vi)(C) to be exempt from obtaining a PTI.

It appears that one water scrubber (the scrubber solution is just water) is associated with each rough line. This is different than the description of EUROUGHLINE1 and EUROUGHLINE2 in PTI No. 71-98, which states “Grinding operation exhausts are controlled by two water spray type wet dust collectors.” AQD will follow up with the facility regarding the permit status of this apparent change in air pollution control equipment.

2.2.1. FGROUGHLINES – PTI 71-98 - Special Conditions and Compliance Status

Permit 71-98 special conditions (SC) for flexible group FGROUGHLINES are discussed below.

SC(s)	Brief Condition Summary	Determination	Explanation
1.1a, 1.8a-d	Emission limit of 172.8 pounds (lbs) of particulate matter (PM) per day; keep records of daily sheets processed and mass emission calculations.	Compliance	Mr. Zang provided daily records in spreadsheet format from August 1, 2020 through July 30, 2021. The highest emissions were 46.9 pounds PM on June 23, 2021.
1.1b, GC 14	Emission limit of 0.025 lbs PM/1000 lbs exhaust gas	Not evaluated	This limit would be evaluated through a performance test requested by the AQD. AQD did not request a performance test.
1.1c, 1.9a-d	Emission limit of 0.691 lbs of manganese per day; keep records of daily sheets processed and mass emission calculations.	Compliance	Mr. Zang provided daily records in spreadsheet format from August 1, 2020 through July 30, 2021. The max emissions were 0.230 pounds of manganese on June 23, 2021.
1.2	Visible emissions from FGROUGHLINES shall not exceed a 6-minute average of 5% opacity.	Compliance	Mr. Zang explained the facility does a daily walkthrough to check opacity. AQD did not observe any opacity from FG-ROUGHLINES.
1.3	Material limit of 23,400 metal sheets per calendar day, and 8,541,000 metal sheets per 12-month rolling time period.	Compliance	Mr. Zang provided daily records in spreadsheet format from August 1, 2020 through July 30, 2021. The maximum daily sheets processed were 22,256 on June 23, 2021. The 12-month rolling total was 4,144,023 sheets from August 2020 through July of 2021.
1.4	Install, maintain, and operate wet dust collectors satisfactorily.	Compliance	Scrubbers appeared to be operating properly. No opacity was observed. Mr. Zang explained that a filter in the scrubber is changed monthly. Additionally, Mr. Zang provided the maintenance calendar which includes dust collection maintenance, and he provided the monthly invoices for sludge grinding disposal.
1.5	Install, maintain, and operate a gauge to measure the pressure drop across wet dust collectors, and sound	Compliance	AQD observed a pressure drop of about 12.5 pounds per square inch gauge (psig) on Rough Line 1, and 12 psig on the third rough line. These are within the appropriate pressure drop range of 10-15 psig. Mr. Zang explained that, if out of range, an alarm shuts down the scrubber and

SC(s)	Brief Condition Summary	Determination	Explanation
	an alarm above 15 psig or below 10 psig.		stops the loading of sheets into the line. This may occur if the scrubber pump fails, as one example.
1.6	Not more than 8 operating grinding heads in each grinding machine of FGROUGHLINES	Compliance	According to Mr. Zang, 5 or 6 grinding heads are typically operating in EUROUGHLINE1 and EUROUGHLINE2. Sheets received are more highly milled than historically, so less grinding is necessary now. Each grinding head contains one polishing belt.
1.7	Maintain a chemical composition of metal sheets.	Compliance	The facility provided a bill of lading from August 19, 2021 of the steel composition.
1.10a-d	Stack dimensions	Not evaluated	AQD did not evaluate stack dimensions during this facility inspection.

2.3. Step 3 - Wet Polishing (Finish Lines) – Rule 290(2)(a)(i), 281(2)(e), 285(2)(l)(vi)(B)

After dry polishing, sheets undergo wet polishing. This part of the process appears to be exempt from obtaining a PTI. Several exemptions are used for wet polishing, per the permit file for PTI No. 71-98.

First, lubricant emissions appear to be exempt for each line under Rule 290(2)(a)(i) for VOC emissions less than 1,000 pounds per month. Fuchs Lubricant’s DA2481 is 0.63 lbs VOC per gallon. The facility provided monthly VOC emissions for each finish line from metal sheet lubrication. The maximum monthly emissions were 653.4 pounds on EUFINISHLINE1 in March of 2020.

Second, phosphate and wash applications that contain no VOCs appear to be exempt using Rule 281(2)(e) for equipment for washing materials if no VOCs with a vapor pressure greater than 0.1 mm Hg is used, and no oil or solid fuel is burned.

Third, wet polishing/grinding appears to be exempt under Rule 285(2)(l)(vi)(B) for surface grinding metal where emissions are released into the general in-plant environment.

Fourth, natural gas-fired curing ovens with a heat input of 0.5 million British thermal units per hour (MMBtu/hr) appear to be exempt under R 282(2)(b)(i) for natural gas-fired fuel burning equipment for indirect heating with a rated heat input capacity of not more than 50 MMBtu/hour.

2.3.1. PTI 71-98 – FGFACILITY - Special Conditions and Compliance Status

Permit 71-98 special conditions (SC) for flexible group FGFACILITY are discussed below.

SC(s)	Brief Condition Summary	Determination	Explanation
2.1a, 2.1b, 2.4a-d	Emission limit less than 9.0 tons of each hazardous air pollutant (HAP) and less than 22.5 tons aggregate HAP per 12 month rolling time period	Compliance	The facility shared safety datasheets (SDS) for materials used on site. The facility indicates that there are no HAPs emitted. SDSs indicate there are no HAPs. The facility steel appears to contain manganese, nickel, and chrome, but in concentrations below HAP concerns. The highest HAP concentration in steel is manganese, for which the facility keeps daily records. The facility emitted 0.02 tons Mn for the 12-month time period of August of 2020 through July of 2021.
2.2, 2.3	Determine HAP content from formulation data; maintain SDSs or formulation data for each process material.	Compliance	The facility provided requested SDSs. SDSs indicate that no HAPs are in the liquids used on site.

3. Additional Facility Equipment

As a final part of the facility process, when required, the facility has four presses that do sheet blanking. These presses appear to be exempt from obtaining a PTI per Rule 285(2)(l)(i) for stamping cold metals.

The facility has one cold cleaner on site. The surface area appears to be less than 10 square feet. The cold cleaner appears to be exempt from obtaining a PTI per Rule 281(2)(h) for surface cleaners that have an air/vapor interface of not more than 10 square feet. The lid was open during the inspection; AQD requested that the lid be kept closed. Operating instructions were posted conspicuously. Mr. Zang provided an image of the closed lid following the facility inspection. Usage instructions were posted. AQD did not request the MSDS of the solvent used in the cold cleaner.

A natural gas emergency engine is used on site for facility computers and server maintenance. AQD was not able to locate the engine's nameplate specifications during the facility inspection. Follow up is necessary to determine the engine's applicability to federal regulations and its compliance status with respect to PTI requirements.

The facility has a protective film sheet applicator that appears to roll tape onto sheets to protect the sheets when necessary. This does not appear to be an air quality concern.

The facility has two natural gas-fired boilers. These boilers are in the Michigan Air Emissions Reporting System as EUBOILEREAST9 and EUBOILERWEST10. EUBOILEREAST9 has a heat input of 6.51 MMBtu/hr, and an installation date of 1983. EUBOILERWEST10 has a heat input of 15.44 MMBtu/hr and an installation date of 1955 (and subsequent modification in 1981 according to the 71-98 permit file). AQD visited these boilers. They appear to be exempt from obtaining a PTI per Rule 282(2)(b)(i) for equipment used for service water heating which burns natural gas and has a rated heat input capacity of not more than 50 MMBtu/hr. EUBOILEREAST9 does not appear to be subject to federal Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units (40 CFR Part 60 Subpart Dc) due to its heat input being less than 10 MMBtu/hr per 60.40c(a). EUBOILERWEST10 does not appear to be subject to 40 CFR Part 60 Subpart Dc due to its installation and modification occurring before June 9, 1989 per 60.40c(a).

Water treatment occurs at the facility. Part of treatment appears to be to remove zinc phosphate from water used at the facility. Water treatment appears to be exempt from obtaining a PTI per Rule 285(2)(m) for process water treatment equipment.

Conclusion

Based on the AQD inspection and records review, it appears that FLM is in 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; and PTI No. 71-98. AQD will follow up with FLM to void general PTI No. 59-09. AQD will also follow up with FLM to determine the facility's Title V status. Lastly, AQD will follow up with FLM to determine the appropriateness of using Rule 285(2)(l)(vi)(C) to exempt wet scrubber type controls, as well to determine the permit status of the apparent change in air pollution control equipment (from two scrubbers per line to one scrubber).

NAME Am Z DATE 2/22/22 SUPERVISOR JK