

DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
ACTIVITY REPORT: Self Initiated Inspection

A626244463

FACILITY: MUELLER BRASS CO.		SRN / ID: A6262
LOCATION: 2199 LAPEER AVE, PORT HURON		DISTRICT: Southeast Michigan
CITY: PORT HURON		COUNTY: SAINT CLAIR
CONTACT: Dave Struble , Facility Manager		ACTIVITY DATE: 04/02/2018
STAFF: Rem Pinga	COMPLIANCE STATUS: Non Compliance	
SUBJECT: Unannounced Level 2 Inspection		SOURCE CLASS: SM OPT OUT
RESOLVED COMPLAINTS:		

On April 2, 2018, AQD staff Eric Grinstern, Remilando Pinga, and Lauren Magirl conducted an unannounced inspection at Mueller Brass Company located at 2199 Lapeer Avenue, Port Huron, Michigan 48060. 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), the administrative rules, and the facility's Permit to Install No. 180-00C. The inspection was also a follow-up to the March 12, 2018 meeting/visit by AQD staff Remilando Pinga at the facility to discuss recently observed lead ambient air levels above 0.15 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) from air monitoring conducted at the AQD monitoring site located North of the facility. This inspection report was written jointly by AQD staff Mr. Grinstern and Mr. Pinga with inputs from Ms. Magirl.

AQD staff Mr. Grinstern, Mr. Pinga, and Ms. Magirl, arrived at approximately 10:00 am. After checking in at the guard station, AQD staff met with Bob Kartanys, VP Engineering, and Doug Westbrook, EHS Supervisor. Dave Struble, Facility Manager, is the current facility contact for AQD. However, he was absent from the facility on the day of the inspection.

A tour of the facility operations took place followed by a post-inspection meeting. From our inspection, the facility can be divided into four sections: Administration, Casting/Rod Mill, Wastewater Treatment/Forging, Forging/Warehouse.

### Wastewater Treatment/Forging (Building No. 72)

#### Forging

The facility forges both brass and aluminum. Approximately 80% of forging involves brass, with the remaining 20% consisting of aluminum. The facility receives the aluminum slugs from an outside source.

In the forging area the following processes were observed:

Core Press – The core press exhausted through a smog-hog filtration unit prior to venting to the outside atmosphere. I observed visible emissions being emitted into the in-plant atmosphere from several locations of the press. Mr. Kartanys stated that the VE was caused by emissions from the mold release material (composed of graphite and water) when sprayed onto the hot mold. Mr. Kartanys explained that the press was a high capacity production unit (up to 800 units/hour).

(4) "Near-Net" Presses – Each press has two furnaces, allowing for the forging of different metals at the same time, i.e. aluminum and brass. The entrance and exit of each furnace is vented to the outside atmosphere.

(1) 2000 Pound Press – Emissions from the entrance and exit of the furnace are vented to the outside atmosphere.

Additionally, there are several smaller forges, of which two have emissions from the furnace ducted to the outside atmosphere. The remaining small forges do not vent to the outside atmosphere.

AQD staff requested SDS information for the mold release material used in the forging operations. From submitted data, the facility used Hykogeem 520 and Metlube H150 at 9:1 parts mixture. Both materials have mineral oil as component and when subjected to heat, oil is emitted as VOC. AQD staff calculated the total estimated VOC emission for FY 2017 at greater than 27,342 pounds.

### **Wastewater Treatment**

Sludge Dryer (EUSLUDGEDRYER) – the sludge dryer is located within the wastewater treatment area. The sludge dryer is used to dry the filter cake derived from the facilities waste water that contains metal oxides. Mr. Westbrook stated that the sludge dryer is operated every other day. Emissions from the sludge dryer are controlled with a wet scrubber. The wet scrubber is equipped with a liquid flow gauge. At the time of the inspection, the flow rate was 2 gallons per minute. The process is vented to the outside atmosphere via a vertical stack through the roof. No emissions were observed from the sludge dryer stack.

Emission testing on the sludge dryer was last conducted and observed by AQD in January 2011. Test results showed PM10 emission rate at 0.01 lb./hr. (pph) and met the permit to install, PTI No. 180-00C special condition EUSLUDGEDRYER (I.1) limit of 1.0 pph. Retesting to evaluate emissions from the process would appear to be warranted due to the length of time since it was last tested.

### **Forging/Warehouse (Building No. 62)**

The Forging/Warehouse building is located south of the other facility operations and is separated by a railroad line. Approximately 3/4 of the plant is used for warehousing and shipping and receiving, while the remaining 1/4 is used for forging and heat treating.

### **Forging**

In the forging area the following processes were observed:

Automated LASCO Press - Emissions from the press are vented to the outside atmosphere. Presses are normally exempt from permit to install requirements per MDEQ-AQD Administrative Rule (AQD Rule) R 336.1285(2)(I)(i). The facility is using Lubriforge 2052 M10 as mold release for this process. Mr. Kartanys mentioned that it contains the same graphite mixture as in the core press mold release agent. AQD

staff observed the forge lines in this area are used to manufacture brass swash plates for air conditioners.

(2) Heat treat lines that contain annealing furnaces and pit furnaces. The furnaces are vented externally. Parts are quenched with a water/glycol solution. Quenchant A is used in this process. Polyalkylene Glycol (PAG) is a component of this material. At 55% component mixture (1.092 specific gravity) and 330 gallons used in FY 2017, a total of 1,653 pounds of PAG was emitted from the process lines.

(2) Aluminum extrusion processes used to make HVAC duct heat sinks. Each line includes a parts washer. The parts washers utilize an alkaline cleaner, for which the SDS was requested from the facility. The parts washers do not vent directly to the outside atmosphere.

Per facility information, Brulin is used on heat sinks. The SDS shows about 8.5% VOC with specific gravity of 1.067. At 3,300 gallons usage for FY 2017, the total VOC emitted by this process is 2,496 lb. or about 1.25 tons.

### **Casting/Rod Mill**

Casting and rod production operations include charge material handling (chips/solid scrap/ingots), melting, castings, billet reheat, extrusion, pickling and finishing.

### **Charge Material Handling**

Approximately 60% of the charge material used by the facility to make brass rod consists of brass chips received back from customers of Mueller. The remaining 40% of charge material consists of material purchased on the open market, including chips, solid scrap and ingot.

Per Mr. Kartanys, majority of the chips are received via semi-trailer. The incoming loads are screened for radiation and sampled for moisture and chemistry. The trucks are tilted on a hydraulic lift to empty the chips into a pit conveyor. There is no capture or control system to address any emissions that might be generated during unloading. The unloading bay was open to the outside where the trucks enter the building. The chips have some moisture content from cutting fluids, however it is possible that some dust could be generated and emitted the outside air when the trucks are unloaded. No trucks were being unloaded at the time of the inspection. Adjacent to the chip receiving bay are truck docks to receive chips and solid charge material via gaylord boxes.

Chips unloaded into the conveyor pit pass through a magnet and shaker to remove impurities prior to storage in internal silos for later use as raw material component for charging into one of the furnaces. During inspection, AQD staff observed a large pile of chips stored in one corner of the building near the pit area utilized as overflow of silo capacity. Gaylord boxes of chips and solid scrap are stored within the facility.

Chip unloading should be evaluated during truck unloading to determine if dust is being generated and emitted to the outside atmosphere.

### **Melting/Casting**

The facility's NSR permit (PTI No. 180-00C) addresses three systems, System A, System B and System C as FGSYSTEMA, FGSYSTEMB, and FGSYSTEMC. The facility currently only operates System B and System C. Systems B and C are located adjacent to each other in the Casting Shop.

Observation of the Casting Shop showed a considerable amount of visible emissions resulted from uncaptured emissions from the melting furnaces. The entire Casting Shop had a thick cloud of visible emissions that extended to the roof of the building.

In 2012, the facility installed the System D baghouse to function as a fugitive emission scavenger collection system in the Casting Shop. The system was designed to capture emissions along the top ridge of the roof. Observation from inside the Casting Shop showed that majority of the fugitive emissions were not reaching or being pulled into the capture system. Observation of the exterior of the Casting Shop showed evidence of emissions "leaking" out of the structure. Black staining was observed at the seams of the building's exterior.

The baghouse associated with System D is a two-chamber negative pressure unit. The baghouse modules had the following readings at the time of the inspection: Module No.1: 5.3", Module No.2: 5.3". AQD staff did not observe visible emissions coming out of the baghouse exhaust system outside the building.

AQD records do not show any emissions testing conducted on the System D baghouse. Testing to evaluate emissions from the process is warranted.

### **System B (FGSYSTEMB)**

System B is a three-strand continuous horizontal billet caster. The system consists of two melting furnaces, a coreless furnace (EUCHIPFURNACE2) and a channel furnace (EUCHANFURNACE1). Molten metal from the two melting furnaces is conveyed to a holding furnace (EUCASTFURNACE3) which feeds Caster No. 4.

Per Mr. Kartayns, the coreless furnace is capable of melting wet chips. The channel furnace is used to melt dried chips, and solids. Mr. Kartayns said that the channel furnace can be used to melt some wet chips, however the design of the coreless furnace is better suited to control (burn off) the resulting emissions from melting wet chips.

Emissions from System B are controlled by the a 75,000 ACFM baghouse (Baghouse System B). The System B baghouse is a five-chamber positive pressure unit. Each of the five chambers are exhausted through two stacks. Observation of the System B baghouse showed discoloration from past fires.

Each of the five chambers is equipped with a pressure drop indicator. At the time of the inspection the pressure drop readings were recorded.

Chamber **B1**: 7.76"; **B2**: 7.88"; **B3**: 0.64" (cleaning cycle); **B4**: 9.05; **B5**: 8.03"

During the inspection, visible emissions were observed to be leaking from the System B baghouse. The facility stated that the visible emissions were caused by a seal leak associated with the guillotine gating system, in Section B5, that closes off chambers for cleaning. The facility stated that they were in the process of getting the leak fixed. No visible emissions were observed from the baghouse stacks during the inspection. The Preventative Maintenance/Malfunction Abatement Plan (PM/MAP) daily maintenance check list for 4/02/2018 did not record the leak (malfunction) in System B baghouse.

AQD records do not show any recent observations by AQD of emission testing on the System B baghouse. Testing to evaluate emissions from the process would appear to be warranted. However, as noted above, there is a large amount of uncaptured emissions from the casting system furnaces that are not being ducted to the baghouse.

In October 2017, the electrical system associated with the coreless and channel furnaces was damaged resulting in the furnaces being inoperable in October and part of November 2017. To address the accumulation of wet chips, the facility restarted the Belding Facility chip dryer. Additionally, the facility increased production on the No. 3 casting line.

### System C (FGSYSTEMC)

System C is a vertical batch casting system capable of casting five billets at a time. The system consists of three melting furnaces, the No. 3 South furnace (EUMELTFURNACE3S), the No. 3 West furnace (EUMELTFURNACE3W) and the No. 3 North furnace (EUMELTFURNACE3N). The No. 3 North furnace is currently not operational. Molten metal from the two melting furnaces is conveyed to a holding furnace (EUHOLDFURNACE3) which feeds Caster No. 3.

Emissions from System C are controlled by the a 120,000 ACFM baghouse (Baghouse System C). The System C baghouse is an eight-chamber positive pressure unit. AQD staff observed that each of the chambers are exhausted through two side vents.

Each of the eight chambers is equipped with a pressure drop indicator. At the time of the inspection the pressure drop readings were recorded.

Chamber **C1**: 0.0" (Rotary lock repair); **C2**: 4.57"; **C3**: 8.0"; **C4**: 8.64; **C5**: 9.24"; **C6**: 8.94"; **C7**: 7.09; **C8**: (locked out-filter replacement)

During the inspection, visible emissions were observed to be coming from the exhaust vents of the C8 chamber, each time there was an air pulse in the baghouse. The facility stated that the visible emissions were likely due the recent replacement of the filter in the chamber resulting in loose dust. AQD staff observed that System C Baghouse does not have stacks associated with each compartment that exhaust emissions unobstructed vertically upwards to the atmosphere.

Emission testing on the System C baghouse was last conducted and observed by AQD in January 2011. Retesting to evaluate emissions from the process would appear to be warranted due to the length of time since it was last tested. However, as noted above, there is a large amount of uncaptured emissions from the casting system furnaces that are not being ducted to the baghouse.

### **Billet Reheat Furnaces (FGBILLETHEATERS)**

The facility has three billet reheat furnaces, EUBILLETHEATER1, EUBILLETHEATER2, and EUBILLETHEATER3. The reheat natural gas fired furnaces bring cast billets up to a temperature around 1350 degrees F, to make the metal malleable for extrusion into rods. The exhaust stacks from these furnaces are uncontrolled. This flexible group only has stack applicable requirements.

### **Extrusion**

After the billets are processed through the reheat furnace, they are processed through the No. 5 Extruder. The extrusion process is used to manufacture the desired rod or coil shape and size. There is no capture or emissions control associated with extrusion. Minimal emissions are expected from this process and was not included in the PTI.

### **Pickling**

The facility utilizes two sulfuric acid pickling lines, one for straight rod and one for coils. The pickling lines vent to the general in-plant environment. The pickling process appeared to be exempt from PTI requirements per AQD Rule R 336.1285(2)(r).

### **Finishing**

Finishing operations primarily involve straightening the rod, cutting to size and chamfering the ends. Emissions are vented to the general in-plant environment. These processes appeared to be exempt from PTI requirements per AQD Rule R 336.1285(2)(l).

### **FGFACILITY**

AQD records in file showed that Mueller Brass conducted stack testing on Casting System A, Casting System C, the Sludge Dryer, and the Chip Dryer in January 2011. The test results showed compliance with the following emission limits: Sludge Dryer - 1.0 lb PM10/hr, Chip Dryer - 2.4 lb PM10/hr & 2.0 lb HCL/hr, System A - 1.0 lb PM10/hr, and System C - 1.0 lb PM10/hr as required by PTI No. 180-00B at that time.

The Chip Dryer was completely uninstalled in 2015 and removed from PTI No. 180-00B in the revised PTI No. 180-00C that was issued on June 10, 2016. AQD staff previously verified the removal of the Chip Dryer.

Per Mueller Brass staff, System A process (FGSYSTEMA) has been removed from the facility and Baghouse System A has been uninstalled. AQD staff verified no System A baghouse which used to be located beside Baghouse System B.

Per PTI No. 180-00C special condition FGFACILITY(I), the facility submitted emissions records to show compliance with the applicable pollutants. The PTI No. 180-00C facility wide emission limits are 88 TPY PM-10, 89.9 TPY NOx, 9 TPY individual HAPs, and 22 TPY of aggregate HAPs, based on monthly 12-month rolling totals. As of December 2017, Mueller Brass reported the monthly 12-month rolling total emissions as follows: 4.6 tons PM-10, 10.83 tons NOx, 0.02 ton Lead (HAP), and 0.02 ton aggregate HAPs. The PM-10 and Lead emissions are based on the 2011 stack test results multiplied by emission unit operating hours. The company is using the average between System A and System C test results to estimate the PM10 and Lead emission factors for System B. The facility used AP-42 emission factor to determine the NOx emissions.

### **Post-Inspection Meeting**

The follow issues were discussed/records requested during the post-inspection meeting:

- Records requested for baghouse maintenance, material throughput, SDSs
- Information regarding furnace start-up procedures requested
- Records kept complying with FGFACILITY, fuel usage and emissions requested
- The need to properly document baghouse malfunctions and corrective actions
- Possible causes for the recent lead spikes at the air monitor
- Conducting emissions testing
- Poor capture associated with the furnaces in the Casting Shop
- Emissions observed from the System B and System C baghouses
- Concern that AQD had regarding the recent spikes and increasing trend in the 3-month average observed in air monitoring lead results for the last few years.

### **Submitted Records Review**

AQD District staff received daily "A.A.F Baghouse Check Sheet" dated from August 1, 2017 through April 2, 2018, Caster 3 & 4 melt data from October 1, 2017 through April 1, 2018, emissions data, SDS sheets, forging chemicals usage data, etc.

AQD staff conducted a review process on the above information. From the August 1, 2017 through April 2, 2018 submitted A.A.F Baghouse Check Sheets, AQD staff

observed multiple dates of baghouse related PM/MAP issues, such as baghouse fires, visible emissions, contaminant leaks, absence of pressure data during melts, baghouse compartments/pressure monitoring not operating for long periods of time, failure to document some malfunction events, and corrective actions taken to address the events, etc. These are indications of improper operation of the baghouse air contaminant emissions control system (failure to maintain and operate the air cleaning device in a satisfactory manner), non-compliance of certain applicable requirements in PTI No. 180-00C, and/or inconsistent implementation of certain provisions of the March 2016 PM/MAP.

AQD staff observed the absence of pressure drop data on either some or all compartments of Baghouse System B on 11/10/2017, 11/14/2017, and 12/04/2017; and Baghouse System C for 11/10/2017 and 1/19/2018. Records indicated that the corresponding casting furnaces were operating based on the presence of daily furnaces melt data, but no pressure drops data were available on the corresponding dates. These observations appear to indicate "failure to maintain and operate Baghouse Systems B & C pressure drops indicator in a satisfactory manner and failure to operate the air cleaning device in a satisfactory manner" as required by PTI No. 180-00C, FGSYSTEMB, Special Condition IV.2; PTI No. 180-00C, FGSYSTEMC, Special Condition IV.2; and MDEQ, AQD Administrative Rule R 336.1210 (Rule 910).

AQD staff observed that the recorded pressure drops readings in A.A.F Baghouse Check Sheets were above the PTI No. 180-00C, FGSYSTEMC, Special Condition IV.3 operating range requirement of 12.0 inches W.G. for 8/3, 4, 10/ 2017 and 11/12/2017, and below 4.0 inches W.G. for 8/30/2017. These observations were non-compliant with the above corresponding permit to install condition, Rule 910 (an indication of failure to operate the air cleaning device in a satisfactory manner), and PTI No. 180-00C, FGFACILITY, Special Condition III (PM/MAP (3 & 4)) - the practice was inconsistent with certain provisions of the March 2016 PM/MAP.

During inspection, AQD staff also observed that the contaminant air flow from the Baghouse System C was exhausted through side ports of each section and not "discharged unobstructed vertically upwards to the ambient air" as required by PTI No. 180-00C, Special Condition, FGSYSTEMC VIII. This is also non-compliant of the above cited permit condition.

### **Inspection Results**

AQD staff has sent Mueller Brass Company, Port Huron facility, Violation Notices (VNs) dated April 17, 2018 and May 15, 2018 for non-compliance of MDEQ-AQD Administrative Rule 910 and certain applicable requirements of AQD Permit to Install No. 180-00C, including PM/MAP, based on observations of the non-compliance



issues from the April 2, 2018 walk through inspection and the information/records review process.

NAME

    *P. A. Pi*    

DATE

    *5/24/2018*    

SUPERVISOR

    *Joyce*