

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

A158839862

FACILITY: SUPERIOR BRASS & ALUMINUM		SRN / ID: A1588
LOCATION: 4893 DAWN AVE, EAST LANSING		DISTRICT: Lansing
CITY: EAST LANSING		COUNTY: INGHAM
CONTACT: David Fedo , Compliance Manager		ACTIVITY DATE: 05/18/2017
STAFF: Daniel McGeen	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Unannounced, scheduled inspection.		
RESOLVED COMPLAINTS:		

On 5/18/2017, the Michigan Department of Environmental Quality (DEQ), Air Quality Division (AQD), conducted an unannounced, scheduled inspection of Superior Brass & Aluminum. The purpose was to check compliance with the Michigan Air Pollution Control Rules and the facility's permits to install, including a permit which had been approved earlier this year.

Facility environmental contact:

David Fedo, Compliance Manager; 517-351-7534; davidjfedo@superiorbrass-mi.com;

Facility description:

This facility is a small, non-ferrous foundry which melts and pours preprocessed alloy ingots and in-house scrap into sand molds. Some cores for the sand molds are created in the plant, while others are purchased from a supplier. The parts recovered from the sand shakeout are cut to shape and ground to remove excess flash prior to shipping. A number of brass and bronze alloys are being poured; however, aluminum has been eliminated from the process line. Many of the products being manufactured are plumbing parts used in fire hydrants.

Emission units:

Emission unit*	Emission unit description	Permit to Install No.	Compliance status
EURECLAIM	Green sand reclaiming system. Sand is transferred via covered conveyors to four hooded storage bins. Controlled by cartridge dust collector.	18-17	Compliance
EUMELT/POUR	Brass foundry operations with four electric pot furnaces (400 lb capacity each) and a pouring station equipped with hoods ducted to a 20,000 scfm cartridge dust collector.	72-06	Compliance
EUSHAKEOUT	A drum-type shakeout and casting separation system controlled by a 15,000 scfm cartridge dust collector.	72-06	Compliance
Metal saws, grinders, and sanders	Cut-off (2), grinders (2), Wheelabrator (1), belt sanders (2), band-saw – bag filter (1)	642-78	Compliance

*An emission unit is any part of a stationary source which emits or has the potential to emit an air contaminant.

Regulatory overview:

This facility is considered to be a true minor source, rather than a major source of air emissions. A *major source* has the potential to emit (PTE) of 100 tons per year (TPY) or more, of one of the criteria pollutants. *Criteria pollutants* are those for which a National Ambient Air Quality Standard exists, and include carbon monoxide, nitrogen oxides, sulfur dioxide, volatile organic compounds (VOCs), lead, particulate matter smaller than 10 microns, and particulate matter smaller than 2.5 microns.

It is also considered a minor, or *area source*, for Hazardous Air Pollutants (HAPs), because it is not known to have a PTE of 10 TPY or more for a single HAP, nor to have a PTE of 25 TPY or more for combined HAPs.

The facility had, at the time of the inspection, 3 permits to install. Please refer to the emission unit table above.

The facility is subject to 40 CFR Part 63, Subpart ZZZZZZ, *National Emission Standards for Hazardous Air Pollutants Area Source Standards for Aluminum, Copper, and Other Nonferrous Foundries*. The facility is aware of the 6,000 ton threshold contained in the NESHAP, which, if exceeded, would classify the plant as a large foundry, subjecting them to additional regulatory requirements.

In 1997 the company applied for and received a permit to install to limit particulate emissions from the foundry processes. The permit was modified and reissued in 2006. The permit were used to establish a PTE indicative of a true minor source of criteria pollutants. At present there is no indication of HAP emissions from the source which would be classified as significant; therefore, Superior Brass is considered an area source of HAPs. Aluminum pouring operations were discontinued in 1995; therefore 40 CFR Part 63, Subpart RRR, *National Emissions Standards for Hazardous Air Pollutants for Secondary Aluminum Production*, does not apply, nor does Subpart XXX, *National Emissions Standards for Hazardous Air Pollutants for Ferroalloys production; Ferromanganese and Silicomanganese*, nor does Subpart QQQ, *National Emissions Standards for Hazardous Air Pollutants for Primary Copper Smelting*.

There are no boilers onsite. The facility has residential water heaters, reported to be less than 120 gallons in size. These would be exempt from 40 CFR Part 63, Subpart JJJJJJ, *National Emissions Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources*, under Section 63.11195(f). To meet the definition of a hot water heater in this area source Generally Achievable Control Technology (GACT) standard, the unit must be no more than 120 gallons in capacity. AQD has not been delegated authority to enforce Subpart JJJJJJ.

Fee status:

This facility is not a Category I fee subject source, because it is not a major source for criteria pollutants. It is not a Category II fee-subject source because it is not a major source for Hazardous Air Pollutants (HAPs), nor is it subject to federal New Source Performance Standards. However, it is Category III fee-subject, because it is subject to 40 CFR Part 63, Subpart ZZZZZZ, the area source NESHAP for aluminum, copper, and nonferrous foundries. The facility is not required to submit an annual air emissions report via the Michigan Air Emissions Reporting System (MAERS).

Location:

The plant is located between East Lansing and Okemos, slightly south of Grand River Avenue. A railroad slices diagonally on the south end of the property, northwards to the east. The Red Cedar River intersects the railroad heading in the opposite direction along the west side of the property. To the immediate west of the plant is a large apartment complex. To the south is another apartment complex. To the immediate north is a brew pub, followed by an industrial facility. To the immediate east are commercial buildings, including a structure which now houses the offices for Superior Brass & Aluminum.

History:

There are no violations and no complaints in the AQD district files for this facility, going back as far as 11/21/1989. Records prior to that date appear to have been archived. Stack testing has never been required at this facility.

Arrival:

This was an unannounced inspection. AQD was represented by Environmental Engineer Michelle Rogers, from AQD's Permit Section, and by myself. M. Rogers had written PTI No. 18-17, for a new sand handling and reclaim system, which was issued on 4/18/2017. One of the goals of today's inspection was to see the newly permitted equipment in operation, and to verify compliance with this permit.

We first went to the parking lot of the apartment complex to the immediate west of Superior Brass

& Aluminum. At 9:36 AM, there was a barely detectable odor (level 1 on the AQD 0 to 5 odor scale), which I was unable to identify. No visible emissions were detected. As we drove south on Dawn Avenue, we detected no visible emissions. There was a slight metallic odor when we were immediately northeast of the plant, at about 9:45 AM. From the plant parking area, south of the plant, no visible emissions could be detected. The odors I detected were insufficient to constitute a violation of Rule 901 (b), which prohibits unreasonable interference with the comfortable enjoyment of life and property.

Weather conditions were mostly sunny, humid, and 75 degrees F, with winds 15-20 miles per hour, variable in direction, but mostly out of the south. Please see attached weather data.

We went to the plant offices, in a commercial building on the opposite (east) side of Dawn Avenue from the plant. We presented our identification/credentials, per AQD procedure, and met with Mr. David Fedo, Compliance Manager. We explained that the reason for the visit was to do a compliance inspection, with particular interest in the recently permitted and newly installed green sand handling and reclaim system, along with its cartridge dust collector.

It is my understanding that because of concerns with general concerns for silica, relating to occupational health, they may apply for a new PTI, for a control system to address silica, prior to 6/23/2018. Plus, we were told that they would like to replace a 20,000 cfm dust collector with a 40,000 cfm dust collector, for the melting operation, possibly under an exemption.

Note: PTI application No. 72-06A, for replacement of the 20,000 cfm dust collector with a 40,000 unit was received on 8/7/2017, a few months after this inspection.

We were shown recordkeeping in the plant office. For 2016, their plant production was 2,545.83 tons, below the 6,000 ton threshold that would subject them to 40 CFR Part 63, Subpart ZZZZZZ, if they exceeded it. Every day, we were advised that they record production schedule, part type, part number, how many molds were made, pouring temperature, and any notes or comments. Melt room records include the heat number (melting and pouring a batch of metal is called a heat) from the metal supplier, and test records, to check against specifications for the raw material. This is entered into a spreadsheet each day.

Inspection:

The facility pours 8 brass alloys, D. Fedo explained, with each one having a different chemical composition and different properties. We were informed that they do not mix the alloys onsite, but purchase them pre-mixed. It is my understanding that all of the brass alloys contain small amounts of lead, although one kind in particular is said to have a very low lead content.

EURECLAIM; PTI No. 18-17:

When sand is separated from metal castings, the sand leaves the separation machine, we were told, and goes to 4 storage hoppers. Originally, there was 1 storage hopper, we were told, but there were issues with heat from the sand. The operator can now control which of the 4 hoppers the sand goes into. The new system has resulted in improved in-plant air quality for the employees, we were informed.

We observed the 4 new hoppers, and the covered conveyor which feeds them. There were no fugitive emissions from the equipment. The processes are ducted to a large Torit dust collector. There were no visible emissions from the Torit, we noted, when we stepped outside of the plant. Pressure drop was 0.8 inches, water column (w.c.). We were told that this dust collector does not yet have a "push to test" button, but this would be rectified (I was subsequently advised by phone that this had been installed). Housekeeping was good around the dust collector. We were told that they do a daily visual check to make sure that outside areas around the plant are clean.

EUMELT/POUR; PTI No. 72-06:

EUMELT/POUR includes 4 electro-induction pot furnaces and pouring stations. These were operating. There were intermittent amounts of visible emissions, less than 5% opacity, from the pot furnaces inside

the plant. The emission appeared to dissipate not far from their point of origin. We were told that they are trying to improve their fume collection efforts, prior to June 2018.

The 4 pot furnaces are rated at 400 lbs capacity each. Batch size ranges from 250-400 lbs, we were told, but no more than 400 lbs.

Because the furnaces are rated at less than 1,000 lbs each, and they do not use chlorinated or fluorinated fluxes, they satisfy the Rule 282(2)(a)(iv) exemption (originally the Rule 282(a)(iv) exemption, until it was revised on 12/20/2016). However, a permit was requested in 1997 for the purpose of limiting facility-wide PTE of particulate emissions. Since then, the permit was amended twice; once in 2005, and again in 2006.

Particulate emissions for the melt and pour operation are limited to 0.32 tpy. The compliance method is Rule 1001, "a test may be required". To date a stack test has never been required.

The brass melting and pouring was in operation during our inspection. The melting and pouring areas are equipped with ventilation hoods that are ducted to a Torit paper cartridge type dust collector. The collector was operating. A particle sensor is installed on the clean side of the filter system. It monitors bag leakage as required by permit. D. Fedo pushed the test button for the detector and the light illuminated and demonstrated the sensor was operational.

The Torrit collector pressure drop was 5.2 inches w.c. There was 0% opacity from the exhaust stack. The stack was at least 35' in height directly upward and less than 28" in diameter. The collector empties directly into drums, which are checked at least once a week for fill capacity. Housekeeping was good around the dust collector.

EUSHAKEOUT; PTI No. 72-06:

The sand handling and recycling system includes a drum-type shake out and a casting separation system that exhaust to a second paper cartridge type dust collector. Shakeout occurs via a vibradrum that provides capture and control.

The collection system was operating. A sensor is installed and operational on the clean side of the dust collector. The sensor monitors bag leakage as required by permit. D. Fedo pushed the test button for the detector and the light illuminated indicating that the monitor was operational. There were no visible emissions from the exhaust of the Torit cartridge dust collector. Pressure drop was 3.0 inches, w.c. There was 0% opacity. The permit limit is 5%.

Housekeeping appeared good.

The exhaust stack was of an appropriate height (24') and dimension (max. 28"). Particulate emissions for EUSHAKEOUT operations are limited to 0.28 tpy. The compliance method is Rule 1001, "a test may be required". A stack test has never been required to date. I identified additional collection hoods ducted to the collector for sand handling operations other than the drum-type shake out and casting separation systems.

Other sand handling equipment that exists at the plant includes a sand muller, rotary screener, mold compactor, and several conveyors that move sand through the system. The equipment was identified in prior permit applications and although not specifically contained in the emission unit description of 72-06, it is believed that they are covered by this permit.

Some of the sand molds require that cores be placed in them. It is my understanding that some cores are purchased from an outside source, while some are made in plant from silica sand, with 2 Redford-Carver core machines. D. Fedo indicated that 3 were present during previous inspections, but one unit was subsequently removed. We were told that they may place an existing 20,000 cfm dust collector, along with a canopy, in the core making area.

Molds are made with green olivine sand on 2 Hunter units. We observed molds being formed, during the

inspection. Their green mold sand is olivine sand, not silica sand, we were told, because of their interest in safety here. The green sand can be reused, we were advised.

Phenolic resin coated sand is purchased for the in-plant production. Some formaldehyde can be released during heating of the product during pouring. Formaldehyde is listed as a HAP and is regulated by the Clean Air Act. In 2013, AQD's Brian Culham attempted unsuccessfully to determine a formaldehyde emission factor for core manufacturing. His research suggested a worse case value for this product of less than 1% of the weight. Records from 2012 indicated that 105,000 pounds of resin coated sand was used that year, and formaldehyde emissions from core making would not exceed 0.5 tons for 2012.

Metal Saws, Grinders and Sanders; PTI No. 642-78:

This permit is still listed as active and may cover some of the equipment that is installed. Additional equipment would be exempt by Rule 285(l)(vi). Dust collectors were were operating properly. There was 0% opacity from the dust collectors.

it is my understanding that they are a rough casting facility, and do not do finishing their parts. We were told that they trim away sprues and remove flash from molded parts, however. I did not see any visible emissions from their metal cutting or grinding processes, which are equipped with particulate control systems. I saw no visible emissions from the dust collectors. The Wheelabrator unit is a self-contained shot blasting unit, it appeared.

Miscellaneous:

An existing robotic grinding station was operating. There were no visible emissions from the dust collector for this unit.

Conclusion:

There were no instances of noncompliance. We left the facility at 12:35 PM.


NAME



DATE

10/11/2017

SUPERVISOR



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