

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

N384240765

FACILITY: BECKER METAL WORKS		SRN / ID: N3842
LOCATION: 800 FRED MOORE HWY, SAINT CLAIR		DISTRICT: Southeast Michigan
CITY: SAINT CLAIR		COUNTY: SAINT CLAIR
CONTACT: Bob Hazuka , Engineering/Quality Manager		ACTIVITY DATE: 06/26/2017
STAFF: Samuel Liveson	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Scheduled inspection of a minor source.		
RESOLVED COMPLAINTS: C-17-01313		

On June 26, 2017, I conducted an unannounced, scheduled, level 2 inspection of Becker Metal Works (Becker Metal), located at 800 Fred Moore Highway in Saint Clair, 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 Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); the Air Pollution Control Rules; the conditions of Permits to Install (PTIs) No. 361-93A and 300-04; and 40 CFR Part 63 Subpart ZZZZZ: National Emissions Standards for Hazardous Air Pollutants for Iron and Steel Foundry Area Sources. Additionally, I investigated complaint number C-17-01313 received June 19, 2017.

Pre-Inspection Complaint Investigation

On June 26, I arrived on site around 6:45 AM to investigate a complaint of odor and opacity from Becker Metal received June 19, 2017. The complainant alleged that smoke and odors were emitted from Becker Metal on May 31 at 8:04 AM, and on June 16 at 12:34 PM.

I parked at the intersection of Francis Street and 7th Street to look for opacity from facility stacks from 6:45 AM to 9:00 AM. The temperature was 55 degrees Fahrenheit (°F) and weather was partly cloudy. Wind was southwesterly (headed northeast) at three miles per hour according to weather.com for St. Clair, Michigan.

I did not observe opacity from the ovens. According to Mr. Jeremy Bul, President, the facility did load ovens during the time that I observed the facility stacks because staff arrived at 6:30 AM and heated the afterburner before loading the ovens. No odor was observed on Frances Street, downwind of the facility. Because no opacity or odor were observed, the complaint is resolved. I will continue to investigate odor and opacity complaints as they are received.

Opening Meeting

At around 9:10 AM, I met with Mr. Robert Hazuka, Engineering/Quality Manager. Mr. Hazuka provided a walkthrough of the facility and explained equipment and operations. I provided Mr. Hazuka with my DEQ identification and explained the purpose of air quality inspections.

Becker Metal conducts investment casting for the general industry and orthopedic industry. The facility generally casts ferrous metals, but some are non-ferrous (annual melt production of non-ferrous metals appears to be below thresholds to be subject to 40 CFR Part 63 Subpart ZZZZZZ: Area Source Standards for Aluminum, Copper, and Other Nonferrous Foundries per §63.11544(a)(4)). Metals include steel, aluminum, and occasionally brass. The facility does not cast leaded parts. The company typically operates from 6:00 am to 4:30 pm Monday through Friday.

40 CFR Part 63 Subpart ZZZZZ

In 2008, Becker Metal sent initial notification of applicability and notification of compliance

status regarding 40 CFR Part 63 Subpart ZZZZZ: National Emissions Standards for Hazardous Air Pollutants for Iron and Steel Foundry Area Sources (40 CFR Part 63 Subpart ZZZZZ). MDEQ-AQD received the facility Semiannual Compliance Report for 40 CFR Part 63 Subpart ZZZZZ on February 7, 2017 per §63.10890(f). Previously the facility received a violation notice on August 11, 2016 for not sending Semiannual Compliance Reports.

According to the Semiannual Compliance Report received February 7, the facility melted 80 tons of metal the previous year as an existing small foundry, and the facility does not melt motor vehicle scrap. Additionally the facility does not use a binder ingredient that contains methanol. MDEQ-AQD received the MSDS of the binder used by the facility on July 22, 2016.

In addition to submitting Semiannual Compliance Reports, 40 CFR Part 63 Subpart ZZZZZ §63.10885(a) requires Becker Metal to have a metallic scrap management program. The facility appears to comply with §63.10885(a)(1) by operating according to written material specifications. Materials arrive with a written certification from the provider which states "We certify that this material does not include any post-consumer automotive body scrap, post-consumer engine blocks, oil filters, oily turnings, lead components, mercury switches, plastic or organic liquids." Additionally, metal samples of all metals received are sent to a third party laboratory for analysis. Sample certifications were provided by the facility.

§63.10885(b) does not appear to be applicable because according to Mr. Hazuka and the facility Semiannual Compliance Report, the facility does not melt motor vehicle scrap.

Facility Walk-Through

To create a wax mold, wax is heated slightly to form a paste and injected into a 2-piece aluminum mold. Mr. Hazuka provided the safety datasheets (SDSs) of the two most-used waxes at the facility, KC 4207B and Likenu Sprue Wax. I provided these SDSs to Mr. Mike Depa, Toxicologist at the MDEQ-AQD to consider the health effects. Wax KC 4207B contains less than 0.1% of styrene, which is carcinogenic because it has an initial risk screening level of 2 micrograms per cubic meter. Styrene decomposes at 572 °F.

According to Mr. Depa, "Since the process used at this facility uses temperatures at 1800 °F, and presumably it has adequate oxygen available during the process, the constituents in this product should be combusted to a large extent. However, at lower temperatures, smoke from the incomplete combustion of KC 4207B is expected to cause irritation to the eyes and upper respiratory tract. The NAAQS for PM should be used to evaluate the ambient air impacts of the smoke. Impacts that are less than the NAAQS for PM are not expected to cause adverse health effects, even in sensitive individuals."

The wax hardens into the shape of the aluminum mold. The facility uses a mold release to remove hardened wax from the mold. In 2016, Mr. Bul provided the mold release safety data sheet (SDS). The mold release is composed of approximately equal halves dimethyl ether (CAS #115106) and 1,1-difluoroethane (CAS # 75376). According to the Michigan Air Toxics System, these components have initial threshold screening levels of 740 and 400,000 micrograms per meter cubed, respectively. The mold release appears to be exempt from obtaining a Permit to Install per R290(2)(a)(iii), where up to 1000 pounds of mold release can be emitted per month. I did not request purchase records of mold release usage during this inspection.

Multiple identical wax pieces are etched onto a metal rod to form a wax tree without the aid of adhesive according to Mr. Hazuka. The facility uses colloidal silica as a binder. MDEQ-AQD

received the binder MSDS on July 22, 2016. This binder does not appear to be an air quality concern.

PTI No. 300-04

Becker Metal received PTI No. 300-04 for the facility autoclave, which was not operating during the facility inspection. The autoclave is used to steam wax out of the ceramic mold. Special condition 1.1 limits particulate emissions to 0.1 pounds per 1,000 pounds of exhaust gases. Per AQD Policy and Procedure 14, this emission limit is consistent with an opacity less than 20%. During opacity observations prior to the facility inspection, no opacity was observed from the autoclave.

Mr. Hazuka provided the MSDS of the two most-used waxes at the facility, KC 4207B and Likenu Sprue Wax, per S.C. 1.2. Wax melted off in the autoclave is collected in storage containers. According to Mr. Hazuka, this collected wax is sent back to the supplier to be reconditioned and reused. According to Mr. Hazuka, the autoclave has two associated stacks, which I observed from outside the facility. Both stacks appear to have dimensions that meet S.C. 1.3.

Two natural-gas fired boilers associated with the facility autoclave are rated for 860 cubic feet of natural gas per hour each. Assuming a conservative heating value of 1200 British thermal units (BTU) per cubic foot, the boilers have a heat input of approximately 1 million BTU per hour each, so they appear exempt from obtaining a Permit to Install per R 282(2)(b)(i). The boilers don't appear to be subject to 40 CFR Part 60 Subpart Dc because the boilers have a heat input below 10 MMBTU, and they don't appear to be subject to 40 CFR Part 63 Subpart JJJJJ because they are natural-gas fired.

PTI No. 361-93A

This permit covers four facility natural-gas fired burnout ovens. The ovens hold ceramic molds and burn off excess wax that isn't removed in the autoclave. The ovens also heat and harden the ceramic to prepare it for contact with molten metal. According to Mr. Hazuka, the ovens are not loaded cold (before the afterburner has reached 1800 °F). Generally, one or two burnout ovens are running at a time.

No opacity was observed during the facility inspection per S.C. 15.

According to S.C. 16, the afterburner shall be maintained at 1800 °F prior to loading molds, and it shall be operated at that temperature for 30 minutes or more, until smoke is no longer generated from the process.

The facility completed installation of afterburner temperature chart recorders in October of 2016. Mr. Hazuka provided five chart recordings for ovens operating the weeks of May 30th and June 10th, and we discussed whether the afterburner temperature was up to 1800 °F during the times of complaints (May 31 at 8:04 AM, and on June 16 at 12:34 PM). Temperature charts show that afterburner temperature is generally greater than 1800 °F for more than a half hour. On Wednesday May 31st, temperature records appear to show that the afterburner temperature was generally between 1700 and 1750 °F from about 7:00 to 8:30 AM, with some spikes to 1800 °F. Because the afterburner temperature was still high and is generally above 1800 °F, I will use discretion to avoid issuing a violation notice for this occurrence. A future low temperature on charts may result in a violation notice.

During the facility walkthrough, both burnout oven #2 and burnout oven #3 were operating. I

observed that burnout oven #2 temperature was 1800 °F and the afterburner temperature was at 1500 °F. Burnout oven #3 temperature was about 1800 °F and its afterburner was at 1145 °F. Because ovens appear to have been loaded for greater than 30 minutes and no opacity is observed, this operation appears to comply with S.C. 16.

I observed stacks associated with the four burnout ovens. Stacks appear to discharge unobstructed vertically upwards to the ambient air, and stack dimensions appear to be within the range of S.C. 17.

Induction Furnaces

Two induction furnaces on site of 160 pound and 270 pound capacities appear to be exempt from obtaining a Permit to Install per R 282(2)(a)(iv). Sweating, distilling, and fluxing don't occur according to Mr. Hazuka.

Shot Blast/Sanding Equipment

Several saws and three steel pellet blasting units are on site and do not appear to vent to ambient air. This equipment appears to be exempt from obtaining a Permit to Install per R 285 (2)(vi)(B).

Acid Dipping

Three closed acid dip tanks are on site. These tanks open to the general in-plant environment and appear to be exempt from obtaining a Permit to Install per R 285(2)(r)(iii).

Cold Cleaner

A cold cleaner is on site at the facility. The cold cleaner was closed during the facility inspection. Mineral spirits are used inside the cold cleaner. Orange operating instructions were posted conspicuously on the unit. The cold cleaner appears to be exempt from obtaining a Permit to Install per R 281(2)(h).

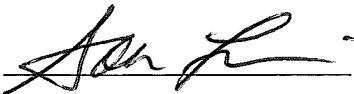
Emergency Engine

The facility has one natural gas-fired emergency engine on its roof. I did not observe the unit for safety reasons. According to Mr. Bul, President, the engine was installed in January of 2000 and has a maximum heat input of 30 kilowatts per hour. The engine appears to be subject to 40 CFR Part 63 Subpart ZZZZ: National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. MDEQ-AQD has not accepted delegated authority to enforce this subpart, so compliance with the subpart was not evaluated.

Conclusion

Based on the AQD inspection and records review, Becker Metal appears to be in compliance with the federal Clean Air Act, NREPA, the Air Pollution Control Rules, the conditions of PTIs No. 361-93A and 300-04, and 40 CFR Part 63 Subpart ZZZZ. Additionally, complaint number C-17-01313 is resolved.

NAME



DATE

7/28/17

SUPERVISOR

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