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

N384235778

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:** 06/15/2016
STAFF: Samuel Liveson	**COMPLIANCE STATUS:** Non Compliance	**SOURCE CLASS:** MINOR
SUBJECT: Scheduled inspection. Violation notice for opacity and low afterburner temperature. Additional VN for semiannual reports per 40 CFR 63 Subpart ZZZZZ.		
RESOLVED COMPLAINTS:		

On June 15, 2016, I conducted an unannounced, scheduled, level 2 inspection of Becker Metal Works, Inc. (Becker Metal), located at 800 Fred Moore Highway in St. 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 (NREPA), 1994 PA 451, as amended; the conditions of Permit to Install (PTI) No. 361-93A and PTI No. 300-04; and with 40 CFR Part 63 Subpart ZZZZZ: National Emissions Standards for Hazardous Air Pollutants for Iron and Steel Foundry Area Sources.

Pre-Inspection Opacity Observations
I arrived on site around 8:10 AM. I parked outside the facility and looked for opacity from the burnoff oven stacks. Between 9:36 and 9:37 am, I observed opacity exceeding 0% from the stack for burnoff oven #3. This appears to be a violation of PTI No. 361-93A Special Condition (S.C.) 15, and of Rule 301(1)(c). However, opacity did not appear to exceed 20% over a 6-minute average per Rule 301(1)(a), per my professional judgment as a Method 9 certified observer. A violation notice was sent on June 17 for this opacity.

Opening Meeting
At around 9:45 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 contact information and a copy of the pamphlet "DEQ Environmental Inspections: Rights and Responsibilities."

Becker Metal conducts investment casting for the orthopedic industry and also for general 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 brass. The facility does not cast leaded parts. The company typically operates one ten hour shift from 6:00 am to 4:30 pm Monday through Friday. The facility has four office employees and ten shop employees.

40 CFR Part 63 Subpart ZZZZZ
On August 5, 2016, I revisited Becker Metal to determine compliance with 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. According to Mr. Jeremy Bul, President, the facility melted approximately 60 tons of metal from January through June of 2016. The facility appears to be a small foundry per §63.10880(f).

The facility takes in pre-consumer stampings from stamping processes at other facilities. Material comes into Becker Metal with a Certificate of Analysis, and Becker Metal performs its

own analysis. Mr. Hazuka provided a Certificate of Analysis from an alloy company, and a Certificate of Analysis obtained by Becker Metal for the same sample #2128. According to Mr. Bul and Mr. Hazuka, mercury is not received at the facility.

The facility will receive a violation notice because it doesn't appear to submit semi-annual reports per §63.10890(f). The notice will also request that a written material specification document be available on site per §63.10885(a).

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 MSDS of the two most-used waxes at the facility, KC 4207B and Likenu Sprue Wax. These waxes do not appear to contain notable air quality concerns. The wax hardens into the shape of the mold. The facility uses a mold release to remove hardened wax from the mold. Mr. Bul provided the mold release safety data sheet (SDS) and estimated that 20 pounds per month are used based on purchase records. The mold release appears to be exempt from obtaining a Permit to Install per R290(a)(ii)(A), where up to 1000 pounds of mold release can be emitted per month.

Multiple identical wax pieces are etched onto a metal rod to form a wax tree without the aid of adhesive according to Mr. Hazuka.

Dip Coating of Wax Trees

Electrically-powered equipment dips the wax trees into a slurry mix of sand and binder. This slurry air dries onto the wax tree and forms a ceramic mold over the wax. This mixing and drying process does not appear to ventilate to ambient air. On June 27, Mr. Hazuka provided the MSDS of the binder agent Engineered Shell System ESB11. According to its MSDS, the binder agent contains a small percentage (0.1-1%) of Hexahydro-1,3,5-Tris(2-Hydroxyethyl)-S-Triazine, with a CAS Number of 4719-04-4. According to the Michigan Air Toxics System, this component's initial threshold screening level (ITSL) is 0.015 micrograms per meter cubed (ug/m^3) annually. Because this ITSL is below 0.04 ug/m^3, this dip coating process is not exempt per R 290.

On July 22, Mr. Bul provided an SDS sheet for an alternate binder under consideration that appears to contain colloidal silica. This alternate binder does not appear to be an air quality concern. On a return visit to the site on August 5, the facility appeared to have implemented the new alternate binder. A violation notice will not be sent for the previous binder since the issue has been resolved.

PTI No. 300-04

Becker Metal received PTI No. 300-04 for the facility autoclave. 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, there was no opacity 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.

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(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 JJJJJJ because they are natural-gas fired.

Autoclave stack dimensions were not evaluated during this inspection.

PTI No. 361-93A
PTI No. 361-93A covers four facility natural-gas fired burnout ovens. The ovens hold ceramic molds and burn off excess wax which wasn'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 supposed to be loaded cold (before the afterburner has reached 1800 °F). Generally, one or two burnout ovens are running at a time.

During the facility walkthrough, both burnout oven #3 and burnout oven #4 were operating. I observed that the burnout oven #3 temperature was 1808 °F and the afterburner temperature was 980 °F. According to the oven operator, this oven was loaded 15 minutes prior to my observation, and the afterburner set point was for 1000 °F. This appears to be a violation of PTI No. 361-93A S.C. 16. 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. A violation notice was sent on June 17 to address this issue. A timely response was received. The facility plans to provide a timeframe to demonstrate compliance with oven temperatures.

I observed that the burnout oven #4 temperature was 1804 °F and the afterburner temperature was at 450 °F. According to the oven operator, this oven was loaded one hour prior to my observation. Because no opacity was observed from this oven, it appears that an afterburner temperature below 1800 °F is allowable by S.C. 16. The oven had been loaded for greater than 30 minutes, and no smoke was being generated by the process.

We observed stacks associated with the four burnout ovens. Stacks appear to discharge unobstructed vertically upwards to the ambient air. On the June 15 facility visit, the end of the stack associated with burnout oven #1 was broken off, so that this stack appears to emit from a lower height than the other three stacks. According to Mr. Bul, stack dimensions of burnout oven #1 are within the range of S.C. 17. During a subsequent visit to the facility on August 5, 2016, I observed that the stack associated with burnout oven #1 was repaired and appeared to have dimensions 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(a)(iv).

Shot Blast/Sanding Equipment – Rule 285(vi)(B)
Several saws and three sand 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(vi)(B).

Cold Cleaner – Rule 281(h)
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. I did not observe operating instructions in a conspicuous area near the cold cleaner, so I provided Mr. Hazuka with Cold

Cleaner Operating Instructions to post. The cold cleaner appears to be exempt from obtaining a Permit to Install per R 281(h).

Conclusion

Based on the AQD inspection, Becker Metal Works was sent a violation on June 17, 2016 for opacity and temperature exceedances from PTI No. 361-93A S.C. 15 and 16 respectively. The facility plans to install a device to demonstrate compliance with afterburner temperatures. Based on a review of facility compliance with 40 CFR Part 63 Subpart ZZZZZ, the facility will receive a violation notice for not submitting semi-annual compliance reports.

NAME _____ DATE 8/9/16 SUPERVISOR CJE