

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

A145363931

FACILITY: Berne Foundry LLC		SRN / ID: A1453
LOCATION: 7190 BERNE RD, PIGEON		DISTRICT: Bay City
CITY: PIGEON		COUNTY: HURON
CONTACT: Daryl Mendrick , EHS Director		ACTIVITY DATE: 08/04/2022
STAFF: Adam Shaffer	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: On site inspection.		
RESOLVED COMPLAINTS:		

An onsite inspection and records review was conducted by Air Quality Division (AQD) staff Adam Shaffer (AS) of the Berne Foundry, LLC (BF) site located in Pigeon, MI. Applicable records were requested on July 12, 2022, to verify compliance with permit to install (PTI) No. 129-19B. An in-person inspection to verify onsite compliance was later completed on August 4, 2022. A follow up visit of the site was completed on September 14, 2022, and several units previously not in operation were observed in operation.

Facility Description

The BF facility is mainly a steel foundry but also casts aluminum and austenitic manganese parts. The facility began operations in 2021 and is a true minor source for criteria pollutants. The site is in operation with PTI No. 129-19B, is in operation under Administrative Consent Order (ACO) AQD No. 2019-10 and is also subject to the National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries Area Sources (NESHAP Subpart ZZZZZ).

Compliance Evaluation

A request was sent to Mr. Daryl Mendrick, EHS Director, of BF on July 12, 2022, for various records required by PTI No. 129-19B. The records that were later received and reviewed will be discussed further in this report. An onsite inspection of the facility was completed on August 4, 2022. AQD staff AS arrived in the area at 8:55am. Weather conditions at the time were cloudy skies, temperatures in the mid 70's degrees Fahrenheit, and winds to the southeast at 0-5mph. While offsite, no emissions were observed coming from the site. Upon arriving onsite, AS met with Mr. Daryl Mendrick, EHS Director, and other BF staff who provided a tour of the facility and answered site specific questions. Requested records were provided by Mr. Mendrick.

A follow up visit of the site was completed on September 14, 2022, and several units previously not in operation were observed in operation.

As mentioned above, BF is a steel foundry. The various stages of onsite processes were reviewed during the inspection and will be discussed further below.

PTI No. 129-19B

EUFINISHING

This emission unit is for various finishing and cleaning processes in the Main Building, including grinding and cutting. Emissions from the grinding processes on the east side of the Main Building are controlled by Baghouse #1, which vents in-plant.

Onsite Observations

Per Special Condition (SC) III.1, the permittee shall not operate EUFINISHING unless an updated Malfunction Abatement Plan (MAP) for Baghouse #1 has been submitted within 90 days of issuance. A MAP was previously submitted to AQD staff on August 14, 2020, that was later approved. The company at the time of the inspection appeared to adequately be following the previously approved MAP with no significant changes to the MAP having been made. Upon review and discussion with company staff, several items were identified, and a corrected MAP was resubmitted to AQD staff on September 28, 2022. Per SC IV.1, the permittee shall not operate EUFINISHING unless Baghouse #1 is installed, maintained, and operated in a satisfactory manner. This emission unit was observed during the course of the inspection. The one grinding machine that after speaking with company staff that would appear to create a large amount of emissions for the unit was not in operation at the time. Additionally, the baghouse was not in operation at the time of the inspection. There appeared to be maintenance being completed on electrical components for the baghouse. The baghouse is installed with a leak detection system and magnehelic gauge. In a follow up site visit on September 14, 2022, the baghouse was observed in operation. A pressure drop reading of 1.8" was noted and appears acceptable.

Offsite Review

Per SC VI.1, the permittee shall monitor and record, in a satisfactory manner, the pressure drop across the baghouse associated with EUFINISHING at least once per week. Records were requested and reviewed for select time periods. Several months had shown the unit to not be in operation and was concluded to have been from the facility working on building the new cooling room and modifying the system to be ready for the new PTI. Additional records were requested. Based on the records reviewed, BF appears to be keeping track of applicable records and the pressure drop readings were noted to be within the satisfactory operating range.

Per SC VI.2, the permittee shall keep a record of all inspections and maintenance performed on Baghouse #1, in accordance with the MAP. Records were requested and reviewed for select time periods. Based on the records reviewed, BF appears to be adequately following the MAP.

Per SC IX.1, the special conditions for this permit for this emission unit do not go into effect until PTI No. 129-19A is voided. A letter to the AQD Supervisor dated June 8, 2022, was submitted and received by the AQD stating the dust collection system (Baghouse #3) has commenced operation and requested PTI No. 129-19A to be voided. This was later approved and PTI No. 129-19A was voided and 129-19B went into effect.

FGFOUNDRY

This flexible group is for four (4) coreless induction tilt furnaces used to produce various steel, stainless steel, and aluminum alloys, with a pouring line, cooling, and manual shakeout operations. Emissions from each furnace are collected by an exhaust hood and controlled by Baghouse #3. Pouring and cooling processes are to be enclosed in a new building with general ventilation to Baghouse #3. Shakeout will have an exhaust hood to direct emissions to Baghouse #3. Emissions units for this flexible group are EUINDUCTIONA-D, EUPOURING, EUCOOLING, and EUSHAKEOUT.

Onsite Observations

The four furnaces were observed during the onsite inspection on August 4, 2022. At the time of the inspection the four furnaces were not in operation. Facility staff had mentioned staff issues, one of the two active furnaces being relined, and a ladle being relined. A follow up visit was made on September 14, 2022, and one of the four furnaces was observed in operation. Additional specifics regarding each furnace are mentioned below.

Per SC III.1, the permittee shall not operate multiple furnaces in charge/melt mode simultaneously. Additionally, per SC III.2, the permittee shall not pour from multiple furnaces simultaneously. During the course of the inspection, it was concluded that the furnaces are divided into two sets (A & B / C & D) with each set having one power supply. It appears that physically, only one furnace can be turned on for each set based on power supply. Additionally, it was verified by company staff that only one furnace will pour melted materials at a time. As mentioned above the furnaces were not in operation during the August 4, 2022, site inspection. In a follow up site visit on September 14, 2022, one furnace was observed in operation and the applicable operating conditions appeared to be being followed.

Per SC III.3, all operations of FGFOUNDRY shall take place inside an enclosed building. All emission units for FGFOUNDRY were observed in older areas of the site building and in the new building addition. After further review this appears acceptable.

Per SC III.4, the permittee shall not operate FGFOUNDRY unless a MAP has been submitted within 60 days of PTI No. 129-19A being voided and is implemented and maintained. As stated earlier, a MAP was previously submitted to AQD staff on August 14, 2020, that was later approved. The company at the time of the inspection appeared to adequately be following the previously approved MAP with no significant changes to the MAP having been made. Upon review and discussion with company staff, several items were identified, and a corrected MAP was resubmitted to AQD staff on September 28, 2022. At the time of the inspection, a bag leak detection system and magnehelic gauge were observed. The magnehelic gauge read 2.2". In a follow up site visit on September 14, 2022, when one of the furnaces was in operation the baghouse magnehelic gauge read 1.6"-1.7". Based on the records reviewed and observations made at the time of the inspection, BF appears to be following the MAP for FGFOUNDRY.

Per SC IV.1, the permittee shall not operate FGFOUNDRY, unless the baghouse fabric filter controlling emissions from the melting furnaces, pouring, and cooling and shakeout area (Baghouse #3) is installed, maintained and operated in a satisfactory manner. Based on the operations made at the time of the inspection and follow up site visit, the Baghouse #3 appeared to be operating in a satisfactory manner.

Per SC IV.2, the permittee shall equip and maintain each furnace of FGFOUNDRY with a properly engineered exhaust hood located directly above the furnace and ducted to Baghouse #3. At the time of the inspection, EUINDUCTIONA and EUINDUCTIONB were both observed to have hoods. The furnaces EUINDUCTIONC and EUINDUCTIOND were both noted to not have furnace hoods. In previous conversations with company staff, it was agreed that BF could begin operation of EUINDUCTIONA and EUINDUCTIONB, which have furnace hoods, and not operate EUINDUCTIONC and EUINDUCTIOND until hoods have been installed for each respective furnace. Based on the observations made at the time of the inspection and follow up site visit, BF appears to be meeting this condition.

Per SC IV.3, the permittee shall not operate FGFOUNDRY unless a bag leak detector on Baghouse #3 is installed, maintained, and operated in a satisfactory manner. A bag leak detector was noted and appeared to be operating properly.

Per SC IV.4, the permittee shall not operate FGFOUNDRY unless a gauge, which measures the pressure drop across the fabric filter collector (Baghouse #3) is installed, maintained and operated in a satisfactory manner. A magnehelic gauge was noted during the inspection / follow up site visit and appeared to be operating properly.

One stack is listed in association with this flexible group. Though the dimensions were not measured they appeared to be consistent with what is listed in PTI No. 129-19B.

Offsite Review

This flexible group is subject to an hourly particulate matter (PM) emission limit of 0.010 lb/1000 lb dry gas. This flexible group is also subject to hourly PM / PM10 / PM2.5 emission limits of 1.84 lb/hr, 3.0 lb/hr, and 2.2 lb/hr respectively. These PM emission limits are based on satisfactory operation of Baghouse #3. At the time of the inspection, the baghouse appeared to be operating in a satisfactory manner. Therefore, no testing will be required to verify that BF is meeting these PM emission limits. The Baghouse #3 was verified to be operating properly during the follow up visit of the site on September 14, 2022.

This flexible group is subject to a material limit for metal charged to furnaces of 7,500 tons per year (tpy) per a 12-month rolling time period. Records were requested and reviewed for select time periods. For the month of May 2022, 19.66 tons of material was processed. As of May 2022, 205.57 tpy of metal has been charged per a 12-month rolling time period which is well within the permitted limit. Previous 12-month rolling time periods reviewed also appear to be within the permitted limit.

This flexible group is subject to a material limit for metal charged to furnaces of 4,500 lbs per heat specifically for EUINDUCTIONA. Records were requested and reviewed for select time periods. Upon review of the records initially provided, they would show the monthly / 12-month rolling totals of the materials treated and not per heat. Speaking with company staff, daily heat treat records are available. Select time periods were provided / reviewed and additional records were reviewed onsite. Based on the records reviewed, BF appears to be meeting this material limit.

This flexible group is subject to a material limit for metal charged to furnaces of 4,500 lbs per heat specifically for EUINDUCTIONB. Records were requested and reviewed for select time periods. Upon review of the records initially provided, they would show the monthly / 12-month rolling totals of the materials treated and not per heat. Speaking with company staff, daily heat treat records are available. Select time periods were provided / reviewed and additional records were reviewed onsite. Based on the records reviewed, BF appears to be meeting this material limit.

This flexible group is subject to a material limit for metal charged to furnaces of 2,200 lbs per heat specifically for EUINDUCTIONC. It was later determined after speaking with company staff that this furnace had not been run for a significant amount of time. Based on the length of time the unit has not been run, no records were reviewed for this unit.

This flexible group is subject to a material limit for metal charged to furnaces of 1,100 lbs per heat specifically for EUINDUCTIOND. Records were requested and reviewed for select

time periods. Upon review of the records initially provided, they would show the monthly / 12-month rolling totals of the materials treated and not per heat. Speaking with company staff, daily heat treat records were available. Select time periods were provided / reviewed and additional records were reviewed onsite. Company staff stated that of the heat treat records provided, only one material listed is used in EUINDUCTIOND and the unit was last run in January 2021. Based on the records reviewed, BF appears to be meeting this material limit for EUINDUCTIOND.

Per SC V.1, upon request of the AQD District Supervisor, the permittee shall verify PM, PM10 and PM2.5 emission rates from the Baghouse #3 exhaust stack by testing. Based on the observations made at the time of the inspection / follow up site visit, no request to verify PM emission rates will be made at this time.

Per SC VI.1, the permittee shall keep records, in a satisfactory manner, of each type of alloy that has been processed at the facility for each calendar year. Records were requested and reviewed for select time periods. Based on the records reviewed, this appears to be being completed.

Per SC VI.2, the permittee shall keep records for each furnace, in a satisfactory manner, of the total weight of metal added to the furnace, for each heat. Records were requested and reviewed for select time periods. As discussed above, daily heat treat records were available and reviewed. Moving forward the records shall be updated accordingly in order to more readily evaluate that this condition is being followed.

Per SC VI.3, the permittee shall keep records, in a satisfactory manner, of the total amount of metal charged to the furnaces of FGFOUNDRY, on a monthly and 12-month rolling time period. Records were requested and reviewed for select time periods. Based on the records reviewed, this appears to be being completed.

Per SC VI.4, the permittee shall monitor and record, in a satisfactory manner, the pressure drop across the fabric filter baghouse on a daily basis, for each operating day. Due to timing of Baghouse #3 starting operation, no pressure drop reading records were requested to be reviewed. It should be noted that the pressure drop for Baghouse #3 was within the acceptable operating range at the time of the inspection / follow up site visit.

Per SC VII.1, within 10 days after initial operation of Baghouse #3, the permittee shall notify the AQD District Supervisor, in writing, of the completion of the activity. A letter dated June 8, 2022, was submitted to the AQD by BF stating that the Baghouse #3 has begun operation on June 1, 2022.

Per SC IX.1, the special conditions in this permit for this flexible group do not go into effect until PTI No. 129-19A is voided. A letter to the AQD Supervisor dated June 8, 2022, was submitted and received by the AQD stating the dust collection system (Baghouse #3) has commenced operation and requested PTI No. 129-19A to be voided. This was later approved and PTI No. 129-19A was voided and 129-19B went into effect.

FGMOLDCORE

This flexible group is for sand premixed with chemical binder (resin coated sand, or RCS) that is used to make molds. There are seven molding machines, one hand-molding operation, and seven core machines. Emission units for this flexible group are EUMOLD1-7, EUHANDMOLD, EUCORE1-7.

Onsite Observations

Per SC II.2, the permittee shall not use any fuel other than natural gas in FGMOLDCORE. During the course of the inspection this was verified by company staff to be true.

Per SC IV.1, the maximum nameplate heat input of the emission units in FGMOLDCORE shall not exceed the following:

Emission Unit	Heat Input (BTU/hr)
EUMOLD1	750,000
EUMOLD2	750,000
EUMOLD3	1,250,000
EUMOLD4	2,000,000
EUMOLD5	750,000
EUMOLD6	750,000
EUMOLD7	750,000
EUHANDMOLD	250,000
EUCORE1	150,000
EUCORE2	250,000
EUCORE3	150,000
EUCORE4	250,000
EUCORE5	150,000
EUCORE6	250,000
EUCORE7	750,000

During the course of the site inspection, it was verified the heat inputs listed above were correct.

One stack is listed in association with the permit and was observed during the course of the site inspection. Though the dimensions were not measured they appeared to be consistent with what is identified in PTI No. 129-19B.

During the course of the inspection, it was verified by company staff that excess sand that was observed is cleaned up at the end of the shift.

Offsite Review

This flexible group is subject to an RCS used material limit of 6,750 tpy per a 12-month rolling time period. Records were requested and reviewed for select time periods. For the month of May 2022, no RCS material was used. As of May 2022, 195 tpy of RCS was used per a 12-month rolling time period which is well within the permitted limit. Previous 12-month rolling time periods reviewed also appeared to be within the permitted limit.

Per SC VI.1, the permittee shall monitor and record, in a satisfactory manner, the amount of RCS used in FGMOLDCORE, on a monthly and 12-month rolling time period basis. Records were requested and reviewed for select time periods. Based on the records reviewed, BF appears to adequately be keeping track of applicable records.

Per SC IX.1, the special conditions in this permit for this flexible group do not go into effect until PTI No. 129-19A is voided. A letter to the AQD Supervisor dated June 8, 2022, was submitted and received by the AQD stating the dust collection system (Baghouse #3) has commenced operation and requested PTI No. 129-19A to be voided. This was later approved and PTI No. 129-19A was voided and 129-19B went into effect.

FGHEATTREAT

This flexible group is for four heat treating furnaces and associated water-based and oil-based quenching operations. Emission units for this flexible group are EUHEATTREAT1-4. It should be noted that EUHEATTREAT4 has been removed.

Onsite Observations

Per SC II.2, the permittee shall not combust any fuel other than natural gas in FGHEATTREAT. During the course of the site inspection, this was verified to be correct.

Per SC IV.1, the maximum nameplate heat unput of the emission units in FGHEATTREAT shall not exceed the following:

Emission Unit	Heat Input (BTU/hr)
EUHEATTREAT1	1,000,000
EUHEATTREAT2	750,000
EUHEATTREAT3	250,000

During the course of the site inspection, it was verified the heat inputs listed above were correct.

One stack is listed in association with this flexible group and was observed during the course of the site inspection. Though the dimensions were not measured they appear to be consistent with what is identified in PTI No. 129-19B.

Offsite Review

This flexible group is subject to a quench oil material limit of 110 gallons per year per a 12-month rolling time period. It should be noted that the quench oil usage is defined as the amount of quench oil added to bring the quench oil levels up to starting levels less any amount of quench oil reclaimed, disposed of, or spilled and cleaned up. Records were requested and reviewed for select time periods. Company staff upon providing the requested records had stated since commencement of operations they have not had to add any quench oil to operations. The records reflected this and are acceptable at this time.

Per SC VI.2, the permittee shall monitor and record, in a satisfactory manner, the amount of quench oil used in FGHEATTREAT, on a monthly and 12-month rolling time period basis. Records were requested and reviewed for select time periods. As stated above, no quench oil has been added since commencement of operations. The records reviewed verified this and appear acceptable at this time.

Per SC IX.1, the special conditions in this permit for this flexible group do not go into effect until PTI No. 129-19A is voided. A letter to the AQD Supervisor dated June 8, 2022, was

submitted and received by the AQD stating the dust collection system (Baghouse #3) has commenced operation and requested PTI No. 129-19A to be voided. This was later approved and PTI No. 129-19A was voided and 129-19B went into effect.

FGMACTZZZZZ

This flexible group applies to BF because they are an existing iron and steel foundry, that is (or is part of) an area source of hazardous air pollutant (HAP) emissions.

Per SC II.1 the permittee shall not utilize a binder chemical formulation that uses methanol as a specific ingredient of the catalyst formulation for a warm box mold or core making line. This requirement does not apply to the resin portion of the binder system. Records were requested and provided by the company to verify that this is being completed. Based on the safety data sheet (SDS) that was provided, it appears that the binder used does not contain methanol. Also, a purchase record was provided of what appeared to be the last purchase of the product used. This appears acceptable.

Per SC III.1, the permittee shall implement and maintain an approved plan to address the pollution prevention management practices for metallic scrap and mercury switches by the applicable compliance date specified in 40 CFR 63.10881. The plan shall include a metallic scrap management plan and mercury requirements. Speaking with company staff, a plan is agreed and certified on a yearly basis between BF and the supplier on what types of specific scrap can be provided to BF. A copy of the 2022 agreement between BF and the supplier was provided. After further review this appears acceptable.

Per SC VI.1, the permittee shall keep applicable records on a monthly basis as required by 40 CFR 63.10899(b)(1) through (13). Based on the items reviewed, no concerns were noted at this time.

Per SC VII.1, the permittee shall submit semiannual compliance reports that included several applicable items according to the NESHAP Subpart ZZZZZ. Previous semiannual compliance reports that were submitted were reviewed. Based on the records reviewed, BF appears to be submitting the semiannual compliance reports as required by the NESHAP Subpart ZZZZZ in an acceptable manner.

Additional Observations

A shot blasting unit was observed that is controlled by Baghouse #2. There appeared to be a metal pre-cleaner for the baghouse. The unit was not in operation at the time of the inspection. The filtered air from the unit is vented internally. A broken bag detection device and magnehelic gauge was observed for this unit. The shot blasting unit and associated control appears to be exempt per Rule 285(2)(l)(vi)(B).

As mentioned above, BF is in operation under ACO AQD No. 2019-10. Based on the observations made at the time of the inspection and records reviewed, no concerns were noted with regards to the ACO.

Conclusion

Based on the facility walkthrough, observations made, and records received, BF appears to be in compliance with PTI No. 129-19B, NESHAP Subpart ZZZZZ, ACO AQD No. 2019-10, and applicable air quality rules.

NAME Adam J. Hoff

DATE 09/29/22

SUPERVISOR Chris Hare

