

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

B642558853

FACILITY: INTERNATIONAL CASTING CORP		SRN / ID: B6425
LOCATION: 37087 GREEN ST, NEW BALTIMORE		DISTRICT: Warren
CITY: NEW BALTIMORE		COUNTY: MACOMB
CONTACT: Kevin Barrickman , Health, Safety and Environmental Coordinator		ACTIVITY DATE: 07/01/2021
STAFF: Adam Bognar	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Scheduled Inspection		
RESOLVED COMPLAINTS:		

On Thursday, July 1, 2021, Michigan Department of Environment, Great Lakes, and Energy-Air Quality Division (EGLE-AQD) employee Adam Bognar conducted a scheduled inspection of International Casting Corporation (the "Facility" or "ICC") located at 37087 Green Street, New Baltimore, MI. The purpose of this inspection was to determine the facility's compliance status with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control of Natural Resources and Environmental Protection Act, 1994 Public Act 451; Michigan Department of Environment, Great Lakes, and Energy, Air Quality Division (EGLE-AQD) rules; and Permit to Install (PTI) Nos. 117-19, 355-08, and 663-92B.

Due to the ongoing COVID-19 pandemic, the record review was conducted electronically. I requested records electronically from Mr. Barrickman on June 11, 2021. Mr. Barrickman provided me the requested records on July 2, 2021. I reviewed records from June 2020 through May 2021. These records can be accessed on the AQD shared drive at the following address: S:\Air Quality Division\STAFF\Bognar, Adam\Inspection Documents\International Casting Company July 2021 records

I arrived at the facility at around 9 am. I met with Mr. Barrickman. I identified myself and stated the purpose of the inspection. Mr. Barrickman gave me a tour of the manufacturing plant.

There are approximately 15 full time employees that operate one shift from approximately 9 am to 5 pm. ICC is considered a small "job shop" sized foundry. Most parts are produced in relatively low volume using various iron alloys. Most of the parts are for automotive applications.

In a foundry, metals are turned into parts by melting the metal into a liquid, pouring the molten metal into a mold, allowing the metal to cool and harden, then removing the mold material leaving the cast metal part. The newly cast part is then machined and/or sanded to complete the final product design.

Induction Furnaces

Molten metal is produced in six electric induction furnaces that are ventilated to the general in-plant environment. Feed materials to the furnaces include pig iron, 1010 steel, and revert. There are three 6,000 lb capacity furnaces, one 2,400 lb capacity furnace, one 800 lb capacity furnace, and one 300 lb capacity furnace. The four larger furnaces each have their own power supply while the two smaller furnaces share a common power supply. The melt is poured into a ladle and carried via overhead hoist to the molds. The four larger furnaces appear to be exempt from Rule 201 requirements pursuant to Rule 290. The two smaller furnaces appear to be exempt from Rule 201 requirements pursuant to Rule 282(2)(a)(iv) (less than 1,000 lb capacity). Mr. Barrickman provided me with 2021 year to date Rule 290 monthly emission calculations for the four larger furnaces. These records show compliance with Rule 290.

Based on the NESHAP for Iron and Steel Foundries, Manganese emissions from these types of furnaces can be estimated at 0.013 lbs/ton of metal. Manganese has a screening level greater than or equal to 0.03 micrograms/cubic meter and less than 2.0 micrograms/cubic meter. The Rule 290 records provided by ICC show that manganese emissions are less than 20 lbs/month.

Mold\Core Making Line

Mold-making sand is gravity-fed to an electric heater, then to mixers where a urethane binder is added. A combination of fresh sand and reclaimed sand is used in this process. To create cavities within the casting, cores may be inserted. Cores are produced in the same way patterns are produced.

The casting pattern is produced using a prefabricated pattern, made of Styrofoam or wood. During casting, the pattern is held in place by a frame, known as a flask. The flask consists of a top piece (the "cope") and a bottom piece (the "drag"). The pattern is placed in the flask and molding sand is poured and packed into the pattern, filling all cavities and creating the mold. Patterns are supplied by the customer.

In order for the molten metal to be poured into the mold cavity, holes called sprues (opening where molten metal is poured) and risers (reservoir of molten metal to fill cavity as metal casting shrinks) must be added to the flask. A channel, called a gate, must be bored from the sprue and riser to allow molten metal into the mold cavity. After the binder sets in, the cope is lifted, the pattern is removed, then the flask is reassembled. Cores, if needed, are inserted into the mold after removal of the pattern. Isomol (isopropyl alcohol based) is used to facilitate removal of the pattern.

Once the flask is reassembled, molten metal is poured through the sprues and risers, filling the mold cavity. The castings are cooled within the molds. To remove the mold, the casting is manually knocked on the ground. No shakedown machines are installed. Any sand adhering to the casting is scraped off. The chunks of sand are sent to the Vibramill sand reclaimer.

Temporary appendages including sprues, gates, and risers are cut off and the finished product is refined using grinding, cutting, and abrasive blasting equipment.

Permit to Install No. 117-19

This PTI was issued on January 6, 2020 for a single screw sand mixer with a nameplate capacity of 1,000 lb sand/minute.

Section I – Special Condition (SC) 1,2: Naphthalene emissions are limited to 363 lb/year and 27 lb/month. ICC is in compliance with these emission limits based on the records I reviewed. Naphthalene usage was highest during the 12-month period ending in May 2021 at 156.2 lbs. The highest reported monthly usage was in April 2021 at 16.3 lbs.

Section II – SC 1,2: Sand use is limited to 20,500,000 lb/year and 1,523,508 lb/month. ICC is in compliance with these sand use limits based on the records I reviewed. ICC reported that sand use was highest during the 12-month period ending in May 2021 at 8,808,000 lbs. The highest monthly sand use is reported at 918,000 lbs in April 2021.

Section II – SC 3: States that, if applicable, the permittee shall not utilize a binder that uses methanol as a specific ingredient of the catalyst formulation for a warm box mold or core making line. I reviewed safety data sheets for the binders used at ICC. The Pepset 3401 catalyst does not contain methanol as a specific ingredient.

Section IV – SC 1: States that the sand rate capacity of EUEAGLEMIXER shall not exceed a maximum of 1,000 lb/minute. According to the record sheet sent by Mr. Barrickman, the maximum output of the mixer is 1000 lb/minute. The sand rate of the mixer is calibrated monthly to verify output is close to 1000 lb/minute. It typically runs between 950 lb/minute to just under 1000 lb/minute.

Section VI – SC 1,2,3,4: Require ICC to keep monthly and 12-month rolling records of naphthalene emissions and sand use. Additionally, ICC must maintain a current listing of the chemical composition of each material used from the manufacturer. These records are maintained. Mr. Barrickman provided me with safety data sheets for the binders and for the mold coating.

Section VIII – SC 1: Specifies stack requirements for SVEAGLEMIXER. I did not take measurements of the stack during this inspection. The stack appeared to be discharged unobstructed vertically upwards to the ambient air.

Section IX – SC 1: States that the permittee shall raise the stack height according to SC VIII – SC 1. The stack must be a minimum of 37.5 feet high with a maximum exhaust diameter of 48 inches. This modification was completed on May 19, 2020. Mr. Barrickman notified the AQD May 26, 2020 that this modification was completed. Additionally, Mr. Barrickman previously provided AQD with a picture showing the new stack. I did not take any stack measurements during this inspection.

Section IX – SC 2: States that the permittee shall comply with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants, 40 CFR Part 63, Subpart A and Subpart ZZZZZ for Iron and Steel Foundries by the initial compliance date. The facility appears to comply with area source requirements of Subpart ZZZZZ (see discussion near end of report).

Permit to Install No. 355-08

PTI No. 355-08 was issued to International Casting Corporation on March 24, 2008 for the application of mold coating to sand molds (EUMOLDCOATING).

Section I – SC 1: VOC emissions are limited to 9.9 tons per year based on a 12-month rolling time period. ICC is in compliance with this emission limit based on the records I reviewed. VOC emissions were reported at 3.46 tons during the 12-month period ending in May 2021. This is the highest 12-month rolling usage for the period I reviewed.

Section II – SC 1: Mold coating usage is limited to 5,157 gallons per year based on a 12-month rolling time period. The mold coating used is Isomol #578. Isomol #578 usage was reported at 1,806 gallons during the 12-month period ending in May 2021. This is the highest 12-month rolling usage for the period I reviewed. The highest monthly usage of Isomol #578 was 231.63 lbs in January 2021.

Section III – SC 1: States that this permit to install does not authorize the use of a furfuryl alcohol warm box mold or core making line. Mr. Barrickman stated that furfuryl alcohol is not used in the mold making line. The SDS for the mold coating does not list furfuryl alcohol as an ingredient.

Section VI – SC 1,2,3: Specifies recordkeeping requirements for EUMOLDCOATING. States that ICC shall monitor and record the usage rate of mold coating in gallons per month. These records are maintained. ICC maintains records of mold coating usage on a monthly and 12-month rolling basis.

Additionally, ICC must maintain a current listing of the chemical composition of each mold coating from the coating manufacturer. The VOC content of the coating shall be used to calculate monthly and 12-month rolling VOC emissions from EUMOLDCOATING. These records are maintained. VOC emissions are reported on a monthly and 12-month rolling basis. The safety data sheet provided to me by Mr. Barrickman lists the chemical composition of the mold coating.

Permit to Install No. 663-92B

PTI No. 663-92B was issued to ICC on October 24, 2005 for a “Vibra Mill” sand reclaim process equipped with a “Modu Kleen” dust collector (EUSANDRECLAIM). The sand reclamation process breaks up the used sand molds into a granular form for reuse. This permit was re-issued in January 2020 to install a new “Eagle sand mixer”.

SC 1.1 – Places a limit on PM emissions of 0.10lb/1,000 lbs of exhaust gases. Compliance with this condition is demonstrated through proper operation of the dust collector. The dust collector was turned off during my inspection. It appeared to be in good working order with no signs of deterioration or leakage.

SC 1.2 – States that visible emissions from EUSANDRECLAIM shall not exceed a six-minute average of 10% opacity. I did not observe any opacity from any stack during this inspection. EUSANDRECLAIM was not operating during this inspection.

SC 1.3 – States that the permittee shall not operate EUSANDRECLAIM unless the dust collector is installed, maintained, and operated in a satisfactory manner. The dust collector appeared to be in good working order. I did not notice any debris outside the facility or near the dust collectors. The maintenance records indicate that the dust collection hopper is emptied weekly and all fittings are greased monthly. Mr. Barrickman provided me with records showing that these maintenance tasks were completed each week/month.

SC 1.4 – States that the permittee shall keep monthly maintenance records in a satisfactory manner and make them available to the AQD upon request. I reviewed maintenance records for the dust collector. The latest major maintenance work order was on May 12, 2020. All filters were changed, cages were inspected for wear, inside of dust collector was inspected for wear, and the air plenum was vacuumed out. Filter bags are inspected yearly and replaced with necessary.

SC 1.5 – Specifies stack dimension requirements. I did not take stack dimension measurements during this inspection. Stacks appeared to be discharged unobstructed vertically upwards to the ambient air.

Subpart ZZZZZ

The facility is subject to 40 CFR Part 63 Subpart ZZZZZ, National Emission Standards for Hazardous Air Pollutants from Area Source Iron and Steel Foundries. They are considered an area source because their metal melt production is below 20,000 tons on an annual basis. The facility is subject to the pollution prevention management practices regarding metallic scrap and mercury switches, as well as notification and semi-annual certification reporting requirements.

AQD received the semi-annual Subpart ZZZZZ certification on July 27, 2020. Mr. Barrickman provided me with scrap inspection records from January 2020 to present. ICC inspects scrap for overall iron quality, the presence of organic liquids, the presence of chlorinated plastics, lead containing compounds, and mercury switches. The records I reviewed show that scrap is free of these contaminants.

Other emission units

Tumble Blaster – There is a tumble sand blaster system equipped with an internal cyclone dust collector and an external fabric filter dust collector. This filter was replaced on January 27, 2021 according to Mr. Barrickman. This is used on as as-needed basis to smooth out parts. The dust collector appeared to be in good working order.

Table Blaster – There is a table sand blasting system equipped with an external fabric filter dust collector. This is used on as as-needed basis to smooth out parts. The dust collector appeared to be in good working order.

Grinding stations – There are 4 grinding stations used to smooth out parts after casting. All four of these grinding stations are controlled by a fabric filter dust collector. There is approximately 50-100 feet of ducting between the grinding stations and the dust collector. I would not anticipate any sparks getting into the dust collector. These stations are used to smooth out parts after casting. The grinding stations are used more often than the blasting stations. The dust collector appeared to be in good working order.

All three dust collectors were turned off during my inspection. These three emission units appear to be exempt from Rule 201 requirements pursuant to Rule 285 (2)(l)(vi)(C).

Compliance Determination

International Casting Corporation appears to be in 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); Michigan Department of Environment, Great Lakes, and Energy-Air Quality Division (EGLE-AQD) Administrative Rules; and Permit to Install Nos. 117-19, 355-08, and 663-92B.

NAME *Adam Bogros*

DATE 07/20/21

SUPERVISOR *K. Kelly*