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

B642569928

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:** 11/07/2023
STAFF: Adam Bognar	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MINOR
SUBJECT: Self Initiated Inspection		
RESOLVED COMPLAINTS: C-23-02087		

On Tuesday, November 7, 2023, Michigan Department of Environment, Great Lakes, and Energy-Air Quality Division (EGLE-AQD) employee Adam Bognar conducted an unannounced 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.

This inspection was also conducted in response to Complaint No. C-23-02087 filed with AQD on September 29, 2023. In this complaint, the complainant alleges that a chemical-like odor is originating from the facility primarily during the evening hours at approximately 10 pm on occasion and is causing a nuisance to their comfortable enjoyment of life and property. The complainant noted that wind speed and direction is important for detecting the odor. I called the complainant on October 18, 2023 to let them know that I am waiting to conduct my investigation until the wind direction is blowing towards the area where the complaint is alleged.

Complaint Investigation

Prior to my inspection, I conducted a complaint investigation near the complainant's location. I arrived near the complainant's location at 2:15 pm. Wind was 7 mph from the north, the sky was overcast, and temperature was 49 °F. I walked around this area until 2:35 pm. During this period, I noticed intermittent level 3 odors.

The EGLE-AQD odor scale ranges from 0 to 5:
0 – Non-detect
1 – Just barely noticeable
2 – Distinct and definite odor
3 – Distinct and definite objectionable odor
4 – Odor strong enough to cause a person to attempt to avoid it entirely
5 – Odor so strong as to be overpowering and intolerable for any length of time

The odor smelled like burning metal, similar to welding or grinding fumes. I noticed this odor for several 30 second (approximate) periods during this investigation. After conducting an inspection of the facility, I can say that the odor I noticed near the complainant's location is identical to what it smells like inside of International Casting Corporation. The odors were not of sufficient duration to constitute a violation of EGLE-AQD Rule 901. I called the complainant after my investigation and informed them of my findings. Additional complaints or information is necessary before further action can be taken.

International Casting Corporation Inspection

I arrived at the facility at around 2:45 pm. I met with the front desk person, who informed me that there was nobody available to show me around the facility. The front desk person told me that she would need to call Kevin Barrickman, Health, Safety & Environmental coordinator. I asked the front desk person if there was any staff who could just show me around the plant even if they cannot provide me with records or answer every question. The front desk person said there was nobody available. The front desk person called Kevin and asked him to come to

the facility. I left the facility for this 45-minute period and got lunch. Kevin arrived at the facility at around 3:30 pm. I identified myself and stated the purpose of the inspection. Kevin and I held a pre inspection meeting where we talked about current operations. I asked Kevin to find someone other than himself who can show an AQD inspector around when they show up unannounced. After the pre-inspection meeting Kevin 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.

I requested records from Kevin during the inspection. Kevin sent these records to me via email on November 9, 2023. 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 Corporation FY2024. I reviewed records from January 2022 through October 2023.

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. Emissions from these furnaces are mainly particulate matter (PM), but also manganese.

Kevin provided me with 2022 and 2023 year to date Rule 290 monthly emission calculations for the four larger furnaces. Based on the records provided, the four larger furnaces are exempt from Rule 201 requirements pursuant to Rule 290 since the reported PM emissions are below 1,000 lbs/month (highest monthly emissions were reported from Furnace #2 at 138 lbs in July 2022), and manganese emissions are below 20 lbs/month (highest monthly emissions were reported from Furnace #2 at 1.8 lbs in July 2022). 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). These records show compliance with Rule 290.

Manganese has a screening level greater than or equal to 0.04 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 on-site 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 reported highest during the 12-month period ending in February 2022 at 122.2 lbs. The highest reported monthly usage was in February 2022 at 11.6 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 January 2022 at 7,014,000 lbs. The highest monthly sand use is reported at 684,000 lbs in March 2023.

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 Kevin, 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. Kevin provided me with safety data sheets for the binders and for the mold coating during a previous inspection. Kevin stated that the formulations have not changed since that time.

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. Kevin notified the AQD May 26, 2020 that this modification was completed. Additionally, Kevin 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. Based on my inspection and record review, the facility is in compliance with the area source requirements of Subpart ZZZZZ (see discussion near end of this 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 highest during the 12-month period ending in August 2023 at 2.93 tons.

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 highest during the 12-month period ending in August 2023 at 1,528 gallons.

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. Kevin 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 sheets Kevin provided list the chemical composition of the mold coatings.

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 sand reclamation system and dust collector were not operating during my inspection. The dust collector (located outdoors) 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. There were some debris outside the facility or near the dust collectors, but it appeared to have come from truck traffic moving in and out of the facility rather than a leaky dust collector. I asked Kevin to sweep up the parking lot behind the facility and do what he can to prevent dust from getting outside. Kevin agreed to sweep up the lot in the near future. Kevin provided me with records showing that the following maintenance tasks were completed each week/month/year since January 2022:

There are three dust collectors at the facility. One is for sandblasting operations, one is for grinding operations (equipped with cyclone pre-cleaner), and one is for the sand reclamation process. Based on the records I reviewed, each of these dust collectors has the hoppers emptied weekly and the fittings greased monthly.

On November 7, 2022, the sand reclamation dust collector had all filters changed, a full inspection of the internals, and air plenum vacuuming. On October 23, 2023, the grinding dust collector had the filters cleaned,

belts checked, ductwork checked, and the unit was cleaned out. On November 7, 2023 (date of this inspection), the sand/shot blaster dust collector had all filters changed, belts checked, ductwork checked, control panel cleaned, and airlines checked for leaks.)

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 all three dust collectors. Kevin provided me with these records.

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. A total of 1,185 tons were melted in the four larger furnaces in 2022 based on the records I reviewed. 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 January 31, 2023, and again on August 8, 2023. Kevin provided me with scrap inspection records from January 2022 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 (blaster dust collector). 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 (blaster dust collector).

Grinding stations – There are 4 grinding stations used to smooth out parts after casting. The grinding stations are used more often than the blasting stations. All four of these grinding stations are controlled by a fabric filter dust collector (grinding dust collector). There is a mechanical pre-cleaner (cyclone) to prevent sparks from reaching the dust collector. The dust collector appeared to be in good working order.

Based on my observations, these three emission units are 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.
After my inspection of the facility, I told Kevin that I had noticed odors at the complainant's location that were consistent with what it smells like inside of International Casting Corporation. I told Kevin that if I continue to notice these odors I may need to issue a Rule 901 violation notice.

NAME Adam Bognar DATE 12/6/2023 SUPERVISOR K. Kelly