

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

A023333634

FACILITY: BAY CAST INC		SRN / ID: A0233
LOCATION: 400 WEBSTER, BAY CITY		DISTRICT: Saginaw Bay
CITY: BAY CITY		COUNTY: BAY
CONTACT: Max Holman, President -General Manager		ACTIVITY DATE: 03/08/2016
STAFF: Gina McCann	COMPLIANCE STATUS: <i>Non-Compliance</i>	SOURCE CLASS: MINOR
SUBJECT: Inspect foundry for compliance status w/PTI 1083-89A (induction furnaces), 1084-89 (Arc furnace), 1085-89 (sand silos), and 1084-89 (ark electric furnace and baghouse)		
RESOLVED COMPLAINTS:		

I (glm) conducted an unannounced inspection at the Webster Street Bay Cast Facility. I was accompanied by Bay Cast Incorporated President & General Manager, Max Holman; Eugene DeLong, Foundry Electrician, and Human Resources Manager, Alicia Fonzi.

We reviewed the facilities air permits, PTI #1083-89A, 1084-89, and 1085-89. The facility is subject to the requirements contained in MACT ZZZZZ for existing small foundries. Bay Cast is an area source for HAPs but is not a major source for air contaminants. AQD has no complaints logged in MACES for this facility.

Violations of air permits PTIs #1087-89 and 1083-89A were found during the inspection. Additional emission information is required to determine compliance with the sand casting operations and PTI#1085-89.

**DESCRIPTION:**

The Bay Cast Incorporated Webster Street, Bay City, Michigan facility is a job shop steel casting foundry. The facility can produce castings up to 20 feet in length and 60,000 pounds. Mold patterns are supplied by the customer or manufactured by Bay Cast from wood or polystyrene. Foundry sand is mixed with the resin and a hardener. The mixture is poured into a mold box and the sand mold is formed to the customer supplied specifications. The resin and hardener react to form a polymer that binds the foundry sand into a mold used to cast steel. The patterns are removed prior to pouring the molten metal into the cavity.

Bay Cast melts scrap steel using a single electric arc furnace (PTI #1084-89) or one of seven induction melt furnaces (PTI #1083-89A). The melted steel is poured into the mold via a furnace ladle. After cooling, the mold box is removed and the sand mold broken from the casting due to the contraction rate or with hammers. Used sand from the casting operations is sent to the City of Midland Landfill. Furnace dust from the arc furnace is sent as special waste to Whitefeather Landfill, Pinconning.

After removal of the casting mold and additional cooling, the casting is usually transported to the Bay Cast facility on Center Avenue in Bay City, Michigan (SRN B7023). The Bay Cast Center Avenue facility processes include a gas-fired annealing furnace, shot blast process, welding, machining, and surface coating/painting. An inspection was completed for this facility on the same day, see B7023 for compliance report.

**FINDINGS****PTI 1083-89A: Non-Compliant**

A bank of seven induction furnaces is used for melting mild steel, alloy steel, and stainless steel. There are two, 5 ton/hr, four 3.25 ton/hr, and one, 1.75 ton/hr induction melting furnaces. The electric induction melting furnaces are located inside the foundry building and are not equipped with hoods or exhaust stacks. We viewed the Mold/Pouring area. A form was being built in the subsurface area. Most pouring of molten metal occurs late at night or early in the morning. The pour times are dictated by lower electricity costs during those hours.

The facility is a minor source of particulate, VOCs, and HAPs/toxics. The site is subject to 40 CFR 63, Subpart ZZZZZ for existing small foundry area sources. The Initial Notification for the NESHAP was received by AQD on January 5, 2009.

We reviewed the monthly metal usage records. The facility is limited to melt not more than 70 tons of very clean scrap per day. Attached is a copy of the metal use for 2014 and 2015. The average daily melt for during this time was less than 5 ton per day.

MACT ZZZZZ requires the site to have a Metallic Scrap Management Program by January 2, 2009, pollution prevention management practices for mercury by January 4, 2010, and, use no methanol in their catalysts. Attached is a copy of the facilities plan.

We viewed the source material staging area. The site receives scrap from multiple sources and includes cut steel punches, ingots made from their own scrap, and a variety of other ingots, for a total of 50 different ferrous alloys available. The metals used are received already separated. Each shipment is characterized. The scrap the facility receives is certified clean scrap. The certification is updated annually by each supplier

Pursuant to 40 CFR 63.10885(4), if the site does not receive any scrap containing mercury switches, the site must certify that they do not receive or use scrap that contains motor vehicle scrap. The facility's Initial Notification contained the certification statement. Certification is also required in semiannual compliance reports. The facility did not know they were supposed to report. A VN sent on March 15, 2016.

The facility reviews MSDS and has certifications from chemical suppliers that products purchased by Bay Cast contain no methanol.

**PTI#1084-89: Non-Compliant**

This permit was issued for a 20 ton direct arc furnace w/a melting capacity of 5 ton/hr. Emissions from the arc furnace are controlled by two baghouses. Baghouse #1 collects tramp dust via a recess in the ceiling above the direct arc furnace. Baghouse #2 receives exhaust from an integral furnace roof collection system built into the direct arc furnace. The original permitted equipment is still operating. Special condition #20 requires the exhaust to exit not less than 34 feet above ground level. The smaller baghouse exhausts less than 10 feet above ground level. The facility stated the exit point has never been higher as they have not modified it. This was included in the letter sent on March 15, 2016. The facility is working to correct. The arc furnace usually operates between midnight and 3 AM due to electricity costs. We viewed the area surrounding the baghouses and waste disposal receipts, there were no signs that material collected by the baghouse is handled improperly.

**PTI # 1085-89: UNKNOWN**

The PTI was issued for sand blending equipment including 2 sand silos, two ribbon mixers, and two 4000 gallon liquid storage tanks for each component 2-part binder. The site now receives liquids in totes and drums. The liquid storage tanks have been removed. The sand silos are out of service and inoperable – the vessels are empty, fill lines capped, and bottom access cover removed.

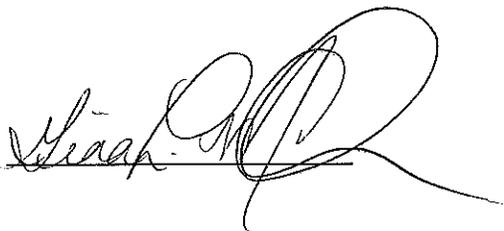
Current operations use two types of sand for castings, sand from west Michigan and manufactured "black sand". Zeolite is used as a coating. The site has one ribbon mixer w/an enclosed, automated resin and hardener pumping system. PTI Special Conditions #14 through #19 limit particulate emissions to 0.10 lb/1,000 lbs of exhaust gas, VE to <20%, and specify operating conditions. Emissions from the sand mixing no longer are exhausted outside but are sent to a dust collector inside the building that exhausts into the general plant area. Photos of the dust collector and empty sand silo are attached.

We viewed electronic records of material purchase records that are used to establish resin, catalyst, and sand usage as required by condition #22. Required information was available on site.

The most recent estimate of emissions was provided by the facility in response to a 2004 complaint investigation. In 2003 the facility switched to a low smoking, low phenol content resin. The reported potential emission estimates for the new resin were 2.34 tons phenol/year and 1.54 ton formaldehyde/year (calculations attached). The current PTI does not contain any emission limits for phenol or formaldehyde.

PTI Special Condition #20 does require the permittee to provide prior notification to the AQD of any appreciable change in the quality or quantity of air contaminants. The facility is evaluating whether there was an appreciable increase in the quantity of emissions due to switching from alkyd oil and isocyanate catalyst mix to a different resin and coreactant.

NAME



DATE

3/15/16

SUPERVISOR

C. Kave