

DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
ACTIVITY REPORT: Self Initiated Inspection

A061425175

FACILITY: A C FOUNDRY INC		SRN / ID: A0614
LOCATION: 1146 N RAYMOND RD, BATTLE CREEK		DISTRICT: Kalamazoo
CITY: BATTLE CREEK		COUNTY: CALHOUN
CONTACT: Brian Shaughnessy , General Manager		ACTIVITY DATE: 05/06/2014
STAFF: Rex Lane	COMPLIANCE STATUS: Compliance	SOURCE CLASS:
SUBJECT: Self Initiated Inspection based on recent air pollution complaint		
RESOLVED COMPLAINTS:		

On May 6, 2014, Air Quality Division (AQD) staff (Rex Lane) arrived at AC Foundry located at 1146 N. Raymond Road, Battle Creek, Michigan at 10:15 am to conduct an unannounced air quality inspection. The inspection was initiated based on a complaint staff received on May 1, 2014 that indicated on-going foundry smoke and a chemical or gasoline like odor coming from this facility. The complaint was assigned PEAS # 10891.

Upon arrival, staff drove around the perimeter of the facility including Raymond Road, Culbertson Street, Hayes Blvd. and McGrath Place. At the time of the drive-by, the air temperature was in the Upper-40's and the wind was out of the east (complainant's house up gradient under this wind direction) at approximately 10 mph. Staff noted a faint hot metal type odor along Raymond Road downwind of the facility, but no other odors were noted during this drive-by. AC Foundry process equipment is located in two main buildings, Permanent Mold (North) and Sand Foundry (South). There are approximately 15 private residences located within a 350 foot radius east and southeast of the Sand Foundry building. A few residential structures are located within 50 feet of the east wall of the Sand Foundry building.

Staff made initial contact with a shell core operator and requested to speak to Mr. Steve Jewell. Mr. Jewell took staff to see Ms. Mackenzie Meekhof, EHS Manager, at their main office. The office is located south of McGrath Place at the southern end of an unpaved employee parking lot. Staff noted an emergency generator had been installed on the east side of the parking lot on the way over to the office. Staff was introduced to Mr. Brian Shaughnessy, General Manager after it was determined that Ms. Meekhof would be out of the office for the next two weeks. Staff provided Mr. Shaughnessy with their ID credentials, a business card and a copy of MDEQ's Environmental Inspections brochure. Staff asked several questions related to plant operations and requested to review flux usage and Safety Data Sheet records prior to getting a tour of the aluminum foundry and casting operations.

AC Foundry is an aluminum foundry and casting facility that has been in operated since 1962 at this location. The facility primarily manufactures castings for the automotive and marine engine OEM and aftermarket sectors. The facility employs between 50 – 100 staff and operates one full 1<sup>st</sup> shift (both mold lines operating in Sand Foundry), one-half 2<sup>nd</sup> shift (i.e. one mold line operating) and a third maintenance only shift. The Permanent Mold and Sand Foundry processes are operated under air use Permit to Install (PTI) No. 180-06A. A summary of the special conditions (SC) for PTI No. 180-06A is listed below with associated compliance evaluation comments:

SC 1.1: Particulate emission limit for dry hearth furnaces in flexible group FG-GC3000-1&2. These furnaces are located in the east addition to the Permanent Mold building and are referred to by the facility as furnaces # 9 and # 10. These furnaces do not have ductwork to vent emissions through stacks to the outside air and testing has not been required. There is one general roof ventilation fan located in the vicinity of these furnaces.

SC 1.2: The permittee shall not process more than 20 pounds/day of fluxing materials in FG-GC3000-1&2. Staff reviewed daily furnace logs for 2014 from the dry hearth furnaces. The 2014 records indicate that the permittee has not exceeded the 20 pounds/day injection flux material limit. The records also indicate that the furnaces are fluxed at the beginning of the first shift and averages 5 – 8 pounds per furnace. Staff also reviewed daily furnace logs for 2014 for the six electric resistance furnaces located in the Sand Foundry building that the facility refers to as furnaces # 1 through # 6. Flux material usage in the electric furnaces is not limited under PTI No. 180-06A, however, the facility adds about a two pound flux mixture (cover and injection flux) for each furnace pour and the furnaces average one to two pours/day. The facility is in the process of installation equipment that will automate degassing (nitrogen gas injection) and fluxing to furnaces # 1 through # 6 that is estimate to reduce flux usage

by about one third. Copies of the cover and injection flux safety data sheets (SDS) were obtained during the inspection and are attached to the inspection report.

SC 2.1: The permittee shall melt only clean charge, customer returns, or internal scrap, as defined by 40 CFR Part 63 Subpart RRR. This condition is necessary to avoid requirements of 40 CFR Part 63 Subpart RRR, National Emission Standards for Secondary Aluminum Production. The facility melts only clean charge (30 – 60 pound ingots), internal runaround (gates, risers, etc.) and clean customer return castings.

SC 2.2: The permittee shall not install or operate any sweat furnace, thermal chip dryer, or scrap dryer / delacquering kiln / decoating kiln at any location in the facility. This condition is necessary to avoid requirements of 40 CFR Part 63 Subpart RRR, National Emission Standards for Secondary Aluminum Production. The permittee stated that they have not installed any sweat furnace, chip or scrap dryer or kiln at the facility during the pre-inspection review. Staff confirmed during the facility tour that none of the above described equipment has been installed.

SC 2.3: The permittee shall keep records of the monthly tonnage of aluminum melted in tons per month and the usage rates of fluxes in pounds per day. Such records shall be kept on file for a period of at least five years and made available to the Department upon request. Facility is maintaining their flux usage rates for each furnace on a daily basis. The facility's EHS manager was on vacation at the time of the inspection so aluminum melt records were provided to staff on 5/21/14 and are attached to this report.

Mr. Steve Jewell, Facilities Manager gave staff a tour of the Sand Foundry and Permanent Mold buildings and plan schematics were provided for each building. Staff process observations for each building are described separately below:

#### Sand Foundry Building:

Five of the six shell core machines at the facility (EUCORE; PTI No. 180-06A) are located in the south end of this building. The facility has two suppliers for the resin (1.1 – 2.5%) coated sand used in the shell core process. The sand is delivered in fabric super sacks and is either gravity fed or pumped into the shell core machines. The shell core machines vent in-plant. Staff detected a slight solvent type odor near the shell core machines that is probably related to the release agent that is sprayed on the molds after every 6- 8 shots. The facility buys a percentage of their shell cores from outside sources. Copies of the sand supplier SDSs were emailed to staff following the inspection and are attached to the inspection report.

Furnaces # 1 through # 6 were capped and idling at the time of the facility tour. A muller feeds green sand via conveyor to two molding machines (EUMOLD; PTI No. 180-06A) that produce and deliver cored and un-cored molds to the pour station where the molten aluminum is ladled into the molds. The hot molds then travel to the shakeout area where the castings are separated from the molds and placed on an overhead cooling line. The dumped molds pass through a floor grate and then go up a covered conveyor to a series of screens which remove any core plugs and metallic particles before the reclaimed sand is sent to temporary storage in a 40-ton silo. The reclaim sand then returns to the muller to be mixed with new clay bentonite and green sand to meet required specifications. The shakeout area vents in-plant and the reclaim sand conveyor, screens, silo and muller all vent to a Paraflo dust collector that discharges the filtered air back into the plant and is exempt from permitting under Rule 285(l)(vi)(B).

The north half of the Sand Foundry building has several cutter saws that remove the gates from the castings before they are sent over to one of four belt grinders for further processing. The facility has also recently installed a self-contained and automated grinder. The cutter saws and the automated grinder are vented internally without controls and the belt grinders discharge to bag filters that vent in-plant. The cutting and finishing equipment is exempt from permitting under Rule 285(l)(vi)(B).

#### Permanent Mold Building:

Furnaces # 9 and # 10, three associated permanent mold machines and one shell core machine are located in the northeast addition to this building. This equipment was in operation during staff observations. The facility uses a dry ice system to remove residue from the mold patterns on the permanent mold machines. No odors were detected in this production area.

In the finishing area, there are two internally vented shot blast machines one of which is equipped with dust control equipment, three cutter saws that vent uncontrolled in-plant and several belt grinders that vent in-plant through bag filters. The cutting and finishing equipment is exempt from permitting under Rule 285(l)(vi)(B).

Emergency Generator:

The facility recently installed a diesel fired emergency generator that is sized only to provide hold power to the electric resistance furnaces in the event of a power outage. Based on information provided by the facility, the engine has a rated heat input capacity of <10 MMBtu/hour and is therefore exempt from air use permitting under Rule 285(g). Based on its manufacture year (2000), the engine is subject to 40 CFR Part 63, Subpart ZZZZ (aka RICE MACT), under Emergency Compression Ignition category "Existing Stationary Engine > 500 HP Located at Area Sources of HAP, constructed before 6/12/2006". The MDEQ has not taken delegation authority for the RICE MACT so this regulation is implemented and enforced by USEPA. The engine is required to be fitted with a non-resettable hour meter, if one has not been installed already, and use hours tracked on a monthly and annual basis. The facility indicated that they have a contract with a vendor to perform engine maintenance. Below is a summary of the RICE MACT engine maintenance requirements:

## For Existing Emergency Engines, Owners and Operators Must:

1. Change oil and filter every 500 hours of operation or annually, whichever comes first (you may use an oil analysis program to extend the oil change requirement)
2. Inspect air cleaner for CI engines or spark plugs for SI engines every 1,000 hours of operation or annually, whichever comes first, and replace as necessary
3. Inspect hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary
4. Operate and maintain the engine per the manufacturer's instructions or your own maintenance plan
5. Minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine
6. Equip the engine with a non-resettable hour meter if one is not already installed
7. Keep records of engine maintenance
8. Keep records of the hours of operation recorded through the non-resettable hour meter, including how many hours are spent for emergency operation and what classified the operation as emergency

Staff thanked Mr. Jewell for his time and cooperation and staff left the facility around 12:45 p.m. Although staff detected slight odors down gradient of the facility prior to the inspection and in plant near the shell core machines, they did not constitute an unreasonable interference with the comfortable enjoyment of life and property under Rule 901, therefore the 5/1/14 complaint could not be verified. At the time of the inspection, the facility appeared to be in compliance with PTI No. 180-06A and applicable state and federal air quality regulations. -RIL

NAME RILDATE 5/21/14SUPERVISOR MR 5/22/2014