

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

N094060267

FACILITY: ACRA CAST INC		SRN / ID: N0940
LOCATION: 1837 1ST ST, BAY CITY		DISTRICT: Bay City
CITY: BAY CITY		COUNTY: BAY
CONTACT: Rich Singer , Owner		ACTIVITY DATE: 09/20/2021
STAFF: Adam Shaffer	COMPLIANCE STATUS: Non Compliance	SOURCE CLASS: MINOR
SUBJECT: Scheduled unannounced inspection.		
RESOLVED COMPLAINTS:		

An onsite inspection was conducted by Air Quality Division (AQD) staff Adam Shaffer (AS) of ACRA Cast Inc (ACRA) site located in Bay City, MI. Both an in-person inspection and an onsite review of records pertaining to permit to install (PTI) No. 297-04 were completed on September 20, 2021.

Facility Description

ACRA is a casting foundry that produces various ferrous and non-ferrous casting products for various companies. The facility is in operation with PTI No. 297-04. Additionally, the facility is an area source of hazardous air pollutants (HAPs) and is subject to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) Subpart ZZZZZ for Iron and Steel Foundries Area Sources.

Compliance Evaluation

An onsite inspection of the facility was completed on September 20, 2021. AQD staff AS arrived in the area at 10:51am. Weather conditions at the time were sunny skies, temperatures in the middle 70's degrees Fahrenheit and winds from the south / southeast at 0-5mph. No opacity or odors were noted prior to entering the facility. AS checked in with the front office and met with Mr. Rich Singer, Owner, who provided a tour of the site and answered site specific questions. The records required per PTI No. 297-04, were also reviewed during the inspection.

As mentioned above, ACRA is a casting foundry that produces various ferrous and non-ferrous casting products. ACRA utilizes the "lost wax" casting process in which wax molds are created of the desired product before being incased in a ceramic mold. The mold is heated, and the wax removed before the desired metal material is added to the now empty ceramic mold. Once cooled the product is removed from the ceramic mold. The product goes through several other processes such as grinding and shot blast cleaning prior to being shipped offsite. The processes were observed throughout the course of the inspection.

PTI No. 297-04

EU_DE-WAX_OVEN

This emission unit is for a natural gas fired oven designed to remove pattern wax from ceramic shell molds. The oven is equipped with two afterburners to vaporize any emitted wax.

Per Special Condition (SC) 1.1, the permittee shall not process more than 95 pounds of pattern wax per batch of ceramic molds processed in the de-wax oven. Speaking with Mr.

Singer, the max capacity for the oven appears to be 80 lbs and ACRA typically only does 20 -30 lbs per batch. After further review, this appears acceptable at this time.

Per SC 1.2, ACRA shall only combust natural gas in the main burner and afterburners of EU_DEWAX_OVEN. Speaking with company staff, it was verified the unit only utilizes natural gas.

Per SC 1.3, visible emissions for EU_DE-WAX_OVEN shall not exceed a six-minute average of 20 percent opacity, except for 1 6-minute average per hour of not more than 27 percent opacity. As mentioned earlier no emissions were noted while observing from offsite.

Per SC 1.4, the permittee shall equip and maintain EU_DE-WAX_OVEN with the following:

- Two natural gas fired afterburners
- Temperature control system for maintaining a minimum specified temperature in the afterburners

Additionally, per SC 1.5-1.6, ACRA shall not operate the main burner of the de-wax oven, unless both afterburners are installed and operating properly, and a minimum temperate of 1,400°F is maintained by both afterburners.

During the inspection, EU_DE-WAX_OVEN was observed in operation during the course of the inspection. The control panel for the unit was observed and the two afterburners were noted for the unit. Additionally, a temperature control system was in place. Company staff stated that the unit wouldn't allow the flash fire (dewaxing process) to occur until the temperature hits the setpoint of 1,500°F. After further review, the unit appeared to be operating properly. As mentioned during the previous inspection, the brick walls for the unit are periodically replaced due to natural wear and tear from operations. Company staff had mentioned brick for the stack had been replaced approximately two years ago.

Per SC 1.7, the permittee shall maintain records of the amount of wax processed in each batch of ceramic molds in the de-wax oven. This requirement is kept on work orders completed for each job processed in the oven. ACRA staff showed AS where all work orders appear to be kept. Based on the items observed, ACRA is keeping track of amounts of wax processed for each batch of ceramic molds in the de-wax oven.

One stack is listed in association with this flexible group and was observed at the time of the inspection. Company staff had since the last inspection replaced the stack with a new stack due to cracking and what appeared to be normal wear and tear from operations. Company staff stated that the dimensions for the unit were the same as the last stack in place. This appears acceptable.

Additional Observations

Two electrically heated induction melting furnaces with a 300 lb capacity were verified by company staff to still be onsite and appear to be exempt per Rule 282(2)(a)(iv).

One 900 lb capacity aluminum melting furnace was noted during the inspection that uses resistance heating. The unit is electrically heated, can process 1,800 lbs of material a day and only uses clean charge. Fluxing is done and Safety Data Sheets (SDS) of materials used were requested and provided. A potential exemption was not identified during the course of the inspection. This is a Rule 201 violation, and the company shall provide an

applicable exemption for the aluminum melting furnace or submit a permit to install application.

Particulate control device for emissions from equipment used to mechanically remove ceramic from castings was verified to be onsite and appears to be exempt per Rule 285(2)(l)(vi)(c).

Particulate control devices for emissions from equipment used to finish castings was observed during the inspection and appear to be exempt per Rule 285(2)(l)(vi)(c). Since the last inspection, a shot blast cleaning unit had been installed and was tied into the particulate control devices.

A NaOH bath used for residual ceramic molds material on casting was verified to still be onsite and appeared exempt per Rule 285(2)(r)(iv).

Dipping and storage operations of coating wax castings with layers of ceramic mold materials was previously determined to not appear to be subject to Rule 201.

A food grade rust inhibitor tank was noted during the inspection that had been installed since the previous inspection. This unit is to treat select products to prevent rusting. The unit is not vented externally and would appear to be exempt per Rule 285(2)(r)(i).

A parts washer that appeared to have an air to vapor interface of less than 10 square feet was observed and appeared to be exempt per Rule 281(2)(h).

Three wax injection mold units that make the pre-molds later used in the EU_DE-WAX_OVEN were observed during the inspection. A safety data sheet (SDS) of the wax used had been provided during the permitting process for EU-DE-WAX_OVEN. The SDS didn't appear to indicate any carcinogenic components to the material and company staff stated the wax has stayed the same. While speaking with company staff on a monthly basis it appeared ACRA have used at most, approximately 4,000 lbs of wax in the three injection mold units and of that 4,000 lbs of wax lost approximately 5 lbs of wax. Based on this and assuming all waste is emitted, ARCA would need to use over 800,000 lbs of wax per unit in a month to exceed the 1,000 lb per month monthly emission limit for Rule 290(2)(a)(ii). After further review, the three wax injection molds appear to be exempt per Rule 290(2)(a)(ii). Moving forward, this potential exemption may need to be reevaluated if changes are made to the materials used.

During the inspection, it was discussed at length on ACRA installing a new furnace. A PTI may be necessary if a potential exemption cannot be identified for the new furnace.

NESHAP Subpart ZZZZZ

ACRA is an area source and subject to the NESHAP Subpart ZZZZZ. On June 20, 2008, a fact sheet was provided by, then at the time, the Michigan Department of Environmental Quality (MDEQ), to ACRA notifying them of being potentially subject to the NESHAP Subpart ZZZZZ. The document provided had also given an overview of the federal rule and included various items such as applicability and reporting requirements. At the time, the MDEQ did not have delegation by the Environmental Protection Agency (EPA) to enforce the NESHAP Subpart ZZZZZ. However, the MDEQ, now EGLE, was given delegation by EPA to enforce the NESHAP Subpart ZZZZZ on May 4, 2014. It was noted during the inspection that ACRA staff were unaware of being subject to the NESHAP Subpart ZZZZZ

and it didn't appear that any documentation had been historically submitted by the company. The following items have not been received by EGLE to date.

- Initial Notification
- Notification of Size Classification
- Notification of Compliance – Metallic Scrap Management / Binder Formulation
- Notification of Compliance – Mercury Requirements
- Semiannual Certification Reports

This is a violation of the NESHAP Subpart ZZZZZ. During the inspection, AS explained and provided to staff blank copies of the initial notifications and semi-annual reports as well as an overview guidance document of the NESHAP Subpart ZZZZZ. These documents as well as additional information are available on the EGLE website. The non-submittal of the applicable notifications and semiannual certification reports is a violation of the NESHAP Subpart ZZZZZ.

Conclusion

Based on the facility walkthrough, observations made, and records reviewed, ACRA appears to be in compliance with PTI No. 297-04. However, the facility is not in compliance with select air quality rules and the NESHAP Subpart ZZZZZ. A violation notice (VN) will be sent for the following violations:

ACRA is subject to the NESHAP Subpart ZZZZZ and has not submitted the applicable initial notifications and semi-annual compliance reports. This is a violation of the NESHAP Subpart ZZZZZ.

An aluminum melting furnace was observed during the course of the inspection. A potential exemption was not identified during the course of the inspection. This is a Rule 201 violation, and the company shall provide an applicable exemption for the aluminum melting furnace or submit a permit to install application.

NAME Adam Shaffer

DATE 09/30/2021

SUPERVISOR Chris Hare