

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

B516966665

FACILITY: WHITEHALL PRODUCTS LTD		SRN / ID: B5169
LOCATION: 8786 WATER ST, MONTAGUE		DISTRICT: Grand Rapids
CITY: MONTAGUE		COUNTY: MUSKEGON
CONTACT: Chuck Krzykwa , VP Manufacturing		ACTIVITY DATE: 03/15/2023
STAFF: Eric Grinstern	COMPLIANCE STATUS: Compliance	
SUBJECT: Unannounced on-site compliance inspection		SOURCE CLASS: SM OPT OUT
RESOLVED COMPLAINTS:		

FACILITY DESCRIPTION

The facility is an aluminum foundry that manufactures decorative castings, such as weathervanes, home address signs, memorials, etc. The facility is a green sand-casting operation that operates four gas-fired crucible furnaces.

The facility was impacted by a fire on December 25, 2021. The facility rebuilt the portion of the building housing the foundry operations. The portion of the facility that housed finishing operations has not been rebuilt. The finishing operations are currently located offsite at the company's paint facility. The facility stated that they had to replace the sand muller, sand system belts, and furnace controls, etc. as a result of the fire.

REGULATORY OVERVIEW

The facility holds one air use permit, opt-out permit No. 142-07. The permit limits the potential emissions of HAPs below the major source level.

The facility has been in operation since prior to 1967, with some of the foundry processes (furnaces/sand system) being replaced in 1977. The facility obtained an opt out permit (No. 142-07) in 2007. The permit application addressed all existing processes at that time. The permit specifically addresses the four crucible furnaces (FG-Furnaces). Additionally, all equipment at the facility is included in FGFACILITY, which contains HAP opt-out limits and conditions.

Subpart RRR, Secondary Aluminum Production – The facility is not subject to Subpart RRR - The facility currently does not melt any charge material that is not defined as clean charge under Subpart RRR. Additionally, the facility does not operate any processes that are affected sources under Subpart RRR.

Subpart ZZZZZZ, Area Source Aluminum, Copper, and other Nonferrous Foundries – The facility is not Subject to Subpart ZZZZZZ because their annual metal throughput remains below the applicability threshold of 600 tons. Total tons melted in 2022 was 288.

COMPLIANCE EVALUATION

Prior to entering the facility, a survey of the perimeter was made. No odors or visible emissions were noted from the facility.

At the facility, staff met with Chuck Krzykwa, V.P. Manufacture. Mr. Krzykwa accompanied EG on a tour of the facility. Subsequent to the on-site inspection, Tim Swainston, Purchasing & Inventory - Whitehall Products, provided facility records as requested.

Sand System

The facility is a green sand foundry. The facility only uses sand with 6% bentonite clay, no sea coal, cereal, or other binders. Additionally, no cores are used. Spend mold sand is conveyed to a rotary screen to remove residual aluminum. From the screen, the sand is conveyed to a silo. From the silo, bentonite is added to the sand on way to the muller. From the muller, sand is conveyed to hoppers located above the molding machines. The sand system does not have any direct external exhaust, however there is a building exhaust fan at the east end of the building. Observation of the exhaust from outside the plant showed no emissions and no staining on the building that would indicate particulate is exhausted from the duct. The facility utilizes nine (9) squeeze mold making machines. All emissions from the mold machines are internally vented.

Melting

The facility utilizes four (4) 1,000-pound gas-fired crucible furnaces to melt pure ingot and internal runaround. Flux (411) is utilized in the furnaces. The furnaces are located in a booth/bay, each with an exhaust fan and stack.

FG-FURNACES:

Emission Limits - Limits PM to 0.10 pounds/1,000 pounds. Compliance is based on the use of only clean charge material and compliance with the flux usage limit. Compliance could also be determined through requiring stack testing, which has not been required to date.

Material Limits/Records – Limits charge material to that which meets the definitions of “clean charge” in accordance with Subpart RRR. Based on the charge material observed on-site and the facility’s statements, only clean charge is melted in the furnaces.

The facility is required to maintain records of the amount of aluminum melted and hours of operation. The facility was requested and provided records for the most recent 12-month time period.

The facility provided records of the hours of operation on a daily basis and the amount of aluminum melted on a monthly basis. The facility melted a monthly high of 61.5 tons in 2022 and a total tonnage of 288.9 tons in 2022. The facility did not melt in January or February 2022 and the second highest amount melted in a month was in June 2022 (38.4 tons).

Flux usage is limited to 30 pounds per day. The facility uses a measuring can with a known weight (can holds 0.68 pounds of flux) to track flux usage. The facility provided daily flux use records for 2022. Review of the records showed a daily high usage of 6.8 pounds. The facility uses between 75-100 pounds of flux per month.

Stack/Vent Restriction

Each furnace has a stack with a required minimum height of 15 feet and a maximum diameter of 24 inches. Visual observation of the stacks showed that they appeared to meet the required dimension.

Miscellaneous

Since the facility had to rebuild the four permitted furnaces impacted by the fire, the facility was requested to evaluate if the rebuilding of the furnaces met the definition of reconstruction. The facility supplied invoices associated with the parts and labor to rebuild the furnaces, as well as a quote for the cost of a new unit. Review of the supplied documents showed that the cost of rebuilding the four furnaces was less than 50% of the cost of installing four new furnaces. Therefore, the facility did not trigger reconstruction.

Pouring/Cooling/Shakeout

Molds are manually poured on the conveyors, where they are also cooled. After cooling, shakeout is conducted via two shakeout units that move between the conveyors. The mold sand is deposited in the floor conveyor that transports the sand to the rotary screen. Emissions from P/C/S vent internally.

Finishing

As stated earlier, all finishing operations are currently located off-site until the portion of the facility that previously housed finishing can be rebuilt.

Miscellaneous

The facility cleans mold patterns by dipping them in a cleaner. The facility has a tank with an exhaust hood that vents to the ambient air uncontrolled. At the time of permitting the facility was using a lacquer thinner that contained toluene. The use of the lacquer thinner gave the facility a potential to emit HAPs over the major source threshold, resulting in the need for an opt out permit. The use of the lacquer thinner was contained in the permit application, but not specifically limited in the PTI. The facility switched to a HAP free cleaner (Bio Adhesive Remover) several years ago. The Bio Adhesive Remover is primarily acetone. The facility recorded 2,310 gallons of Bio Adhesive Remover usage in 2022.

FGFACILITY

FGFACILITY limits the facility-wide HAP emissions below the major source threshold.

Emission limits – Limits individual HAPs to 9.0 tpy and aggregate HAPs to 22.5 tons tpy. Compliance is based on the requirement to maintain records of emissions and records of HAP containing material usage.

The facility provided records of HAP containing material usage and emissions. The spreadsheet contains information regarding toluene usage. This information is an artifact left on the spreadsheet from previous years. The facility no longer uses lacquer thinner with toluene. The facility records show total HAP emissions for 2022 at 0.18 tons. All of the accounted for HAP emissions are HCl from flux usage.

Conclusion

Based on the information and observations made during the inspection, the facility appears to be in compliance with applicable air quality rules and regulations.

NAME *Cec Guimatao*

DATE 04/28/2023

SUPERVISOR *HH*