

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

B286436164

FACILITY: Shiloh Industries, LLC		SRN / ID: B2864
LOCATION: 205 N GROVER, ALMA		DISTRICT: Lansing
CITY: ALMA		COUNTY: GRATIOT
CONTACT: Dan Rinke , Human Resources Manager		ACTIVITY DATE: 08/18/2016
STAFF: Michelle Luplow	COMPLIANCE STATUS: Non Compliance	SOURCE CLASS: MINOR
SUBJECT: Scheduled, unannounced inspection of Shiloh Industries to determine compliance with PTI No.'s 05-00A, 183-95A, and 272-96.		
RESOLVED COMPLAINTS:		

Inspected by: Michelle Luplow

Personnel Present: Dan Rinke, Human Resources Manager ([drinke@shiloh.com](mailto:drinke@shiloh.com))  
Dustin McDonald, Plant Manager ([dmcDonald@shiloh.com](mailto:dmcDonald@shiloh.com))

**Purpose:** Conduct an unannounced, scheduled compliance inspection. In 2014 the City of Alma issued a "Notice to Public of No Significant Impact on the Environment and Notice to Public of Request for Release of Funds" for Shiloh. This inspection was also conducted to learn what, if any, processes were added or changed as a result of this document.

**Facility Background/Regulatory Overview:** Shiloh Industries is a minor source of HAPs and criteria air pollutants that makes aluminum parts from die cast molds for the auto industry.

The facility currently has 3 active air quality permits for 3 natural gas-fired aluminum jet melter furnaces: 183-95A, 272-96, and 5-00A. PTI 272-96 has a supplemental revision issued in December 1996 to the original permit issued in October 1996. The supplemental permit change the opacity limit from 5% to 20% and changed the flux usage rate from 131.4 tons/year to 6.6 tons/year.

D. Rinke said that only the 1053 jet melter furnace (PTI 183-95) has been consistently used since 2013. The other two have been used sparingly since 2013, after Shiloh bought the plant. He said Shiloh operates 24 hr/day, and runs 3 shifts.

Hydrofluoric Acid (HF) is the HAP of concern at this facility. The HF potential to emit based on the evalform evaluation of the permitted processes and the associated emission limits from the 3 permits is 2.63 tons per year which indicates that Shiloh is a true minor for HAPs.

**Inspection:** This was an unannounced, scheduled compliance inspection. At approximately 9:30 a.m. on August 18, 2016, I met with Dan Rinke, Human Resources Manager. Dan Stahl, Maintenance Manager, was not present for the inspection but D. Rinke said that for future inspections either he or D. Stahl would be the plant contact. I gave D. Rinke a DEQ "Environmental Inspections: Rights and Responsibilities" brochure to illustrate a typical inspection procedure, a July 2014 Permit to Install Exemption handbook, and a Boiler MACT outreach brochure.

D. Rinke explained that they only use raw ingots (bars) of aluminum, also known as "clean charge", or they remelt the raw aluminum scrap from the die cast process in their processes. D. Rinke said that they will soon be ramping up production, including using all 3 furnaces in order to meet the demands for new GM parts.

Each furnace has a 20% limit on opacity being emitted from the stack. Prior to entering the facility I saw no signs of opacity from any of the stacks.

The following table was used to determine which permitted equipment was still present onsite. Dustin McDonald, Plant Manager, worked with us to determine the presence or absence of the emission units. They verified that a shot blaster had been removed from the site.

Table 1. Current permitted equipment

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Emission Unit	PTI/Exemption	Compliance Notes
No. 1106 Aluminum jet melter furnace, natural gas-fired, metal fabric filter screen, east side of building	5-00A	Non-compliance with operating hour recordkeeping and lb flux/lb of aluminum rate for May 2015
No. 1053 Aluminum jet melter furnace, natural gas-fired, metal fabric filter screen, southeast side of building	183-95A	Non-compliance with lb flux/ton Al melted
No. 1100 Aluminum jet melter furnace, natural gas-fired, metal fabric filter screen, southwest side of building	272-96	Compliance
One electric hold furnace and diecast machine, "holding pot"	Rule 282(a)(vi)	D. Rinke said this unit is operated once per shift for "surface jobs" – those jobs that are sporadically picked up to produce parts for old cars. It is able to process 6,000 lbs/day (2,000 lbs/batch) and "fluxes" by removing the air from the metal.
Aluminum die cast machine with launder system which maintains aluminum's heat as it is conveyed	Rule 285(l)(ii)	Die cast machines are exempt
T-4; 2 MMBtu/hr natural gas-fired heat treating furnace	Rule 282(a)(i)	Unit heats and cools the Al ingots – ingots remain solid; furnace must be less than 10 MMBtu/hr to be exempt. Will follow up on Btu/hr in a supplemental report.
T-5; natural gas-fired heat treating furnace	Rule 282(a)(i)	Unit heats and cools the Al ingots – ingots remain solid; furnace must be less than 10 MMBtu/hr to be exempt. Will follow up on Btu/hr in a supplemental report.

PTI 183-95A: No. 1053 Al jet melter furnace

Almost all aluminum processing has been done using this furnace as opposed to the 1106 and 1100 furnaces. In this process aluminum flux and nitrogen are injected into the furnace to separate out the impurities. This is the same process that occurs for the 1106 and 1100 furnaces.

D. Rinke provided me with the SDS for the aluminum flux that they use in all fluxing processes (attached). Aluminum flux contains potassium fluorosilicate at less than 40% by weight of the flux material. The limit of 6.6 tons flux per year would yield 2.64 tons of potassium fluorosilicate used, which equates to 1.36 tons of HF emitted from this unit if Shiloh were to use up to the 6.6 tons per year limit.

Shiloh is limited to one pound of flux per ton of aluminum melted, and 6.6 tons of flux per year for furnace 1053. Shiloh is required to keep monthly records of the amount of flux used and the flux composition is to be kept on file.

I was provided with calendar year 2015 and calendar year 2016 records for furnace 1053. In May 2015, Shiloh exceeded the one lb flux per ton of aluminum melted. The May flux usage was 2.21 lbs flux per ton of aluminum. The remainder of calendar year 2015 and the calendar year 2016 (up through July) was in compliance with the lb flux/ton of aluminum limit. The total tons of flux used in 2015 was 0.78 tons. The total tons of flux used through July 2016 was 0.49 tons. With their excel spreadsheet, Shiloh averages flux per ton of **total** Al melted, not just for the Al melted within that particular furnace. I will make D. Rinke aware that the flux used should be averaged over the Al melted for that specific furnace for future recordkeeping purposes.

All "waste" scrap aluminum from the die cast machines are re-melted to be used in Shiloh's processes.

272-96: No. 1100 Al jet melter furnace

Shiloh is limited to one pound of flux per ton of aluminum melted, and 6.6 tons of flux per year (equating to 1.36 tons of HF emitted) for furnace 1100. Shiloh is required to keep monthly records of the flux usage rate and the flux composition is to be kept on file. They keep monthly lbs flux/ton aluminum (monthly average). Furnace 1100 was only used once between January 2015 and July 2016. In February 2015 17.5 lbs flux was used. The flux per ton of Al melted was 0.39 lbs for February 2015. With their excel spreadsheet, Shiloh averages flux per ton of **total** Al melted, not just for the Al melted within that particular furnace. I will make D. Rinke aware that the flux used should be averaged over the Al melted for that specific furnace for future recordkeeping purposes.

Shiloh is in compliance with PTI 272-96.

PTI 5-00A: No 1106 Al jet melter furnace

Shiloh is limited to 2 pounds of flux per hour (equating to 1.8 tons of HF in an 8760 hour time period) on a monthly average and is required to keep record of the flux usage rate and hours of operation on a monthly basis.

Furnace 1106 was operated in January 2015 and in June and July of 2016. Each lb flux usage per ton of melted aluminum was less than 1 lb; however, Shiloh averages flux per ton of **total** Al melted, not just for the Al melted within that particular furnace. I will make D. Rinke aware that the flux used should be averaged over the Al melted for that specific furnace for future recordkeeping purposes.

For each calendar year, Shiloh has an excel spreadsheet that keeps track of furnace operating hours per furnace per month. There are no records of hours of operation for furnace 1106 in 2015 and 2016 even though there are records that it was used. Additionally, the hours recorded in 2015 for the other 2 furnaces is identical to the hours recorded in 2016, suggesting that 2016 hours of furnace operation were not updated, but copied and pasted from the previous year without updates. I will cite a violation for failure to keep hours of operation for furnace 1106 and therefore a violation of the 2 lb/hour flux monthly average as there are no hourly records to determine compliance.

NAME Mickie Spina

DATE 9/28/16

SUPERVISOR 

