

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

B666042729

FACILITY: Norbrook Plating, Inc.		SRN / ID: B6660
LOCATION: 11400 E Nine Mile Rd, WARREN		DISTRICT: Southeast Michigan
CITY: WARREN		COUNTY: MACOMB
CONTACT: Ken Otto, General Manager		ACTIVITY DATE: 12/01/2017
STAFF: Adam Bognar	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Scheduled Inspection		
RESOLVED COMPLAINTS:		

On Friday, December 1, 2017, I conducted a targeted scheduled inspection of Norbrook Plating, located at 11400 Nine Mile Rd, Warren, MI. The purpose of this inspection was to determine the facility's compliance status with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control of Natural Resources and Environmental Protection Act, 1994 Public Act 451; Michigan Department of Environmental Quality, Air Quality Division (MDEQ-AQD) rules; Permit to Install Nos. 584-86A, 238-99, 239-99, 240-99, 266-04; and 40 CFR Part 63 Subpart N – National Emissions Standards for Chromium Emissions From Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks (Chrome NESHAP).

I arrived at Norbrook Plating at 9 am. I met with Mr. Ken Otto, General Manager. I identified myself as a MDEQ inspector, provided credentials, and stated the purpose for the inspection.

During the pre-inspection meeting we discussed the applicable recordkeeping requirements. Mr. Otto provided me with copies of the required records and then gave me a tour of the facility.

Norbrook has three plating lines: A chrome line, a nickel line, and a copper line. In total the lines consist of approximately 60 tanks. Most of these tanks are water rinse tanks. Various plating chemicals are used at the facility including hydrochloric acid, sulfuric acid, phosphoric acid, nitric acid, ammonia, chromic acid, caustic, and sodium bisulfide. Norbrook only plates aluminum and steel parts. Plastic parts are not plated at this facility.

All parts get nickel and chromium plated. Only certain parts receive copper plating. Nitric acid etching (PTI 240-99) is done only for aluminum parts. Steel parts are pickled in hydrochloric acid (PTI 238-99). Parts are finished and cleaned with detergent solution using two dip tanks.

Decorative Chrome Plating Tank (PTI No. 584-86A)

The chrome plating line is a series of several tanks in series. A caustic cleaning tank→two rinse tanks→cyanide tank (nickel plating activator)→two rinse tanks→five nickel electroplating tanks→3 rinse tanks→one chrome pre-dip tank→one chromic acid tank (chrome plating activator)→one chrome tank (1000 gallons)→one chrome rinse tank→and three rinse tanks.

Norbrook utilizes three different control technologies to reduce emissions that arise from the chromium electroplating. A wetting agent based fume suppressant is used to comply with 40 CFR 63.342 (d)(3). An emulsifier is added to develop a foam blanket over the tank during active electrolysis. Additionally, a rooftop fiber bed mist eliminator is installed to capture emissions prior to atmospheric release.

Mr. Otto explained that the wetting agent is added in 500 ml doses nearly every day. The emulsifier is added as needed to maintain complete foam coverage. The fiber bed mist eliminator is washed down once per week. The fiber bed mist eliminator is not used for compliance with the chrome NESHAP, therefore Norbrook is not required to conduct performance testing and is not required to monitor the filter pressure drop.

Definitions:

PFAS stands for “(per or poly) fluorinated alkylated substances” These substances include both:

- PFOS: Perfluorooctanesulfonic acid
- PFSA: Polyfluorosulfonic Acid

Mr. Otto provided me with the MSDS for the fume suppressant used in the chrome electroplating bath (Attachment 1). The fume suppressant used contains a PFAS based surfactant. The substance listed on the MSDS is “Polyfluorosulfonic Acid” (PFSA). Initially I considered this substance a “PFOS-based fume suppressant” and thus a violation of the chrome plating NESHAP 63.342 (d)(4). I discussed my concern with Mr. Otto and he agreed to change his formulation to a “PF-free” surfactant. As of December 5th, 2017 Mr. Otto is no longer using a PFAS based surfactant.

I called the manufacturer (Benchmark Products) listed on the surfactant’s MSDS to confirm that PFSA contains PFOS. I spoke with Billie. I learned that this company only blends chemicals. I was informed that the PFSA containing compound in the surfactant blend is known as “S-151”, manufactured by Chemguard.

Chemguard S-151 contains PFAS, but the manufacturing process intentionally excludes PFOS. I consulted with the PFAS/PFOS experts in the AQD, Heidi Hollenboch and Joy Taylor Morgan. Heidi informed me that many manufacturing processes are seeing PFOS products replaced with other PFAS. Joy informed me that neither AQD rules nor NESHAP rules are currently regulating the use of fluorinated alkyl substances that do not contain PFOS in the chrome plating industry. Attached is this email conversation (Attachment 2).

After learning this I informed Mr. Otto that the PFSA containing surfactant that he had been previously using was not technically a violation of the Chrome NESHAP. I advised him that a regulation for all PFAS in chrome plating may be forthcoming. Mr. Otto stated that he will continue to use the new formulation that does not include PFAS.

Special Condition 1: Fume suppressant is added to the chrome tank in quantities and frequencies such that the surface tension of the tank does not exceed 40 dynes/cm at any time during operation. Mr. Otto’s records seemed to indicate that a surface tension reading of 45 dynes/cm was the operating limit. I explained to him that the operating limit has since been reduced to 40 dynes/cm when measured with a stalagmometer. I did not notice any instance of an exceedance of 40 dynes/cm in the records that I randomly reviewed.

Special Condition 2: Norbrook maintains an operation and maintenance plan pursuant to 40 CFR 63.342 (f)(3)(i). The 2005 revision of the operation and maintenance plan is included in the Norbrook AQD file. Mr. Otto stated that there have not been any process changes since the plan was implemented.

Special Condition 3: A fiber bed mist eliminator is installed. Washdown of the fiber elements occurs once per week. I randomly inspected records of weekly washdowns and monthly inspections and did not notice any noncompliance issues. I did not visually inspect the rooftop filter unit.

Special Condition 4: Since there have been no bath changes or instances of non-compliance, stalagmometer measurements are taken at least once every 40 hours of operating time. Surface tension readings are not taken on-site, but instead are sent out to a laboratory for analysis. Norbrook utilizes two different test labs for analysis. The primary laboratory used is Kenco Supply, LLC, located in Riverview, Michigan. When Kenco is unavailable, the samples are sent to Atotech USA, LLC, located in Sterling Heights, Michigan. I randomly inspected the records and did not notice any instances of noncompliance. Mr. Otto provided me with the past two lab analysis reports (Attachment #3). These records indicate compliance with the PTI and 40 CFR 63.342 (c)(iii).

Special Condition 5: Records of the amount of chemical fume suppressant added to the chrome tank are kept along with the date and time of each addition. I collected records of the past three months of additions (Attachment 4).

Special Condition 6: Mr. Otto stated that washdown of the fiber bed mist eliminator baffles occurs once per week.

Special Condition 7: A contractor inspects the mist eliminator once per month but no records are kept.

Special Condition 8: The stack appeared to meet permit requirements

Nitric Strip Tank with Wet Scrubber

Norbrook operates a single 185 gallon nitric strip tank. This is used only for etching aluminum pieces. Emissions from the tank are vented to a packed bed scrubber with a recirculating caustic solution.

Special Condition 1.1: I did not notice any signs that the bath was being operated at elevated temperature.

Special Condition 1.2: The wet scrubber was in operation during the inspection. The scrubber liquor is maintained at a pH of 10-12 by using a pump to make necessary additions of caustic. The pump is turned on when a pH probe indicates that pH has dropped below 10. During the inspection, the scrubber liquor flow rate was 10 gallons per minute and the pH was 12.2.

Special Condition 1.3: A rotameter is present to measure the scrubber liquor flow rate. A pH meter keeps track of the alkalinity. A pressure gauge is present to monitor the pressure drop through the system.

Special Condition 1.4: Records of the pressure drop and liquid flow rate for the wet scrubber are recorded once per calendar day (Attachment 5).

Special Condition 1.5: Records of the amount of aluminum and steel loads are kept (Attachment 6).

Special Condition 1.6: The stack appeared to comply with permit parameters.

Nitric Etch Tank

Special Conditions 1 & 2: Production records are maintained (Attachment 6). The tank is exhausted to mist eliminator baffles which are washed weekly. The stack appeared to comply with permit parameters.

Hydrochloric Acid Tank

Special Conditions 1.1 & 1.2a: Production records are maintained (Attachment 6). The stack appeared to comply with permit parameters.

Copper Acid Tank

Special Conditions 1 & 2: Production records are maintained (Attachment 6). The tank is exhausted to mist eliminator baffles which are washed weekly. The stack appeared to comply with permit parameters.

Sludge Dryer – Solids generated from plating and stripping processes are run through a filter press. The collected solids were previously dried in the Sludge Dryer to reduce moisture content. Now, the collected solids are disposed of as wet hazardous waste. Mr. Otto explained that it was too difficult to keep up with the regulatory requirements needed to operate the sludge dryer. Mr. Otto stated that the associated equipment has been removed from the site (email attached). A request was sent to void this permit (Attachment 7).

Other Metal Treatment Tanks

Norbrook operates several nickel and copper electroplating tanks. These tanks appear to be exempt from Rule 201 requirements pursuant to Rule 285 (2)(r). These tanks are vented to the general in-plant environment. A wetting agent is periodically added to

the nickel tanks. The MSDS indicates that the wetting agent does not contain PFAS (Attachment 8). Mr. Otto maintains annual compliance certification reports in accordance with 40 CFR Part 63 Subpart WWWW (6W) National Emission Standards for Area Source Plating and Polishing Operations. I collected the most recent example of this report (Attachment 9). The AQD has not taken delegation of 40 CFR Part 63 Subpart WWWW (6W) standards therefore compliance was not evaluated.


Boilers

Norbrook operates one boiler for process heating. It is a Burnham Boiler Model 4FL-345-50-0-OP that generates 2,500 lb/hr of steam. This corresponds to 2.8 million BTU per hour heat input and 69 HP. There is a back up boiler present that is even smaller. Both these boilers appear to be exempt from Rule 201 requirements pursuant to rule 282 (b). They have a heat input less than 50MM BTU. The boilers are not subject to 40 CFR 60, Subpart Dc for Small Industrial-Commercial-Institutional Steam Generating Units because they are less than 10 million BTU/hr.

I left the facility at 11:25 am.

Compliance Determination

Norbrook Plating Inc. appears to comply with the federal Clean Air Act, Part 55, Air Pollution Control of the Natural Resources and Environmental Protection Act, 1994 Public Act 451; Michigan Department of Environmental Quality, Air Quality Division (MDEQ-AQD) rules; Permit to Install Nos. 393-99A and 252-03; and the Chrome NESHAP (Subpart N).

NAME  DATE 12/19/2017 SUPERVISOR SK