

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

A330156990

FACILITY: Cadillac Plating Corporation		SRN / ID: A3301
LOCATION: 23849 Groesbeck Highway, WARREN		DISTRICT: Warren
CITY: WARREN		COUNTY: MACOMB
CONTACT: Craig Stevens , Quality Assurance Engineer		ACTIVITY DATE: 02/08/2021
STAFF: Adam Bognar	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Self-Initiated Inspection		
RESOLVED COMPLAINTS:		

On Monday, February 8, 2021, Michigan Department of Environmental Quality-Air Quality Division (EGLE-AQD) staff, I, Adam Bognar, conducted a self-initiated inspection of Cadillac Plating Corporation (the "facility") located at 23849 Groesbeck Hwy, Warren, MI 48089. 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 Environment, Great Lakes, and Energy, Air Quality Division (EGLE-AQD) rules; and Permit to Install No. 11-19 (issued May 23, 2019).

I arrived at Cadillac Plating Corporation at around 9 am. I entered the facility and met with Mr. Craig Stevens, Quality Assurance Engineer. I identified myself, provided credentials, and stated the purpose of the inspection. Mr. Stevens gave me a tour of the facility and explained the operations at Cadillac Plating Corporation.

Cadillac Plating Corporation performs zinc electroplating on steel parts. No other type of plating is done at this facility. There are seven zinc electroplating lines of various sizes. These lines are operated 24/7 including weekends by approximately 35 full time employees. Mr. Stevens stated that Cadillac Plating Company lost most of their temporary workers at the beginning of COVID-19 when the facility was mandated to shut down. The company has struggled to re-hire employees now that operations have restarted.

All plating lines are essentially the same, the main difference between lines is the size of the plating tanks. In all lines, an automated rack system dips racks of parts into a series of tanks containing different surface treatment materials. The series of tanks is described below.

Zinc Plating Process: Alkaline Cleaner à Electrified-cleaner à Acid Wash (5% HCl) à Aqueous Rinse à Zinc Electroplating à Drip tank à Aqueous Rinse à Chrome Conversion Coating à Aqueous wash à Drying Oven

The first three tanks act to strip unwanted scale, dirt, oxides, and smut from the steel parts before plating. The alkaline cleaner and electrified-cleaner are both heated by natural gas burners. The drip tanks catch zinc electroplating solution and recycle it back into the zinc electroplating tank. The chrome conversion coating utilizes a trivalent chromium solution to apply a "clearcoat" like finish to the zinc plating. No electric current is used in chrome conversion coating and not all parts receive this coating. Parts exit the plating tanks into a natural gas fired drying oven that operates at approximately 150 °F. After drying, the parts are loaded into bins and shipped to the customer.

Zinc electroplating is commonly used on parts that do not need the decorative look of more expensive plating, but still need some extra protection against corrosion. Zinc electroplating is relatively cheap compared to other metal plating such as nickel and chrome. It is useful because as zinc becomes oxidized it forms a fine white dust that does not cause breakdown of the steel substrate (in contrast to what iron oxide would do to steel). In this way, the zinc layer is used as a "sacrificial layer" (a sacrifice to atmospheric oxygen). So long as the zinc oxide layer remains relatively undisturbed it will create a barrier to oxidation of the underlying steel.

90% of the parts plated at this facility are for the automotive industry. These parts will end up under the dashboard and in other generally non-visible and undisturbed sections of an automobile. For

applications that require a more decorative aesthetic, chromate conversion coatings can provide one of several different finishing options for the zinc layer.

The plating lines are equipped with a “push/pull” style system that pulls fumes in from above the plating tanks and vents this air outdoors. The push pull system for all plating lines is vented to one of two wet scrubbers. These are not caustic scrubbers – a neutral pH aqueous solution is used as the scrubber liquor.

I observed scrubber liquor flowing in both scrubbers. The scrubbers appeared to be operating in a satisfactory manner.

PTI No. 11-19

PTI No. 11-19 requires Cadillac Plating Company to operate the scrubbers in a satisfactory manner, maintain a malfunction abatement plan (MAP) for the scrubbers, record and maintain records of weekly pressure drop across the scrubber bed, and perform quarterly inspections of each scrubber system.

Mr. Stevens provided me with a malfunction abatement plan after the inspection, on August 14, 2020. The plan details the recordkeeping procedure, states the acceptable pressure drop readings for both scrubbers, identifies critical parts, and states that the plating line will be shut down if the scrubbers are not operating.

Records of weekly pressure drop are maintained. Based on the records provide to me, Scrubber#6 has a normal pressure drop of 1” H₂O and Scrubber#7 has a normal pressure drop of 2” H₂O. Records of quarterly inspections are maintained. The last quarterly inspection was performed on November 20, 2020. These records align with the pressure readings I observed during this inspection. During this inspection, Scrubber#6 had a pressure drop of 2” H₂O and Scrubber#7 had a pressure drop of 4” H₂O. 5” H₂O is the maximum allowable pressure drop in the MAP.

Copies of the current MAP, pressure drop records, and quarterly inspection records can be found on the AQD shared drive at the following address: S:\Air Quality Division\STAFF\Bognar, Adam\Inspection Documents\Cadillac Plating 2021

Cadillac Plating obtained permit to install No 11-19 for the 7 plating lines on May 23, 2019. Prior to that, Cadillac Plating operated these lines without a permit. Since some tanks are ventilated outdoors through a stack, Cadillac Plating Corporation was required to obtain a Permit to Install from the EGLE-AQD. Mr. Stevens stated that the zinc plating lines and associated ventilation equipment has all been installed for at least 20 years. Mr. Stevens was unsure of the exact date. These electroplating lines do not meet the requirements of Permit to Install exemption Rule 285 (2)(r) because they are exhausted outdoors to the ambient air (rather than to the general in plant environment).

Cadillac Plating applied for and received a permit to install in a timely manner. The permit requires operation of two existing wet scrubbers to control emissions from ventilated HCL tanks. One of the scrubbers is located inside the plant. The other scrubber unit is located on the roof. Mr. Stevens informed me during my inspection in July 2020 that he would have to shut the scrubber down in the winter to prevent it from freezing.

I informed Mr. Stevens that shutting down the scrubber would be a violation of Permit to install No. 11-19. I asked Mr. Stevens to come up with a solution so that the rooftop scrubber can be operated during freezing temperatures. I suggested that a heated shed/enclosure might work. I informed Mr. Stevens that I would follow up on this issue when the temperatures become freezing.

The temperature during today’s inspection was around 12°F. An additional goal of this inspection was to verify that the rooftop scrubber was operated during these cold temperatures. I was able to verify that Cadillac Plating has installed a heated shack to house the scrubber unit on the roof of the manufacturing facility. I verified that scrubber water was flowing through the scrubber.

The chemical storage crib was locked and appeared to be kept in an organized manner. I did not see any open containers or spilled chemicals. Mr. Stevens stated that only their chemists have the keys to the chemical storage crib.

There is an on-site water treatment system used to treat plating effluent before it is sent to the WWTP. None of the treated water is reused since some of the treatment chemicals are detrimental to plating bath chemistry. The water treatment process consists of neutralization and filtration. The plating bath solutions are neutralized with caustic and pumped to a holding tank for a time. The contents of the holding tank are pumped through a filter press to remove the solids formed during neutralization. The filtered solids are scraped off the filters using a spatula and disposed of. Mr. Stevens stated that there is no wastewater evaporator or sludge dryer at Cadillac Plating Corporation.

There is a natural gas fired "hydrogen bake oven" used for certain parts pre or post zinc plating. Mr. Stevens explained that this batch oven serves to remove trace impurities that are embedded in the piece. This heating process is required when quality is especially important such as in aerospace and military applications. This oven is relatively small (it fits a single 4x4 pallet) and appears to be exempt from permit to install requirements pursuant to Rule 282 (2)(a)(i).

The zinc electroplating tanks appear to be subject to 40 CFR Part 63 - National Emissions Standards for Hazardous Air Pollutants: Area Source Standards for Plating and Polishing Operations (NESHAP WWWWWW). AQD has not taken delegation of 40 CFR Part 63 Subpart WWWWWW (6W) standards therefore compliance was not evaluated.

Compliance Determination

Observations made during my inspection indicate that Cadillac Plating Corporation is operating in compliance with the requirements of the federal Clean Air Act; Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451); and Michigan Department of Environment, Great Lakes, and Energy-Air Quality Division (EGLE-AQD) Administrative Rules.

NAME Adam Bogros

DATE 3/1/2021

SUPERVISOR K. Kelly