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

A330166360

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:** 02/10/2023
STAFF: Adam Bognar	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MINOR
SUBJECT: Self Initiated Inspection		
RESOLVED COMPLAINTS:		

On Friday, February 10, 2023, Michigan Department of Environmental Quality-Air Quality Division (EGLE-AQD) staff, I, Adam Bognar, & AQD staff Owen Pierce, conducted an unannounced 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).

This inspection was conducted in response to a complaint received by the U.S. EPA Criminal Investigation Division on February 6, 2023. The complainant alleged the following: "one of the facility managers hit a tote full of chemicals and left it unreported, the facility is missing acid ventilators putting employees at risk, there are various spills of different chemicals on the floor, and the current CEO dumped used/contaminated oil from the facility around his residence to try and kill a mole problem."

We arrived at Cadillac Plating Corporation at around 10 am. We entered the facility and met with Craig Stevens, Quality Assurance Engineer. We identified ourselves, provided credentials, and stated the purpose of the inspection. Craig 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.

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 -> Electrified-cleaner -> Acid Wash (5% HCl) -> Aqueous Rinse -> Zinc Electroplating -> Drip tank -> Aqueous Rinse -> Chrome Conversion Coating -> Aqueous wash -> 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. I did not determine the maximum heat input capacity for these burners during this inspection. These are relatively small burners used for heating 500-1000 gallon tanks. Based on my observations

during this inspection and the size of the heated tanks, these burners are exempt from Rule 201 requirements pursuant to Rule 282(2)(b)(i).

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.

Hydrochloric acid fumes from plating lines 4, 6, & 7 are vented to one of two wet scrubbers. These are not caustic scrubbers – a neutral pH aqueous solution is used as the scrubber liquor. Craig stated that makeup water is added to each scrubber at a rate of 1 GPM. Overflow goes to the wastewater treatment system. After my inspection, I inquired about how the pH of the tanks is maintained. Craig checked the pH of both scrubbers on February 14, 2023 and determined that the pH’s were 7.53 and 7.62.

I required Cadillac Plating to make some changes to the current malfunction abatement plan (MAP) for the scrubbers at the facility. Craig modified the MAP to include the acceptable pressure drop range for each scrubber (5" of water maximum). Craig also added a paragraph stating that the pH will be maintained above 7 by maintaining a 1 gallon/hour make-up water to each scrubber, and that pH will be verified through monthly pH readings that are recorded on the same form as the weekly pressure drop readings. The MAP states that if the pH or pressure drop is out of range, the corresponding process will be shut down until proper operating conditions are restored. Based on the information Craig provided me, these scrubbers should maintain an adequate pH to remove hydrochloric acid from the air stream.

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

I asked Craig about the allegations cited in the recent EPA complaint. Craig stated that he did hit a sodium hydroxide containing tote with a forklift. Craig said that the material that spilled was “Trimax Base LC-B”. I informed Todd Zynda of the Materials Management Division and Joe DeGrazia of the Remediation and Redevelopment division of this incident.

I did not see evidence that the facility is missing acid ventilators. I didn't notice any strong acid odors while at the facility other than when I was within a couple feet of the HCl tanks. I observed that the tanks that are permitted to be controlled were controlled by wet scrubbers.

I did not see evidence of excessive spills on the floor. I did notice a few small damp spots, but nothing that looked significant.

I asked Craig if he knew anything about the CEO using waste oil to kill moles at his residence. Craig stated that he is not aware of anything like that. I did not speak to the CEO during this inspection.

I informed Todd Zynda and Joe DeGrazia of my findings regarding this complaint. Todd stated that he would follow up with an on-site inspection when he gets a chance.

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.

Craig provided me with a malfunction abatement plan 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.

I verified that records of weekly pressure drop are maintained. Based on the records provided to me, Scrubber#6 always has a pressure drop of 1" H_2O and Scrubber#7 always has a drop of 2" H2O. Each entry of the weekly pressure drop was either exactly 1" H_2O or 2" H_2O. I told Craig that it was strange that each number was an exact whole number since during my inspection I noted a pressure drop of 1.5" H_2O on each scrubber. Craig stated that his operators tend to round to the nearest whole number. I asked Craig to have his operators note the pressure drop more precisely rather than rounding to the nearest whole number.

I verified that records of quarterly inspections on the structural integrity of the scrubber systems were maintained for 2022.

Copies of the current MAP 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.

Craig stated that the zinc plating lines and associated ventilation equipment has all been installed for at least 20 years. Craig 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 (Scrubber for line 6). I could see water flowing through the roof scrubber via a glass viewing window. I was not able to verify that water was flowing through the scrubber inside the plant because it is located in a mezzanine area that I did not feel comfortable walking on. I verified that the blower for the indoor scrubber was on and drawing air from the hood above the controlled HCl tank.

The chemical storage crib was kept in an organized manner. I did not see any open containers of chemicals/waste or spilled chemicals on the floor. Craig 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. Craig stated that there is no wastewater evaporator or sludge dryer at Cadillac Plating Corporation.

There are two natural gas fired “hydrogen bake oven” used for certain parts pre or post zinc plating. Craig 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. These ovens sized to fit a single 4x4 pallet. Craig stated that the newer oven has a maximum heat input of 600,000 BTU/hr. Craig could not find the maximum heat input for the older furnace, but the older furnace is the same size. Based on my observations during this inspection these two ovens are exempt from permit to install requirements pursuant to Rule 282 (2)(a)(i) since they have a maximum heat input less than 10,000,000 BTU/hr.

Based on my inspection and review of the applicable regulations, the zinc electroplating tanks are 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 Bognar DATE 2/27/2023 SUPERVISOR K. Kelly