

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

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| FACILITY: K C JONES PLATING CO DIV OF CHEMETCO | | SRN / ID: B7773 |
| LOCATION: 321 W 10 MILE RD, HAZEL PARK | | DISTRICT: Southeast Michigan |
| CITY: HAZEL PARK | | COUNTY: OAKLAND |
| CONTACT: Scott Field , Environmental Manager | | ACTIVITY DATE: 10/23/2013 |
| STAFF: Erik Gurshaw | COMPLIANCE STATUS: Compliance | SOURCE CLASS: MINOR |
| SUBJECT: Self-Initiated Inspection | | |
| RESOLVED COMPLAINTS: | | |

SRN: B7773

COMPANY: KC Jones Plating Company

COMPANY ADDRESS: 321 W. 10 Mile Road; Hazel Park, MI 48030

PURPOSE OF INSPECTION: Self-Initiated

CONTACT PERSON: Mr. Scott Field, Environmental Manager (Ph: 248-399-8500; Fax: 248-399-2504; E-mail: sfield@kcjplating.com)

COMPANY PHONE NUMBER: 248-399-8500

On October 23, 2013, AQD staff, Erik Gurshaw, conducted a self-initiated, unannounced inspection at KC Jones Plating Company located at 321 W. Ten Mile Road in Hazel Park, Michigan. The purpose of the inspection was to determine compliance 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; PTI Number 878-90A for an electroless nickel-barrel plating line; PTI Number 361-98 for a zinc auto electroplating line; PTI Number 88-99 for a cyanide bronze electroplating line; PTI Number 316-98A for a electroless nickel rack plating line; and PTI Number 109-99A for a kolene metal surface prep line. The inspection was prompted by an opacity complaint received by the Southeast Michigan District Office on October 17, 2013.

AQD staff arrived at front office of the facility at 1:45 PM after conducting a complaint investigation regarding high opacities emanating from the company's stacks. Upon arriving, AQD staff introduced themselves and stated the purpose of the visit to Mr. Scott Field, Environmental Manager. Mr. Field assisted AQD staff during the inspection.

Mr. Field indicated that KC Jones Plating Company operates 24 hours a day Monday through Saturday (three eight hour shifts). The facility is also open for a limited amount of time on Sundays to meet customer demand when necessary. 50 people are currently employed by the company. KC Jones plates metal parts with nickel and zinc. The parts are received from Tier II metalworking shops for the automotive, heavy truck, aerospace, agricultural, and alternative energy industries. The company also plates some parts for the military. Some of the parts are surface treated in the kolene line without being plated. The company has five active permits for two electroless nickel plating lines, a zinc auto electroplating line, a cyanide bronze plating line, and a kolene metal surface preparation line. The cyanide bronze plating line has been completely removed from the building and the company plans to have this permit voided (PTI #88-99). The company has plans to add another electroless nickel plating line in early 2014. This plating line will vent to the outside air. Therefore, the company will have to obtain a permit for this line prior to it being installed and operated.

PTI #878-90A-Electroless Nickel-Barrel Line

Steel, stainless steel, aluminum, titanium, or Inconel alloy parts are plated with nickel in the electroless nickel-barrel line via the following process: Parts are soak cleaned at 160-200 degrees Fahrenheit for 3-20 minutes. The duration of the soak cleaning depends upon the type of part being cleaned. After being soak cleaned, the parts are electrocleaned at 160-200 degrees Fahrenheit for 3-6 minutes. A DC current is applied to the solution in the electrocleaning tank to clean the parts. After being electrocleaned, the parts are sent through combined counterflow rinse tanks at ambient temperature

for approximately 1 minute. From the combined counterflow rinse tanks, the parts are immersed in a 30-40%, by volume, HCl solution dip tank at ambient temperature for 3 minutes to remove rust. After being derusted, the parts are sent through another combined counterflow rinse tank stage at ambient temperature for approximately 1 minute. From the second counterflow rinse tank stage, nickel is plated onto the parts in an electroless nickel tank. The temperature of the bath within the electroless nickel tank is 185-200 degrees Fahrenheit and plating takes place for 10-90 minutes depending on the type of part being plated and the age of the bath in which the plating occurs. After being nickel plated, the parts are sent through a third combined counterflow rinse tank stage at ambient temperature for approximately 1 minute. From the third combined counterflow rinse tank stage, the parts are washed with water at 140-180 degrees Fahrenheit for 1 ½ minutes. The hot water wash is the last stage of the process. This line is called the "electroless nickel-barrel line" since the parts are immersed in the various tanks throughout the process in plastic barrels. The electroless nickel-barrel line exhausts to a rooftop scrubber and eventually to a stack. The electroless nickel-barrel line and associated scrubber were operating during the inspection.

The PTI for the electroless nickel-barrel line requires that a packed bed scrubber and mist eliminator be properly installed and operated in order for the line to be operated. AQD staff verified that the scrubber and associated mist eliminator were installed and properly operated during the inspection. Proper operation of the scrubber includes maintaining the scrubber solution at a pH of greater than 5.5 at the entrance to the scrubber. AQD staff noted that the pH of the scrubbing solution was 6.5 at 2:45 PM. The scrubber must also be equipped with a liquid flow measuring device. The scrubber is equipped with a liquid flow measurement device and the flow to the scrubber at 2:45 PM was 75 gallons per minute (gpm). The permit also requires that the exhaust gases from the electroless nickel plating line be discharged vertically unobstructed to the ambient air through a stack 40 feet above the ground with a maximum cross-sectional area of 1040 square inches. The stack from the scrubber appeared these requirements in the opinion of AQD staff. The PTI requires the company to maintain production records, including the addition of make-up chemicals to the tanks. The company is maintaining monthly production records. Production records and chemical make-up records for September 2013 are attached to this report (Appendix A). The PTI does not require the company to measure pressure drop across the packed bed scrubber, but AQD staff noted a pressure drop of 0" of water column across the scrubber at 3:01 PM.

PTI #361-98-Zinc Auto Electroplating Line

Metal parts are plated with zinc in the zinc auto electroplating line via the following process: Parts are soak cleaned at 160-200 degrees Fahrenheit for 3-20 minutes. The duration of the soak cleaning depends upon the type of part being cleaned. After being soak cleaned, the parts are electrocleaned at 160-200 degrees Fahrenheit for 3-6 minutes. A DC current is applied to the solution in the electrocleaning tank to clean the parts. After being electrocleaned, the parts are sent through combined counterflow rinse tanks at ambient temperature for approximately 1 minute. From the combined counterflow rinse tanks, the parts are immersed in a 30-40%, by volume, HCl solution dip tank at ambient temperature for 3 minutes to remove rust. After being derusted, the parts are sent through another combined counterflow rinse tank stage at ambient temperature for approximately 1 minute. After the second counterflow rinse tank stage, the parts are dipped into a mild sodium hydroxide solution at ambient temperature for 30 seconds to 3 minutes. This is done to alter the pH of the surface of the metal prior to it being plated with zinc. From the sodium hydroxide dip tank, the parts are coated with zinc in an electric zinc plating tank at 70-90 degrees Fahrenheit for 30-90 minutes depending on the desired thickness of the zinc being applied. After being zinc plated, the parts are sent to a cold water rinse tank for 1 ½ minutes and then to either a trivalent black or blue chromate tank. Parts which are intended to be black are sent to the black chromate tank. Parts which are intended to be blue are sent to the blue chromate tank. From the trivalent chromate tanks, the parts are sent to a cold water rinse tank for 30 seconds and then to either a trivalent chromate seal tank at 120 degrees Fahrenheit or to a rust inhibitor tank at 160 degrees Fahrenheit. The determination over whether a part is sent to the chromate seal tank or rust inhibitor tank is dependent upon customer specifications. The final stage of the process is a heat drying stage which takes place

for 6 minutes at 120-160 degrees Fahrenheit. Emissions from the zinc autoplating line vent to a packed bed scrubber and mist eliminator. The zinc autoplating line and associated scrubber were operating during the inspection.

The PTI for the zinc auto electroplating line sets hourly emission limits for hydrogen chloride and formaldehyde at 0.19 pounds per hour and 0.0085 pounds per hour, respectively. HCl and formaldehyde emissions are calculated based on the chemical make-up on the tanks requiring chemicals containing these compounds. The scrubber controlling emissions from the line is required to be equipped with a pressure monitoring device to measure pressure drop across the scrubber. A pressure monitoring device is installed and at 3:03 PM, the pressure drop across the scrubber was 0" of water column. The exhaust gases from the scrubber are required to be discharged unobstructed vertically to the ambient air from a stack with a maximum diameter of 18 inches in diameter and at least 40 feet above the ground. The stack appeared to meet these requirements in the opinion of AQD staff. Finally, the company is required to keep records of all chemical additions to the tanks comprising this line. The company is maintaining monthly records of chemical additions to the tank. Chemical addition records and production records for September 2013 are attached to this report (Appendix B). The company is not required to maintain flow records for the scrubber, but at 2:48 PM, the liquid flow rate to the scrubber was 80 gpm.

PTI #88-99-Cyanide Bronze Electroplating Line

As previously mentioned, the cyanide bronze electroplating line has been removed from the facility. The company intends to add a new electroless nickel plating line in the area where the cyanide bronze electroplating line was once located.

PTI #316-98A-Electroless Nickel Rack Line

The process in which parts are plated in the electroless nickel rack line is the same as the process in which parts are plated in the electroless nickel-barrel line. The only operational differences between the two lines are that only steel parts are plated in the nickel rack line, the two lines use different sized tanks, and most of the parts in the nickel rack line are immersed in racks as opposed to barrels. Emissions from the electroless nickel rack line vent to a packed bed scrubber and mist eliminator. The electroless nickel rack line and associated scrubber were operating during the inspection.

The permit for the nickel rack line includes a 0.9 pound per hour and 1.2 pound per hour emission limit for ammonia and ethylenediamine, respectively. The company is required to keep monthly usage records of all materials containing ammonia and ethylenediamine used in the nickel rack line. Pound per hour ammonia and ethylenediamine emission calculations are estimated from the representative chemical make-up of the bath and are revised when the chemical makeup of the bath changes. The company is required to maintain daily records of the liquid flow rate to the scrubber and the pressure drop across the scrubber. Daily liquid flow rate and pressure drop records for September 2013 are attached to this report. AQD staff recorded the liquid flow rate to the scrubber as 85 gpm at 2:56 PM. The pressure drop across the scrubber was 1.5" of water column at 3:00 PM. The PTI for the electroless nickel rack line does not require that the pH of the scrubber solution to be within a specific range or that pH even be recorded, but AQD staff recorded a pH of 7.01 for the scrubber fluid at 2:55 PM. The nickel rack line is equipped with two nickel plating tanks. The PTI specifies that only one of the two nickel tanks can be operated at the same time. Mr. Field said that only one of the tanks is used at any one time and that the other tank is covered while not in use. AQD staff verified this during the inspection. The PTI requires that an operational and maintenance plan be developed for the nickel rack line. The company has submitted an operation and maintenance plan and the plan has been approved by the AQD. The operation and maintenance plan is part of the company's Malfunction Abatement Plan (MAP) for the entire plant. The MAP includes standardized maintenance checklists for the equipment at the plant, develops a set of work practice standards for the scrubbers and monitoring equipment, and contains procedures to check for and to correct malfunctions. Only the nickel rack line and kolene line are required to have a MAP, but the company included all of the lines/process equipment in the approved MAP. Chemical makeup records, preventative maintenance checklists, and

production records (including hours of operation) for September 2013 are attached to this report Appendix C). AQD verified that the stack from the scrubber of the nickel rack line met the dimensions required by the PTI during the inspection.

PTI #109-99A-Kolene Line

The kolene line is used to treat the surface of metal parts. No plating occurs in the kolene line. All of the tanks associated with the kolene line are enclosed due to the high temperatures required to operate the kolene tanks. Emissions from the kolene line vent to a mist eliminator and packed bed scrubber. The kolene line, mist eliminator, and scrubber were all in operation during the inspection. The surface of metal parts is treated in the kolene line via the following process: Parts are soak cleaned at 160-200 degrees Fahrenheit for 3-15 minutes depending upon the type of part being cleaned. After being soaked cleaned, the parts are sent to a cold rinse tank for 1-3 minutes and then to a hot water rinse tank at 120-160 degrees Fahrenheit. From the hot water rinse tank, the parts are preheated at 650-750 degrees Fahrenheit for 5-25 minutes and then sent to a nutride (salt bath) tank for 800-1100 degrees Fahrenheit for 10-75 minutes. From the nutride tank, the parts are sent to a post quench tank at temperatures ranging from 800-900 degrees Fahrenheit before being sent to another cold water rinse stage at 120-160 degrees Fahrenheit. From the second cold water rinse tank, the parts are sent to a second hot water rinse tank at 120-160 degrees Fahrenheit. From the hot water rinse tank, the parts are sent to a heated post wash stage at 160 degrees Fahrenheit and then sent to a third cold water rinse tank. After the third cold water rinse tank, the parts are sent to another hot water rinse tank at 120-160 degrees Fahrenheit. After the final hot water rinse stage, the parts may be sent to an oil immersion tank at ambient temperatures per customer specifications. The purpose of the oil immersion tank is to apply a corrosion resistant layer to the final product or to give the final product a black color if requested by the customer.

The PTI for the kolene line requires that the company submit a MAP for the kolene line. The company has submitted a MAP for the kolene line. The MAP was revised on August 20, 2009, and was approved by the AQD. As with the nickel rack line, the MAP includes standardized maintenance checklists for the equipment at the plant, develops a set of work practice standards for the scrubbers and monitoring equipment, and contains procedures to check for and to correct malfunctions. The PTI requires that the scrubber solution for the kolene line be below a pH of 9.5 at the inlet to the scrubber and that the pressure drop across the scrubber be continuously maintained. The scrubber is equipped with a pH monitoring device at the inlet to the scrubber and a pressure drop monitoring device to measure pressure drop across the packed bed scrubber. At 2:52 PM, the pH of the scrubber solution was 7.8. The pressure drop across the scrubber was 0.5" of water column at 3:02 PM. The company is recording the pH of the scrubber solution and the pressure drop across the packed bed scrubber once a shift as required by its PTI. pH and pressure drop records for September 2013 for all of the lines are attached to this report (Appendix D). The company is also recording the hourly number of parts processed, the monthly hours of operation, and the composition and amount of chemicals used in the kolene tanks. Hourly production rates, the monthly hours of operation, and the type and amount of chemicals used in the kolene tanks for September 2013 are attached to this report (Appendix E).

Exempt Equipment

The facility has three cold cleaners. The cleaning solvent used in these cleaners is Lacquer Think #26 which is a non-halogenated solvent. The cold cleaners are equipped with automated closing lids. The lids were closed at the time of the inspection and the cold cleaners appeared to be properly maintained and operated. The cold cleaners are exempt from Permit-To-Install requirements pursuant Rule 281(h).

The facility also has two natural-gas fired boilers. The boilers have a maximum rated capacity of 2.5 MMBTU/hour and are, therefore, exempt for Permit-To-Install requirements pursuant Rule 282(b)(i).

Compliance Determination

Based on this inspection, it was determined that KC Jones Plating Company is in compliance with its permits and all other applicable air rules and requirements. Mr. Field is going to modify the company's MAP to reflect that an acceptable pressure drop across the company's packed bed scrubbers is anything less than 8" of water column and that an acceptable liquid flow rate to the scrubbers is anything between 50-100 gpm. Previously, the acceptable operating range for the pressure drop across the scrubbers was 2"-8" of water column and the acceptable liquid flow rate to the scrubbers was 40-100 gpm. Mr. Field said that the cleaning media within the scrubbers is routinely cleaned and that immediately after a cleaning, the pressure drop across the scrubber is close to 0" of water column. The cleaning media was cleaned in September 2013 and AQD staff noted a pressure drop of 0" across the scrubbers serving the electroless nickel barrel line and the zinc auto electroplating line at the time of the inspection. According to Mr. Field, the amended operating ranges for pressure drop across the scrubber and liquid flow rate to the scrubber are within manufacturer recommended values. In addition to the records cite in this report, the chemical inventory usage inventory for September 2013 is attached (Appendix F). Chemical inventory usage records are separated by department (each plating line) and for the entire facility.

NAME Erik A. Gurskaw DATE 11/12/13 SUPERVISOR CTE