

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

N314042704

FACILITY: CHARLOTTE ANODIZING PRODUCTS		SRN / ID: N3140
LOCATION: 591 E PACKARD HWY, CHARLOTTE		DISTRICT: Lansing
CITY: CHARLOTTE		COUNTY: EATON
CONTACT: Ronald McDiarmid , President		ACTIVITY DATE: 12/05/2017
STAFF: Michelle Luplow	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Scheduled, unannounced inspection to determine compliance with PTI 827-91B		
RESOLVED COMPLAINTS:		

Inspected by: Michelle Luplow (author)

Personnel Present: Ron McDiarmid, President (sales@charlotte-anodizing.com)
Chad Walker, Plant Manager (production@charlotte-anodizing.com)
Eric Hollister, Production Manager (production@charlotte-anodizing.com)

Purpose

Conduct an unannounced, scheduled compliance inspection of Charlotte Anodizing Products (Charlotte Anodizing). A complaint was received June 7, 2017 wherein the complainant stated the air was burning his eyes, and irritating his throat, and the symptoms have gotten worse during the 1.5 years he has lived at 1022 Tumbleweed, Charlotte (see attached map), which is located approximately 1 mile WSW of both Linn Products and Charlotte Anodizing Products, the only facilities located within the vicinity of this complainant. While the source of the alleged air irritants could not be determined based on the information the complainant provided, I told the complainant I would inspect these facilities and check for odors and physical irritations when in the area. This inspection was conducted in part as a response to this complaint. I detected no odors nor experienced any physical symptoms while in this area for the inspection. An unofficial copy of the complaint report is attached. This inspection in no way associates the alleged health affects with Charlotte Anodizing's production, but is merely a demonstration that Charlotte Anodizing is in compliance with all permitted air quality requirements, and therefore less likely to be a source associated with the complaint.

Particular attention was also paid to whether Charlotte Anodizing had been using PFOS (perfluorooctane sulfonic acid) or PFAS (perfluoroalkyl and polyfluoroalkyl substances) chemicals as fume suppressants for their anodizing baths.

Charlotte Anodizing was last inspected September 2013.

Facility Background

Ron McDiarmid, President, said Charlotte Anodizing specializes in surface conversion of aluminum (anodizing) predominantly for architectural components, but also anodize aluminum for warehouse conveyor systems, the auto industry, aerospace, and furniture. R. McDiarmid said they operate 2 10-to-12-hour shifts, 6 days per week, but mentioned that the equipment does not operate the entire 20-24 hours.

Charlotte Anodizing has had odor complaints and concerns with yellow plumes being emitted from the scrubber stacks. I did not detect any odors before, during or after the inspection, and did not see any plumes, yellow or otherwise, being emitted from the stacks.

R. McDiarmid verified that Charlotte Anodizing does not currently have any emergency generators or parts washers installed.

The anodizing baths (those containing acids), including the Bright Dip, are controlled by fume suppressants. They currently use a fume suppressant that does not have any suspect PFAS/PFOS chemicals; however, I was told that AnoFumeGo was used for 4 years through January 2017. The SDS is attached and indicates that AnoFumeGo contains a PFAS chemical, perfluorohexylethylsulfonic acid (CAS # 27619-97-2). Internet research of this CAS number indicates that another name for this compound is perfluorooctanesulfonic acid.

Ron McDiarmid, the company president, said he does not have purchase records of AnoFumeGo, but knows that they used 5 gallons of this chemical in the 4-year-span that they had it. As of February 2017, they no longer use this fume suppressant and the replacement fume suppressant, Ekalin F liq does not have any suspect components.

He also said that during this 4-year period, they used and discharged about 60 million gallons of water to the Charlotte WWTP. This is water that was removed from all tanks at the facility, including the bright dip tank, which did not contain the AnoFumeGo suppressant.

Steve Lachance, one of AQD's PFAS contacts said that this chemical is not regulated (this is not chrome plating operation, and therefore not subject to 40 CFR 63 Subpart N), but the information is useful and illustrative.

Inspection

I arrived at Charlotte Anodizing at approximately 9:45 a.m. December 5, 2017 and met with Ron McDiarmid; Chad Walker, Plant Manager; and Eric Hollister, Production Manager. All were present during the inspection to ensure that all management were aware of regulatory expectations for the facility. I provided R. McDiarmid with a January 2017 Permit to Install Exemptions handbook. We had a short discussion about PFAS/PFOS chemicals prior to a tour of the facility.

Table 1 contains a list of all permitted and exempt equipment which I identified during the inspection.

Table 1. Equipment located onsite

Unit	Description	Control	PTI/Exemption
Bright Dip Aluminum Anodizing Line	Dip tank containing H ₃ PO ₄ , HNO ₃ , and water	Liquid scrubber/mist eliminator system	PTI 827-91B
2 natural gas-fired boilers	1986 Unit rated at 100 hp (1,255-1,485 Btu/hr) The other is a 300 hp (6,942 Btu/hr) back-up boiler unit These units were installed in 1992 Both are used to heat water	NA	Rule 282(2)(b)(i) These are exempt from the area source Boiler MACT (40 CFR 63 Subpart JJJJJ) because they are natural-gas fired boilers
Welding	Welding units	NA	Rule 285(2)(i)

PTI 827-91B

This permit covers the NO_x emissions from the bright dip aluminum anodizing line. To note is that the 2 liquid scrubbers used to control Bright Dip tank emissions are also used to control all emissions from all tanks. Image 1, attached, illustrates this. The horizontal arrow indicates air flow from air intake to air exhaust, which leads to the scrubbers. The scrubbers neutralize the acids prior to exiting the stack.

Aluminum Etching and Anodizing Process:

Mild acidic cleaner w/ detergents to remove oils/dirts/residues → Deionized water rinse (dumped 1-2x/shift) → Caustic Etch for surface conditioning (removes surface oxides) *fume suppressant added* → Deionized water rinse → Nitric Acid rinse (removes deposits from etching) → Anodizing tanks (H₂SO₄/water solution) *fume suppressant added* (converts Al to Al₂O₃) → Deionized water rinse → Nickel Acetate seal

R. McDiarmid said that if caustic etching is not necessary, the parts are sent directly to the Bright dip tank which is used to create a bright, shiny finish on the aluminum part. Fume suppressants are used in the Bright dip tank as well. The Bright Dip tank contains H₃PO₄, HNO₃ and water, and is run at ~200°F.

The NO_x that this PTI regulates is formed from the nitric acid during the Bright Dip anodizing process

Bright Dip

Emission Limits & Testing

NO_x emissions are limited to 7.8 lb/hr and are required to be verified upon request of the AQD. It is my professional judgment that testing is not necessary at this time.

The evaluation form for this permit to install included NO₂ emissions data based on the amount of nitric acid purchased per year minus the amount of nitric acid recovered per year and the amount of nitric acid used in their Desmut Tank. During the inspection R. McDiarmid and I worked through the calculations for 2017 (up through the end of November) to ensure that their peak hourly rate would be less than 7.8 lb/hr. See attached for permit evaluation for the NO₂ calculations example with R. McDiarmid's notes documented during the inspection. R. McDiarmid documented that 1,200 gallons were used in the Bright Dip tank in 2017, which is 44% less than what the permit evaluation was based on (2,700 gallons). Thus, 44% less NO₂ emissions on a lb/hr basis were being emitted in 2017, and therefore indicative of compliance with the hourly limit.

Process/Operational Limits

Charlotte Anodizing is required to ensure that the F-100D scrubbers are installed and operating properly. R. McDiarmid said that the scrubber bed material is replaced every 5-6 years. Weekly inspections are conducted on the scrubbers to ensure the

spray nozzles are functioning properly and the packing/scrubber bed material is not plugged. If they find that the packing is plugged, they will wash the packing to remove scale and residue. The replacement of the packing happens when there is too much build-up to remove by washing; when washing becomes ineffective at cleaning the packing; it can also happen when they notice the packing is visibly breaking apart.

A liquid flow indicator is also required to be installed and maintained on each F-100D scrubber. Chad Walker, Plant Manager, said they inspect and monitor the return line flow every four hours, this includes checking pressure gauges on the water pumps to the scrubber and checking the spray nozzles through the sight glasses on the scrubbers. He said they use 500-800 gallons of make-up water per day to maintain the proper water level in the resurge tank, which varies based on weather conditions. There is a level indicator sensor hooked up to a red hat valve on the water fill line that will trigger automatic water additions.

He also said the return flow pH is automatically adjusted. A pH probe hooked to a sensor which is relayed to a caustic chemical feed pump will trigger additions to the resurge tank water as needed. The pH is charted on a Bristol Babcock graph chart and monitored by staff every 4 hours.

Although the permit condition refers to the scrubber influx flow, rather than the return flow, the practices Charlotte Anodizing has implemented to ensure there is an appropriate flow through the scrubbers is acceptable and meets the intention of the requirement.

Safety Precautions During Inspection

Standing on the metal grates between the two lines of tanks can potentially expose you to acidic vapors that can be suffocating at times. Exercise caution when entering this area.

Compliance Statement: Charlotte Anodizing is in compliance with PTI 827-91B at this time.

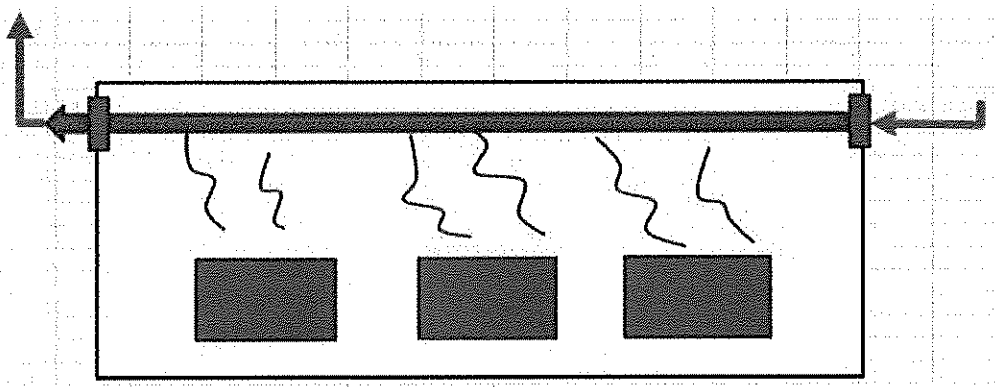


Image 1(Process Air Flow) : Red arrow representative of air flow through the etching/anodizing room. Vapors captured from all tanks. Air intake on right, air exhaust on left. All process air is pushed through exhaust to scrubbers

NAME M. Walker

DATE 4/4/18

SUPERVISOR B. M.

