

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

M329034999

FACILITY: TI-COATING INC		SRN / ID: M3290
LOCATION: 50500 CORPORATE DR, UTICA		DISTRICT: Southeast Michigan
CITY: UTICA		COUNTY: MACOMB
CONTACT: Anna Witters , Vice President		ACTIVITY DATE: 06/07/2016
STAFF: Rebecca Loftus	COMPLIANCE STATUS: Compliance	SOURCE CLASS: Minor
SUBJECT:		
RESOLVED COMPLAINTS:		

On June 7, 2016, I, Rebecca Loftus, from the Department of Environmental Quality's (DEQ), Air Quality Division (AQD), conducted an inspection of Ti-Coating, Inc. (Ti-Coating), State Registration Number (SRN): M3290, located at 50500 Corporate Drive, in Utica, Michigan. The purpose of this inspection was to determine the facility's compliance with the Federal Clean Air Act Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act of 1994, PA 451, as amended, Michigan's Air Pollution Control Rules, and Permit to Install (PTI) No. 431-87A.

### **Contacts**

Anna Witters, Vice President, 586-726-1900, a.witters@ticoating.com  
Leo Manoogian, Manufacturing Manager, 586-726-1900, l.manoogian@ticoating.com

### **Company Overview**

Established in 1975, Ti-Coating, Inc. provides thin film coating technologies services and equipment to the metal removal and metal forming industries. The thin film coating technology includes two processes: the physical vapor deposition (PVD) process and the chemical vapor deposition (CVD) process. These processes are used to deposit a variety of coatings to medial, aerospace, and other industrial metal parts and tools.

### **Inspection**

I arrived on-site at 1:00pm and met with Ms. Anna Witters and Mr. Leo Manoogian. Ms. Witters and Mr. Manoogian escorted me through the facility and explained the following processes/areas.

At this facility, Ti-Coating has twelve PVD machines, seven CVD furnaces, three HF cleaning furnaces, a prepping area, manufacturing department, and gas storage area.

#### **Physical Vapor Deposition**

Ti-Coating's physical vapor deposition (PVD) process produces multi-layered, heat resistant coatings used to extend the life of the tools. Nitrogen, argon, hydrogen and methane gases are injected into each machine. The PVD machines (2 manual PLC based, 8 deposition, and 2 heat treat) exhausted heat and/or unreacted gases to the in-plant environment; this process does not appear to release any air contaminants to the ambient air.

#### **Chemical vapor deposition**

In the chemical vapor deposition (CVD) process, the coating is achieved by a chemical reaction between the coating compound and the surface of the heated substrate material at very high temperatures. In this process, metal parts are placed in a CVD reactor vessel (or furnace) and then hydrogen gas, inert gases (argon, nitrogen), and titanium based coatings are injected. The vessel is heated to high temperatures and each cycle ranges from 8-14 hours depending on the composition of the coating (see attached list).

The building has seven CVD (#1-7) furnaces which are permitted under PTI No. 431-87A. Each CVD furnace exhausts to a caustic scrubber and the exhaust from each individual scrubber is then sent to one of two 150 gallon central scrubber systems. The pH off the central scrubber system is automatically monitored and maintained between 8-10; the system alarms when pH is below 8 or above 10.

During my inspection I did not observe any visible emissions from the CVD process and the pH of the central scrubber system appeared to be maintained in the pH range of 8-10. Based on these observations the CVD processes appear to be in compliance with the conditions established in PTI No. 431-87A.

#### Hydrogen Fluoride (HF) Ion Cleaning

In addition to the coatings, Ti-Coating also offers hydrogen fluoride (HF) ion cleaning. HF is utilized to clean components for engine manufacturers and repair centers. The building has three (#8, #9, #10) HF reactors which all exhaust to individual scrubbers and then to one central caustic tank. The pH is monitored from the PLC furnace (#10).

On September 26, 2016, Mr. Manoogian provided the AQD with potential to emit calculations for the HF ion cleaning process (see attached emails). The calculations provided indicate the worst case scenario emissions, which assume proper operation of both sets of scrubbers, are 0.00073 lbs of HF per month. Based on this information, the HF ion cleaning process appears to be exempt from obtaining a PTI pursuant to Rule 290.

#### Prep Area

The metal parts are washed in wash tanks before undergoing the vapor deposition process. Soap based cleaners and acid rinses (see attached MSDSs) are used and exhaust to the in-plant environment. This cleaning line appears to be exempt from obtaining a PTI Pursuant to Rule 285(r)(vi). At the end of the cleaning line is a dryer which is used to remove moisture from the parts before they are placed into the coating furnaces; the heat from the dryer is exhausted through a stack.

The prep area also has an enclosed sandblasting room which is exhausted to an indoor baghouse/cyclone. This equipment appears to be exempt from obtaining a PTI pursuant to Rule 285(l)(vi)(B&C).

#### Manufacturing Department

In the manufacturing department, Ti-Coating has a welding area and machining equipment. The processes observed in this area appear to be exempt from obtaining a permit to install pursuant to Rule 285(i) and Rule 285(l)(vi)(B).

#### Gas Storage

Ti-Coating stores cylinders of HF, HCl, and Methane inside the building. Bulk tanks of Hydrogen (1500 gallons), Argon (500 gallons), and Nitrogen (1500 gallons) are located outside. This equipment appears to be exempt from obtaining a PTI pursuant to Rule 284(j).

#### Conclusion

Based on my inspection observations and the calculations/information provided, Ti-Coating appears to be in compliance with the Federal Clean Air Act, Michigan's Air Pollution Control Rules, and PTI No. 431-87A.

NAME

Rebecca Joffe

DATE

updated  
9/26/16

SUPERVISOR

Joyce