

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

N767942244

FACILITY: RACK PROCESSING MICHIGAN LCC		SRN / ID: N7679
LOCATION: 3513 LOUSMA DR SE, WYOMING		DISTRICT: Grand Rapids
CITY: WYOMING		COUNTY: KENT
CONTACT: Amy Wright		ACTIVITY DATE: 11/01/2017
STAFF: David Morgan	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Stack test observation and inspection		
RESOLVED COMPLAINTS:		

At 8:00 A.M. on November 1, 2017, Air Quality Division staff Dave Morgan conducted stack test observations and a scheduled inspection of Rack Processing Michigan LLC located at 3513 Lousma Drive SE in Wyoming. The purpose of the inspection was to verify process operations during the stack test and to verify the facility's overall compliance with state and federal air pollution regulations as well as Permit to Install (PTI) Nos. 300-06 and 3-11C. Accompanying AQD staff on the inspection was Amy Wright, of Wright Environmental Solutions LLC who was handling compliance on behalf of Rack Processing. Tom Gasloli of the AQD Technical Programs Unit was on site. Stack testers were Mason Sakshaug and Paul Diven of B-Tec Inc. and Blake Ericson of PRISM Analytical.

FACILITY DESCRIPTION

Rack Processing refurbishes part racks used in the electroplating process. The part racks are dipped in plastisol to protect the metal racks during the plating process. The company strips off the old plastisol coating on the racks, conducts maintenance and then recoats the racks with plastisol. The coating line is covered under General PTI No. 300-06 and there is a burn-off oven covered under PTI No. 3-11C. The facility is considered a major source of hazardous air pollutants (HAPs) due to hydrogen chloride (HCl) emissions. An initial Renewable Operating Permit application was submitted in November 2017.

COMPLIANCE EVALUATION

Rack Burn-Off Oven:

Under PTI-3-11C the company operates a Steelman rack burn-off oven to remove the existing plastisol coating from racks that they refurbish. Typically the unit operates about once, sometimes twice per week. The primary chamber is operated around 430 °F and the cycle time on a batch of racks can range from 9 to 18 hours.

There is a secondary afterburner installed on the unit and a circular chart to record the temperature. The company had temperature records on site which AQD staff reviewed. Temperature records show that the afterburner is operated at or above 1,600 °F which is above the minimum temperature limit of 1,560 °F in the permit. In addition, the company records, on the circular chart, the number of water spray cycles that occurred during a batch and also the total oven run time.

Records required by PTI No. 3-11C were being maintained in accordance with the permit. From October 2016 through September 2017, 51,881 pounds of plastisol were burned which is well below the 188,000 pound limit in the permit. In addition, records show that the highest amount of plastisol burned in a batch was 1,277 pounds which is below the limit of 1,285 pounds in the permit. Ms. Wright indicated that the facility typically operates with an oven batch load from 900 to 1,000 pounds. The company is using the same Chemionics plastisol (with a chlorine content of 30%) used in the development of PTI No. 3-11C. In accordance with the permit, the process was being tested to determine the HCl emission rate from the oven (see discussion below).

As for maintenance, the company plans to replace seals on the unit next month. In addition, the thermocouples were last calibrated on July 31, 2017. It is also noted that the stack on the oven was replaced in 2014 due to wind damage and in August 2017 the stack height was raised to 51 feet above ground which allowed for the 90 pounds of HCl per hour limit.

Sandblasting:

After the racks come out of the oven the racks are sandblasted. The sandblasting booth is fully contained. There are two baghouses used to collect particulate that is exhausted to the in-plant environment. This equipment is exempt under Rule 285(l)(vi)(B).

Primer Dip Coating:

After the racks are sandblasted, a soap solution is pasted on the part clips and the racks are then coated with a primer. The primer coating operation, permitted under General PTI No. 300-06, consists of a 2,000 gallon rectangular

dip tank containing a primer coating and methyl ethyl ketone (MEK) mixture. The MEK is a diluent that makes up the majority of the volume of the total primer coating. The primer dip tank is not in an enclosed booth, however, there is an air handling system to allow solvent fumes to be vented to the ambient air. There are no exhaust filters, however, no coating atomization is occurring. At the time of the inspection, the primer tank was not operating and the lid was closed on the dip tank.

According to company records from November 2016 through October 2017, total VOC emissions from priming operations (including primer coating and added MEK) were 6.52 tons which is below the 10 ton per line and 30 ton per facility limits contained in PTI No. 300-06. The company had adequate records to determine compliance with emission limits. It is noted that the company is reformulating the primer coating to reduce the VOC content of the coating by replacing some VOC components with acetone which is not defined as a VOC. See attached Safety Data Sheet for SD-2461. Ms. Wright clarified that the MEK diluent will be fully replaced with acetone, thus reducing overall VOC emissions from the process. It appears that the switch to acetone would not constitute a meaningful change in emissions under the DEQ Policy and Procedure, AQD-025. It is further noted that although the General PTI does not specifically address acetone, at the time the General Permit for Surface Coating Operations was developed, acetone was reviewed as a toxic air contaminant (TAC) and allowed as if it were 100% of the VOC limit. Additional review may be necessary should acetone emissions approach 10 tons per year.

Preheat Oven:

After the racks are primed, they go into a 0.6 Million Btu/hr natural gas-fired pre-heat oven for 25 minutes at a temperature around 450 °F. This oven is covered under PTI No. 300-06.

Plastisol Coating:

The heated racks are dipped into a 2,000 gallon rectangular tank containing black plastisol and reducer. Two coats of plastisol are applied in order to insure complete coverage of the metal rack. After the first coat of plastisol, the racks are flash cured in an oven at around 500°F for 30 seconds. Then a second coat of plastisol is applied. Plastisol from 275 gallon bulk containers and a small amount of reducer is added to the tanks on a monthly basis. The company is using a Chemionics Corporation plastisol and plasticizer reducer that have no VOCs.

Curing Oven:

After the final coat of plastisol, the racks are final cured in a natural gas-fired oven around 350 °F for about 35 minutes. This oven is covered under PTI No. 300-06. It is noted that there is no afterburner on this oven.

Soldering:

The company has a liquid soldering station that is exempt under Rule 285(2)(i). According to Ms. Wright the company is planning to remove this equipment from the facility.

Micellaneous:

No odor or visible emissions issues were noted at that time of the inspection.

Stack Testing:

Stack testing was being conducted on EUBURNOFFOVEN as required by PTI No. 3-11C. The purpose of the stack testing was to determine the HCl emission rate (in pounds of HCl emitted per pound of plastisol burned). Testing was being conducted under U.S.EPA Method 320 using Fourier Transform Infrared Spectroscopy (FTIR). The test was being conducted over the entire batch cycle which was estimated at 12 hours.

Racks were weighed prior to being loaded into the oven. According to Ms. Wright, the pre-test estimate of the amount of plastisol burned was around 1,214 pounds (see attached records). The final actual amount of plastisol burned was determined by weighing the racks after ash and plastisol residual was removed from the racks. Actual plastisol burned during the test was 1,068 pounds (see attached records).

Since the FTIR method allows for the direct analysis of the exhaust gases, the HCl concentration could be monitored in real time. A steady increase in HCl emissions was observed on the analytical equipment. The following is a summary of AQD district staff observations:

Time	Primary Oven Temp	Afterburner Temp	HCl (in ppm)	Comments
0700	70°F	70°F	DNO	Process started. Approximately 20-30 minutes of gas purging were necessary prior to burner ignition.
0745	70°F	1,450°F	DNO	Primary burner ignited after afterburner temp. was around 1,560F.
0800	DNO	DNO	100	
0905	~430°F	~1600°F	DNO	
1000	~430°F	~1,500°F	4,200	
1015	~430°F	~1,625°F	6,000	
1030	~430°F	~1,650°F	8,583	

1045	~430°F	~1,690°F	10,000	A drop in the HCl concentration was noted at this time. At the time of the HCl drop, a flow rate was being sampled by BTec staff.
1100	~430°F	~1,700°F	11,400	
1115	~430°F	~1,690°F	12,640	
1130	~430°F	~1,700°F	13,160	
1140	~430°F	~1,700°F	10,780	A drop in the HCl concentration was noted again at this time. Once again, a flow rate was being obtained by BTec staff. Possible dilution was occurring based on probe position, low flow rate (~4,000 acfm) and possible ambient air influence. Tom Gasloli thought that the data results would need to address the drop in HCl possibly through extrapolation of the data.
1155	~430°F	~1,700°F	13,440	
1200	~430°F	~1,727°F	12,960	
1215	~430°F	~1,700°F	13,440	
1230	~430°F	DNO	12,870	

DNO= did not observe

It is noted that the process operation was stable. Primary oven temperature was around 430°F. The afterburner was operating above 1,600°F. Circular chart temperature records from the test are attached to this report. No production problems were noted during testing. A steady increase in HCl emissions was observed on the analytical equipment during the first five hours of the test and then emissions appeared to level off. AQD district staff left the site at 12:30 P.M. after HCl emissions had started to decrease. Tom Gasloli planned on staying until the end of the test for quality assurance.

The company has 60 days to submit official results of the test. Results will be evaluated when the report is received by AQD.

SUMMARY

Rack Processing appears to be in compliance with applicable requirements evaluated above. Attached are company records.

NAME  DATE 11/16/17 SUPERVISOR 

