

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

B237130922

FACILITY: PVS TECHNOLOGIES		SRN / ID: B2371
LOCATION: 10825 HARPER, DETROIT		DISTRICT: Detroit
CITY: DETROIT		COUNTY: WAYNE
CONTACT: Peter Onyskiw , Environmental Manager		ACTIVITY DATE: 08/26/2015
STAFF: Jonathan Lamb	COMPLIANCE STATUS: Non Compliance	SOURCE CLASS: Minor
SUBJECT: Compliance inspection, FY 2015		
RESOLVED COMPLAINTS:		

INSPECTED BY: Jonathan Lamb, MDEQ-AQD
PERSONNEL PRESENT: Peter Onyskiw, Environmental Manager; Matt Hehn, Chemical Engineer; Steve Wasko, Plant Manager
FACILITY PHONE NUMBER: (313) 571-1100
CONTACT PHONE NUMBER: (313) 921-1200, ext. 5174 (Mr. Onyskiw)
CONTACT EMAIL: ponyanskiw@PVSCchemicals.com
FACILITY WEBSITE: www.pvschemicals.com

FACILITY BACKGROUND:

PVS Technologies produces liquid ferric chloride, which is used as a flocculant in the drinking and wastewater treatment industries and as an etching agent in the production of circuit boards in the electronic and computer industries. The facility also repackages and redistributes anhydrous ferric chloride; however, anhydrous ferric chloride is no longer produced on site. The facility moved into this location in 1991. Current hours of operation are 24 hours per day, 5 days per week and has approximately 15 employees.

PVS Technologies is a division of PVS Chemicals, Inc. PVS Chemicals, Inc. is headquartered across the street at 10900 Harper. PVS Chemicals was established in Detroit in 1945 as Pressure Vessel Services, Inc., and has been at the current address since 1991. The company has various divisions and facilities throughout North America and worldwide.

The facility is located adjacent to PVS Transportation (11001 Harper, SRN B3427) and tanker trucks owned by PVS Transportation may be used to transport ferric chloride produced at PVS Technologies to customers off-site; however, there is no common control of the two facilities (separate ownership), they do not share the same SIC major group code, and the transport of chemicals produced at PVS Technologies is less than 50% of the business operations of PVS Transportation. Based on this information, the facilities are considered separate stationary sources.

Note: The mailing address for PVS Technologies is at the corporate offices at 10900 Harper, but the facility operations are performed at 10825 Harper. Wayne County files/permits show an address of 6500 French Road for this facility – this is the same address as 10825 Harper but a different entrance that is no longer used.

COMPLAINT/COMPLIANCE HISTORY:

There have been no complaints lodged against this facility, nor have any Violation Notices been issued in the past 10 years.

INSPECTION NOTES:

The inspection was performed on August 26, 2015, to determine compliance with Wayne County

Permit Nos. C-9040 through C-9055, C-10082, C-10083, and C-10084 and to discuss PVS Technologies' recent application for a permit modification (PTI No. 152-15). Upon arrival, watched a brief safety video before meeting with Peter Onyskiw (Environmental Manager), Matt Hehn (Chemical Engineer), and Steve Wasko (Plant Manager). We discussed the ferric chloride production process in detail before performing a walk-through of the facility.

During the walk-through, I noted the following operating parameters of the scrubbers:

Single-stage scrubber: 45-50 gpm. No flow meter.

Two-stage scrubber: Tower 1: 60-65 gpm; ORP -478; Pressure drop = 0.6"wg; Tower 2: 33-37 gpm; Pressure drop = 0.0"wg

PROCESS DESCRIPTION/EQUIPMENT:

The raw materials used in the production of ferric chloride are ferrous chloride, scrap steel and mill scale, and hydrochloric acid. Ferrous chloride and hydrochloric acid are delivered via either railcar or tanker and stored in outdoor tanks. Scrap steel and mill scale (iron oxide) are delivered via dump truck and stored in designated areas outside.

The ferric chloride production process is broken into two groups, the Reduction Group and the Chlorine Group, both of which consist of various storage and reactor tanks. In the Reduction Group, Ferrous chloride and/or HCl is reacted with iron oxide (either scrap steel or mill scale) to produce ferrous chloride with a higher iron/lower acid concentration. This ferrous chloride is then sent through a filter press to remove any solids and then sent to the Chlorine Group, where chlorine is added to the ferrous chloride, which reacts to produce ferric chloride.

The vessels in the Reduction Group, except for T-200 and T-201, are controlled by a single-stage 4,500 acfm scrubber which uses a sodium hydroxide solution to control HCl emissions. All tanks within the Reduction Group contain solutions with less than 25% hydrochloric acid, except for T-200, which has a 37% concentration of hydrochloric acid.

The Chlorine Group and Tanks T-200 and T-201 are controlled by a 2-stage 2,000 acfm scrubber, which uses a scrubbing solution of ferrous chloride in the first stage and a caustic in the second stage to control chlorine emissions.

Reduction Group

T-106 and T-107 (20,000 gallons each): Reactor tanks. Mill scale is added to ferrous chloride to produce ferric chloride with a lower acid concentration.

T-107A (15,000 gallons): Reactor tanks. Scrap steel is added to ferrous chloride to produce ferric chloride with a higher acid concentration.

T-109 (3,000 gallons): Intermediate storage prior to filter press.

T-114 and T-115 (150,000 gallons each): Storage for either ferrous chloride or hydrochloric acid (raw materials)

T-116 (150,000 gallons): Storage of ferric chloride (final product). Shipped off via railcar or tanker.

T-200 (4,700 gallons): Storage of hydrochloric acid (37%) used for fine-tuning concentrations.

T-201 (10,000 gallon): Alternate ferric chloride reactor tank for specialty blends.

SV-Reduct Scrubber: 4,500 cfm single-stage scrubber

Chlorine Group

T-108A, T-108B, and T-108C (30,000 gallons each): Reactor tanks. Chlorine is added to ferric chloride.

T-101 (30,000 gallon): Intermediate tank for ferric chloride.

T-102 and T-103 (30,000 gallons each): Ferric chloride storage (final product)

T-104 (30,000 gallon): Intermediate storage tank for unfiltered ferrous chloride.

SV-Chlorine Scrubber: 2,000 cfm 2-stage scrubber.

Chlorine is stored in the railcars in which it is delivered on tracks which run adjacent to the building. Chlorine is pumped from the railcars to the processing tanks. There are chlorine monitors with alarms near these railcars and throughout the facility to detect any chlorine leaks coming from the storage or processing of chlorine.

There are additional storage tanks for finished product:

T-195, T-196, T-197, T-198, and T-199 (10-20,000 gallons each): Finished product, etchants.

T-50(10,000 gallon): Finished product, general purpose mixings

In their permit application, the facility is requesting to have T-200 and T-201 controlled by the Reduction Group scrubber and to have no controls on tanks T-195, T-196, T-197, T-198, and T-199 due to a low HCl concentration in the final product. The facility is also requesting to allow the Reduction Scrubber to use water as the scrubbing solution.

APPLICABLE RULES/ PERMIT CONDITIONS:

PVS Technologies operates under Wayne County Permit Nos. C-9040 through C-9055, C-10082, C-10083, and C-10084, issued on August 31, 1995, which superseded the previous permit conditions issued on February 23, 1993. Facility currently has a permit application submitted (PTI No. 152-15) to modify the existing permit:

Special Conditions:

17. IN COMPLIANCE. Facility no longer produces anhydrous ferric chloride.
18. IN COMPLIANCE. Facility no longer produces anhydrous ferric chloride.
19. IN COMPLIANCE. Testing to determine the emission rate of hydrochloric acid (HCl) has not been performed since the issuance of the current August 31, 1995 permit. However, testing to determine the hydrochloric acid emission rate was performed on March 11, 1992, to demonstrate compliance with an earlier version of Wayne County Permit Nos. C-9040 through C-9055, which had the same emission limit of 0.0366 lbs HCl/hr as the current permit. The March 11, 1992, test showed an emission rate of 0.0107 pounds HCl/hr, in compliance with current permit limit. In addition, the scrubbers are equipped with chlorine monitors at the outlet to monitor emissions. The process shuts down if emissions reach 1 ppm, which is approximately 0.022 pounds per hour, below the permit limit of 0.0366 pounds per hour.
20. IN COMPLIANCE. Facility no longer produces anhydrous ferric chloride.
21. NOT IN COMPLIANCE. Facility exceeded the annual limit of 52,600 tons of ferric chloride produced. Records indicate that PVS Technologies produced 53,403 tons of ferric chloride in 2013 and 54,858 tons of ferric chloride in 2014. At the time of inspection, ferric chloride production was at 36,277 tons for 2015. PTI No. 152-15 is requesting an increase in allowable production to 100,000 gallons per year.
22. IN COMPLIANCE. Only ferric chloride produced in permitted equipment.
23. IN COMPLIANCE. Stack dimensions appear to comply with the maximum diameter of 18 inches and minimum height of 49 feet.
24. IN COMPLIANCE. Scrubbers are equipped with alternate pumps.
25. IN COMPLIANCE. All process tanks are vented through the scrubber. The scrubber appeared to be in proper operation at the time of inspection.
26. IN COMPLIANCE. Process shuts down in case of scrubber malfunction.
27. IN COMPLIANCE. Per Mr. Hehn, the facility follows the operational guidelines recommended by the Chlorine Institute., of which PVS Technologies is a member. Facility maintains copies of these guidelines on site.
28. IN COMPLIANCE. Per Mr. Hehn, the facility no longer uses the "Chlorine Emergency Control Features" document referenced in the permit, but follows the Chlorine Institute's industry safety guidelines for the handling, storage, and processing of chlorine.

