UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, ILLINOIS 60604

SUBJECT:	CLEAN AIR ACT INSPECTION REPORT PVS Technologies, Inc., Detroit, Michigan
FROM:	Brittany Cobb, Environmental Engineer AECAB (MI/WI)
THRU:	Sarah Marshall, Section Supervisor AECAB (MI/WI)
TO:	File

BASIC INFORMATION

Facility Name: PVS Technologies, Inc. (Detroit)

Facility Location: 10825 Harper Ave, Detroit, Michigan

Date of Inspection: June 14 – June 15, 2022

EPA Inspector(s):
1. Brittany Cobb, Environmental Engineer
2. Natalia Vazquez, Environmental Engineer

Other Attendees:
1. Marc Tallent – Production Supervisor, PVS Technologies, Inc.
2. Shane Brunson – Director, PVS Technologies, Inc.
3. Stephen Wasko – Plant Manager, PVS Technologies, Inc.
4. John Grant – Plant Manager in training, PVS Technologies, Inc.
5. Tim Klein – Area Manager, PVS Technologies, Inc.

Contact Email Address: jgant@pvschemicals.com

Purpose of Inspection: Determine compliance with Section 112r of the Clean Air Act

Facility Type: Chemical manufacturer

Regulations Central to Inspection: 40 C.F.R. Part 68 Chemical Accident Prevention Provisions

Arrival Time: June 14, 2022 8:00 AM ET
Departure Time: June 15, 2022 12:00 PM ET

Inspection Type:
☐ Unannounced Inspection
☒ Announced Inspection

OPENING CONFERENCE

☒ Presented Credentials
☒ Stated authority and purpose of inspection
☒ Small Business Resource Information Sheet provided via email
☒ Provided CBI warning to facility

The following information was obtained verbally from PVS Technologies employees unless otherwise noted.

Process Description:
PVS Technologies, Inc (PVS or facility) manufactures blends of ferric chloride and polymers used in water treatment. The facility uses the regulated substance chlorine in the covered process. Chlorine is brought onsite and stored in 90-ton railcar tanks. From the tanks, chlorine is delivered to oxidizers where it is mixed with ferrous chloride to produce ferric chloride. There are three (3) oxidizers (A, B and C) and a fourth being installed this year. Any excess chlorine in the oxidizers' void spaces is transferred to two (2) scrubbers in series. Ferric chloride is delivered off site by truck, drums, and railcars.

Staff Interview:
The facility has 20 employees on site and operates up to 24 hours per day 7 days per week.

1. Applicability
    a. PVS has more than the threshold quantity of one regulated substance (chlorine).
    b. The covered process meets the eligibility requirements of Program 3.
2. Management
    a. The plant manager oversees the implementation of the RMP elements.
3. Worst-case release scenario analysis
    a. PVS used EPA's RMP*Comp(TM) to model their worst-case scenario.
4. Alternative release scenario analysis
    a. PVS used EPA's RMP*Comp(TM) to model their alternative release scenario.
5. Hazard Assessment Documentation
    a. PVS used the 2010 census in the off-site analysis and identified environmental receptors in the off-site analysis.
6. Five-year accident history
    a. There were no covered accidents in the last five years.

7. Process Safety Information (PSI)
    a. PVS has a SDS for chlorine on site.
    b. PVS has a process flow diagram, process chemistry, maximum intended inventory, safe upper and lower limits and an evaluation of the consequences of deviations.
    c. The oxidizers do not have pressure relief valves, they do have vacuum relief devices.
    d. Each oxidizer has one (1) temperature, one (1) pressure, and two (2) level sensors. The first level sensor has a digital read out and the critical alarm which sounds at 27 feet. The second level sensor is a physical probe that alarms at the "high high" level of 32 feet.
    e. PVS follows the design codes and standards from the Chlorine Institute.
    f. PVS does not have information pertaining to the ventilation design since the entire covered process is outside or electrical classification because they do not have explosive or flammable substances.
    g. The chlorine pipelines have vacuum release devices and expansion chambers.
    h. The piping and instrument diagrams (P&ID's) indicated the oxidizers vent to atmosphere before going to the scrubbers which was found to be inaccurate.
    i. PVS does not have a form u-1a – manufacturer's data report for the oxidizers but had a third-party contractor perform an analysis that states the vessels are rated for 40 inches of water column. The study does not include which one of the three oxidizers the analysis was performed on.
8. Process Hazard Analysis (PHA)
    a. PVS performed a facility wide PHA in 2020 using the HAZOP method. Recommendations were made for seven (7) nodes (node 5, 6, 7, 8, 17, 19, and 24).
    b. On 1/14/2022 PVS performed an initial PHA on a new ferric chloride oxidizer (Oxidizer 108D) for Node 1.
    c. On 12/19/18 PVS performed an initial PHA to increase the chlorine line off the railcar from 1 inch to 1.5 inches, change the contents and controls for Tank 103, and add a constant feed scrubber sump to Tank 103 for Node 17 and 18.
    d. PVS is not establishing due dates or a written schedule for addressing the recommendations from the PHAs.
9. Mechanical Integrity (MI)
    a. PVS has the following inspections in their mechanical integrity database:
        i. Chlorine line inspection once per month
        ii. Sensor calibration once per month
        iii. Dielectric testing (aka "spark testing") once per year
        iv. Thickness testing once per year
    b. PVS does not inspect or maintain records of inspecting the following equipment:
        i. Vacuum reliefs on chlorine line
        ii. Pressure or temperature sensors in chlorine lines or oxidizers
        iii. Level sensors on oxidizers A or C
    c. Duratech, a third-party contractor, performs dielectric testing on all three (3) oxidizers to detect any leaks.

d. The work orders for the dielectic testing do not include a description of the test or the results.
e. In the most recent chlorine sensor calibrations (5/19/2022), the air pad system chlorine sensor was not calibrated.
f. Electron Specialties Inc., a third-party contractor, performs thickness testing on the chlorine pipelines. PVS provided EPA with the thickness testing from 2018, 2019 and 2021. The 2018 and 2019 thickness testing report did not include criteria for evaluating the measurements in order to determine if the thickness was acceptable. In the 2021 thickness testing report, there was severe pitting noted next to point #14 (6 inches west). PVS does not have records of addressing this pitting.

10. Operating Procedures (SOP)
    a. PVS has operating procedures for initial startup, normal operations, emergency shutdown, emergency operations, normal shutdown, and startup following a turnaround/emergency operation.
    b. The operating procedures include operating limits for pressure and level but do not include the operating limit for temperature.
    c. The operating limits include safety and health considerations.
    d. The operating procedures are readily accessible to employees and are reviewed annually.
11. Training
    a. The operators are trained in their respective roles. To verify that the operators understood the training, they are observed actively operating the system.
12. Management of Change (MOC)
    a. PVS has established written procedures to manage changes in the process equipment. The procedures address the technical basis, impacts on safety and health, operating procedures, and authorization requirements.
    b. The facility uses a software for tracking MOCs. The software does not have the capacity to change the status to complete after its finalized, therefore their MOCs appear to still be open. In particular, there was one project that was abandoned but the MOC still appears to be open.
13. Pre-startup safety review
    a. PVS performs pre-startup safety reviews when significant modifications are performed.
14. Compliance Audits
    a. PVS performs self-audits with at least one person knowledgeable in the process and documents the findings.
15. Employee Participation
    a. PVS has developed a written employee participation plan and provides employees access to information under the chemical accident prevention rule.
16. Hot Work Permit
    a. PVS issues hot work permits for hot work done near or on the covered process. The permit includes the date(s), authorization for hot work and a description of the work being performed.

17. Contractors
    a. PVS follows an internal Contractor Safety Assessment and Re-assessment procedure to determine contractor safety and evaluate risks associated with the contractor.
18. Emergency Response
    a. PVS employees have HAZWOPER training. For smaller spills the employees are trained to control the release. For larger spills, PVS reaches out to the fire department for support. PVS' emergency response plan has been provided to Detroit LEPC for inclusion into the Community emergency response plan.

TOUR INFORMATION

EPA Tour of the Facility: Yes

Data Collected and Observations:
EPA toured the entire covered process. EPA observed the pressure of the pipeline at the chloride platform where chlorine is offload from the railcar tanks was 90 psi at the gauge and read 80 psi on the digital readout in the control room. The maximum pressure for the pipelines is 110 psi. The pad air pressure was at 110 psi. EPA observed moderate corrosion on the pipelines.

Photos and/or Videos: were taken during the inspection.

Field Measurements: were not taken during this inspection.

RECORDS REVIEW

EPA reviewed documents for the following RMP Level 3 Requirements:
1. Applicability
2. Management
3. Off-site consequence analysis
4. Worst-case release scenario analysis
5. Alternative release scenario analysis
6. Hazard Assessment Documentation
7. Five-year accident history
8. Process Safety Information (PSI)
9. Process Hazard Analysis (PHA)
10. Mechanical Integrity (MI)
11. Operating Procedures (SOP)
12. Training
13. Management of Change
14. Pre-startup safety review
15. Compliance Audits
16. Incident Investigation
17. Employee Participation
18. Hot Work Permit
19. Contractors

20. Emergency Response
21. Risk Management Plan

CLOSING CONFERENCE

☒ Provided U.S. EPA point of contact to the facility

Documents Requested:

- Vacuum relief design basis for the oxidizers, which should include the set point and documentation of how the loads and sizes of the relief system, as well as inlet and outlet sizes, were determined.
- PHS recommendation excel sheet
- Duratech contractor evaluation information

Compliance Assistance:

1. PVS had inaccurate P&ID, which was correct by the facility on 6/15/2022.

Concerns:

1. PVS is not establishing due dates or a written schedule for addressing the recommendations from the PHAs.
2. MOCs are not being closed out after the change is complete.
3. The maximum operating limit for temperature is not included in the operating procedures.
4. The documentation for dielectric testing does not indicate the results of the test.
5. PVS is not calibrating and/or maintaining records of calibrating temperature, pressure or level sensors in the oxidizers.
6. There have been approximately three instances in which the oxidizers have leaked ferric chloride or ferrous chloride. PVS should consider inspecting vessels more frequently to prevent leaks and possible releases of chlorine.
7. PVS has not addressed severe pitting observed during the 2021 thickness testing. And prior to 2021, the thickness testing did not include criteria for evaluating thickness.

DIGITAL SIGNATURES

Report Author: Brittany Cobb Digitally signed by Brittany Cobb Date: 2022.08.11 13:19:37 -05'00'

Section Supervisor: SARAH MARSHALL Digitally signed by SARAH MARSHALL Date: 2022.08.11 14:52:29 -05'00'

APPENDICES AND ATTACHMENTS

1. Digital Image Log

Facility Name: *Facility Name*
Facility Location: *Facility Address*
Date of Inspection: *Select date by clicking on the arrow*

APPENDIX A: DIGITAL IMAGE LOG

1. **Inspector Name:** Brittany Cobb	2. **Archival Record Location:** confidential business information – images located in OneDrive

Image Number	File Name	Date and Time (Eastern Time)	Description of Image
1	1.jpg	6/14/2022 2:07 PM	Photo of line that does not vent to atmosphere, as indicated in the P&ID
2	2.jpg	6/14/2022 2:07 PM	Photo of line that does not vent to atmosphere, as indicated in the P&ID
3	3.jpg	6/14/2022 3:07 PM	Chlorine line with corrosion
4	4.jpg	6/14/2022 3:10 PM	Chlorine sensor indicates 13 ppm
5	5.jpg	6/14/2022 3:12 PM	Chlorine line next to building going to oxidizers
6	6.jpg	6/14/2022 3:14 PM	Bottom of reaction vessel T108A