



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

SUBJECT: CLEAN AIR ACT INSPECTION REPORT
Blue Grass Chemical Specialties, LLC, New Albany, Indiana

FROM: Sasa Dunovic, Inspector/Enforcement Officer
AECAB (IL/IN)

THRU: Nathan Frank, Section Supervisor
AECAB (IL/IN)

TO: File

BASIC INFORMATION

Facility Name: Blue Grass Chemical Specialties, LLC (Blue Grass Chemical)

Facility Location: 895 Industrial Blvd., New Albany, Indiana

Date of Inspection: August 30, 2023

EPA Inspectors:

1. Sasa Dunovic, Inspector/Enforcement Officer
2. Jason Schenandoah, Environmental Engineer

Other Attendees:

1. Amy Rotert, IDEM Air Compliance Inspector
2. Matt Brenner, President of Blue Grass Chemical
3. Paul McCauley, Executive Vice President of Blue Grass Chemical
4. Andrew Nelson, Director of Operations at Blue Grass Chemical

Contact Email Address: mbrenner@bluegrasschemical.com,
mccauley@bluegrasschemical.com, anelson@bluegrasschemical.com

Purpose of Inspection: To determine the facility's compliance with the Chemical Accident Prevention Provisions at 40 CFR Part 68 (CAPP).

Facility Type: A stationary metal nitration plant producing metal nitrates.

Regulations Central to Inspection: Chemical Accident Prevention Provisions, 40 CFR Part 68.

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Date of Inspection: August 30, 2023

Arrival Time: 9:00 am

Departure Time: 11:30 am

Inspection Type:

- ☒ Unannounced Inspection
- ☐ Announced Inspection

OPENING CONFERENCE

- ☒ Presented Credentials
- ☒ Stated authority and purpose of inspection
- ☒ Provided Small Business Resource Information Sheet
- ☐ Small Business Resource Information Sheet not provided. Reason:
- ☒ Provided CBI warning to facility

The following information was obtained verbally from the facility's representatives unless otherwise noted.

Process Description:

The facility produces various metal nitrates using predominantly scrap metal, metal oxides, virgin 67% nitric acid, and recycled (40%) nitric acid as raw materials. Iron, copper, manganese, magnesium, aluminum, zinc, or bismuth are metals dissolved in the nitric acid dissolving tanks. Most of the production is shipped out in the form of water solutions, while some products are obtained as solids through filtration. The nitration process produces nitrogen oxides (NO_x) sent to three parallel banks of scrubbers working in series. The scrubbers use a water solution of hydrogen peroxide as a scrubbing liquid to catalyze the conversion process of NO_x to nitric acid for recycling.

Since the facility does not use nitric acid with a concentration of 80% or greater in its process, as determined under 40 C.F.R. § 68.115, it is not subject to the requirements of the CAPP.

Staff Interview:

The facility employs 21 people that work three shifts, five days a week, and sometimes on weekends. Mr. McCauley indicated that they schedule four operators per shift.

The facility has ten nitric acid dissolving tanks with varying geometries and equipment. Some tanks are flat-bottomed, some have agitators, and some are jacketed for thermal insulation. According to the facility representatives, metal is fed manually into all tanks from the top, while acid is pumped into the tank. According to Mr. Brenner, in August 2023, metal isolation dissolving baskets were tested in tank 13 to improve chemical reaction control. The chemical reaction cannot cause over pressurization in the tanks because the manways do not create a solid, airtight seal when closed. He also mentioned that they have enhanced the perimetric monitoring on all tanks by monitoring additional parameters. All the data gathered is stored electronically for ongoing review, which enables better control over chemical reactions. As per his explanation,

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the facility keeps track of temperature, acid concentration, added metal weight, tank levels, and product quantity.

Mr. McCauley explained that three parallel banks of scrubbers are working in series. The scrubber banks differ in configuration as some have pre-scrubbers, primary scrubbing units, and polishing scrubbers, whereas others lack some of these elements. Polypropylene 3-inch hollow balls are used as packing material. Gases from the dissolving tanks are pulled through scrubbers by one fan, and cleaned gasses are exhausted through one stack. The scrubbing liquid removes nitrogen oxides from the inlet stream and converts them into nitric acid. This newly formed nitric acid is recirculated within a scrubber until it attains a concentration of 40%, at which point it is pumped out to Intermediate Bulk Container (IBC) totes.

Additionally, Mr. McCauley noted that hydrogen peroxide concentration, flow rate, and differential pressure are monitored in the scrubbers twice per shift. Although the scrubbing liquid is cooled down during the process, the temperature is not observed.

TOUR INFORMATION

EPA Tour of the Facility: Yes

Data Collected and Observations:

During the site tour, EPA observed different areas of the property, such as the laboratory, warehouse, production building, scrubbers, and storage tanks. All nitric acid dissolving tanks were located in the production building (Appendix A images 3, 4, 5, and 10). At the time of the inspection, all dissolving tanks but one were in service.

A strong odor of acid was detected at the back of the production building, close to tank 3. A system that collected partially condensed vapors from the dissolving tanks en route to scrubbers was observed in the same area. However, some condensates were not captured and dripped from the vapor's ductwork, as shown in images 1 and 2. EPA found dissolving tanks 5, 1, and 2 in the metal spill containment. However, the containment was found not functional and had a visible opening on the side walls and foundation (images 5 and 9). Tanks 6 and 7 were also located in a different spill containment that did not have visible openings. The production building floor was heavily eroded by liquids in several places, leading to the formation of puddles or streams of liquids (images 3, 4, 8, and 9). Additionally, a bucket was observed overflowing with brown liquid from one of the filter press stations, which was flowing toward one of the floor sewer collectors, as seen in image 10.

Following the production building that housed the nitric acid dissolving tanks, outside EPA inspectors observed scrubbers and storage tanks on the property's west side. A concrete spill containment area housed two nitric acid storage tanks, one hydrogen peroxide storage tank, and all the scrubbers that were in service at the time of the inspection. Mr. McCauley pointed at the operating fan that pulled vapors from the dissolving tanks through the scrubbers and flow meters, revealing flows of the scrubbing liquid through the scrubbers. EPA inspectors observed the scrubbers' exhaust stack and noted no visible emissions or odors leaving the stack. However,

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both nitric acid storage tanks had visible emissions (white puffs) leaving vent pipes, as can be seen in images 6 and 7.

Moreover, IBC totes containing 40% nitric acid created in the scrubbers were observed outside the concrete spill containment area. On the south side of the production building, one 4,000-gallon storage tank of 40% nitric acid, labeled "peroxide acid", and one 7,000-gallon storage tank of sodium hydroxide were located. No visible spills, gaseous emissions, or odors were noted outside the building.

Photos: were taken during the inspection. *See Appendix A.*

Field Measurements: were not taken during this inspection.

RECORDS REVIEW

1. Parametric monitoring records.

CLOSING CONFERENCE

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

Requested documents:

- Documentation demonstrating the dissolving tanks are suitable for the nitric acid dissolving process,
- Scrubbers' operation manuals,
- List of monitoring equipment, and
- Preventative maintenance plan/schedule for the dissolving tanks and scrubbers.

Compliance Assistance: EPA highlighted the significance of enhancing perimeter monitoring for the chemical reactions of dissolving metals in nitric acid and adequate controls for the nitrogen oxides produced during the process. EPA also emphasized the importance of improving preventive maintenance of production equipment and implementing better housekeeping practices.

DIGITAL SIGNATURES

Report Author: Dunovic, Sasa Digitally signed by Dunovic, Sasa
Date: 2023.09.25 10:35:19 -05'00'

Section Supervisor: NATHAN FRANK Digitally signed by NATHAN
FRANK
Date: 2023.09.27 08:36:17 -05'00'

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APPENDICES AND ATTACHMENTS

1. Appendix A: Digital Image Log

APPENDIX A: DIGITAL IMAGE LOG

1. Inspector Name: Sasa Dunovic	2. Archival Record Location: <i>Region 5's Electronic Record Center under file name: Enf_BlueGrassChemical_IN_23</i>
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Image Number	File Name	Date and Time	Description of Image
1	IMG_0327.JPG	2023:08:30 10:43:59	Collection of partially condensed vapors from the dissolving tanks en route to scrubbers.
2	IMG_0328.JPG	2023:08:30 10:44:29	Collection of partially condensed vapors from the dissolving tanks en route to scrubbers.
3	IMG_0329.JPG	2023:08:30 10:46:47	Partially dissolved copper carbonate on the floor of the production building around tanks 9 and 10.
4	IMG_0330.JPG	2023:08:30 10:47:12	Eroded rills on the production building floor.
5	IMG_0331.JPG	2023:08:30 10:48:43	Unfunctional metal spill containment around the nitric acid dissolving tanks.
6	IMG_0332.JPG	2023:08:30 10:56:39	Visible emissions emanating from a vent pipe of a big storage tank that contains nitric acid.
7	IMG_0333.JPG	2023:08:30 10:57:09	Visible emissions emanating from a vent pipe of a small storage tank that contains nitric acid.
8	IMG_0334.JPG	2023:08:30 11:02:54	Shower station water leak on the floor of the production building.
9	IMG_0335.JPG	2023:08:30 11:03:25	Water from the shower station leak in the eroded rill on the floor of the production building en route to the floor sewer collector.
10	IMG_0336.JPG	2023:08:30 11:05:04	Overflowing bucket of liquid from one of the filter press stations.