

United States Environmental Protection Agency / Region 4

Risk Management Program Inspection Report

Cherokee Nitrogen

Cherokee, Alabama

August 30, 2022 – September 1, 2022

1.0 Introduction

The U.S. Environmental Protection Agency's efforts to reduce the likelihood and severity of chemical accidents includes planning and legislative initiatives such as the National Contingency Plan, the Emergency Planning and Community Right-to-Know Act (EPCRA), and the Accidental Release Prevention requirements under Section 112(r) of the Clean Air Act (CAA), as amended in 1990. This report outlines an inspection of the Risk Management Program (RMP) as mandated by Section 112(r)(7) of the CAA.

The focus of this inspection was to assess the RMP for the fertilizer manufacturing process at the Cherokee Nitrogen facility located in Cherokee, Colbert County, Alabama. This facility was selected for inspection because it had not been inspected within the last five years under the RMP. The inspection, which was conducted on August 30, 2022, through September 1, 2022, consisted of an examination of program documentation as well as site reviews of various aspects of facility operations. Personnel from the facility participated throughout the inspection. Requested program documents were provided for further review off-site. This report will provide a background of the facility and a listing of observations.

2.0 Background

The Cherokee Nitrogen facility is located in Cherokee, Alabama. The facility is a supplier to the fertilizer, explosives, and commercial industries by manufacturing ammonium nitrate, ammonium nitrate solutions, and other products. Ammonia (anhydrous) is used to manufacture nitric acid, urea, and aqua ammonia. Ammonia (conc. 20% or greater) is contained within the letdown, urea, and ammonium nitrate solutions processes. There are three processes at the facility (Letdown area- Ammonia, Urea, and Ammonium-Nitrate Solution), and each is regulated as program level 3. According to facility records, the facility has a maximum of 25,299,678 pounds of ammonia (anhydrous) and 355,094 pounds of ammonia (conc. 20% or greater) on site. The Letdown area- Ammonia, Urea, and Ammonium-Nitrate Solution processes at the facility are subject to the RMP requirements of 40 C.F.R. Part 68 and EPCRA Section 302. The background specifics are summarized as follows in Table 1.

TABLE 1: Inspection Information Summary

Inspection Team

Inspector: Dan Roper, Eastern Research Group (ERG)

Inspector: Brook McKeown, ERG

Dates of Facility Visit: August 30, 2022 – September 1, 2022

Facility Identification

Name: Cherokee Nitrogen

Street Address: 1080 Industrial Drive

City: Cherokee County: Colbert State: Alabama Zip: 35616

EPA Facility ID No: 1000 0009 9877

Dun & Bradstreet (D&B) No: 57203135

Latitude: 34.805000

Longitude: -087.936944

Name, address and phone of corporate parent company:

Owner/Operator: LSB Industries, Inc.

Mailing Address: NA

City: NA State: NA Zip: NA

Phone: NA

Name, title, and email of person responsible for 40 C.F.R. Part 68 implementation:

Name: Mallory Noyola

Title: PSM Coordinator

Phone: (256) 359-7000

Email: mnoyola@lsbindustries.com

Name and title of emergency contact:

Name: Mallory Noyola

Title: PSM Coordinator

Day phone: (256) 359-7208

24-hour Phone: (256) 359-7000

Email: mnoyola@lsbindustries.com

Name and titles of stationary source personnel involved in site inspection (*accompanied site tours, provided documents and explanations*):

Name: Mallory Noyola

Title: PSM Coordinator

Phone: (256) 359-7000

Email: mnoyola@lsbindustries.com

Note: This is not a union facility.

Date and Program Levels of Submitted Risk Management Plan

Date of initial submission: June 21, 2004

Date of most recent submissions: September 25, 2020

Process: Letdown Area- Ammonia

Process ID: 1000111931

Program Level as reported in RMP: 3

NAICS code: 325311 (Nitrogenous Fertilizer Manufacturing)

Process: Urea

Process ID: 1000111932

Program Level as reported in RMP: 3

NAICS code: 325311 (Nitrogenous Fertilizer Manufacturing)

Process: Ammonium-Nitrate Solution

Process ID: 1000111933

Program Level as reported in RMP: 3

NAICS code: 325311 (Nitrogenous Fertilizer Manufacturing)

3.0 Observations

The inspection of the Cherokee Nitrogen facility evaluated various sections of the RMP regulations (40 C.F.R. Part 68, Program Level 3) and the inspection checklist included in “Guidance for Conducting Risk Management Programs Inspections under Clean Air Act Section 112(r).” The inspection began with an opening discussion of facility operations. Inspectors requested paperwork associated with the facility’s Risk Management Plan (RMPlan). The documents were reviewed by inspectors on-site and later off-site. The discussion was followed by a tour of the facility’s fertilizer manufacturing process. An inspection out-brief was conducted where EPA inspectors described their observations. Observations from the RMP inspection at the Cherokee Nitrogen facility are discussed below:

1. 40 C.F.R. § 68.65(d)(1)(ii) requires the owner or operator to complete a compilation of written process safety information before conducting any process hazard analysis required by the rule. The compilation of written process safety information is to enable the owner or operator and the employees involved in operating the process to identify and understand the hazards posed by those processes involving regulated substances. This process safety information shall include information pertaining to the equipment in the process, including piping and instrument diagrams (P&ID's).
 - At the time of the inspection, the equipment in the field did not match the P&IDs.
 - C-Grade storage: P&ID no. 32PD008 identifies a 6-inch line from C-Grade storage tank 2123-F with a single 6-inch valve on the piping immediately leaving the tank to transfer pump 2120-JA. During the site

walkthrough, an additional 6-inch valve and a sample line were observed that were not shown on the P&ID.

- Urea plant: P&ID no. 42PD002 identifies a ¾-inch line from 1201A-F Suction Pulsation Dampener to G1202-A Main Pump inlet with a single ½-inch hand valve (P&ID asset number NE11593). During the site walkthrough, two additional hand-valves were observed in series downstream of NE11593 that were not identified on the P&ID.

2. 40 C.F.R. § 68.65(d)(2) requires the owner or operator to document that equipment complies with recognized and generally accepted good engineering practices.

- At the time of the inspection, the anhydrous ammonia piping in the C-Grade storage area was not labeled to indicate contents, direction of flow, physical state (i.e., liquid or vapor), or pressure level (i.e., high or low).

Section 3.1 of ASME A13.1 (2015) states, “*Positive identification of the contents of a piping system shall be by lettered legend, giving the name of the contents in full or abbreviated form ... Arrows shall be used to indicate direction of flow. Where flow can be in both directions, arrows in both directions shall be displayed. Contents shall be identified by a legend with sufficient additional details such as temperature, pressure, etc., as are necessary to identify the hazard.*”

3. 40 C.F.R. § 68.67(c) requires the process hazard analysis (PHA) to address: (1) The hazards of the process; (3) Engineering and administrative controls applicable to the hazards and their interrelationships such as appropriate application of detection methodologies to provide early warning of releases. (Acceptable detection methods might include process monitoring and control instrumentation with alarms, and detection hardware such as hydrocarbon sensors.); (4) Consequences of failure of engineering and administrative controls; and (5) Stationary source siting.

- At the time of the inspection, the 2019 Letdown PHA, including the facility siting checklist, did not identify loss of power or extreme weather events as a potential hazard. At the time of the PHA, the operation of the Emergency Scrubber was only accessible from certain external locations during a loss of power. On July 1, 2020, the facility experienced a power outage due to a severe thunderstorm, which resulted in a release due to the shutdown of certain equipment. Because of the severe nature of the thunderstorm and the location of the controls for the scrubber, facility personnel were delayed for approximately one hour in starting the scrubber. Due to the results of the severe weather and loss of power, inspectors believe that the 2019 Letdown PHA did not adequately address loss of power and extreme weather as hazards, electrical power as an engineering control, the consequences of failure of engineering controls, and stationary source siting.

4. 40 C.F.R. § 68.67(e) requires the owner or operator to establish a system to promptly address the PHA team's findings and recommendations; assure that the recommendations

are resolved in a timely manner and that the resolution is documented; document what actions are to be taken; complete actions as soon as possible; develop a written schedule of when these actions are to be completed; and communicate the actions to operating, maintenance and other employees whose work assignments are in the process and who may be affected by the recommendations or actions.

- At the time of the inspection, action item #101057 from the 2014 Letdown Area PHA states, “Consider automating compressor monitoring on DCS.” This action item had a deadline of July 1, 2022 and was still listed with open status at the time of the inspection.
5. 40 C.F.R. § 68.69(a) requires the owner or operator to develop and implement written operating procedures that provide clear instructions for safely conducting activities involved in each covered process consistent with the process safety information and shall address at least the following elements: (3) Safety and health considerations; (ii) Precautions necessary to prevent exposure, including engineering controls, administrative controls, and personal protective equipment.
- At the time of the inspection, there were two incidents reported in the facility’s RMP submission accident history that involved personnel who were injured due to their not wearing proper personal protective equipment (PPE). “Incorrect or incomplete procedures” was identified as a root cause in each incident investigation, with related corrective actions to revise procedures to clarify PPE requirements.
 - 2018-INC-0227 occurred on August 7, 2018, when an employee was burned by liquid ammonia after opening rather than tightening a valve on a liquid ammonia line. The employee was not wearing a respirator, chemical jacket, or gloves that were available nearby. The facility identified “Incorrect or incomplete procedures” as a root cause and identified two related corrective actions:
 - “Issue memo stating that full chemical PPE including respirator, full chemical suit, and chemical gloves is required during connection, disconnect, and any activity on the railcar before the plugs have been inserted in the load/vapor lines.”
 - “Revise all applicable procedures to clearly state PPE requirements and recommended tools. Remove language from existing standard operating procedures (SOPs) that allow use of chemical apron.”
 - 2019-INC-0111 occurred March 11, 2019, when an employee was exposed to aqua ammonia in their eye. The employee was not wearing a respirator and had raised their face shield. The facility identified “Incorrect or incomplete procedures” as a root cause and identified two related corrective actions:
 - “Revise SOP 32SP215 to clarify PPE requirements and to include detailed instructions on a bleeding load hose.”
 - “Issue a department memo stating PPE requirements for disconnecting and bleeding ammonia trailers.”

6. 40 C.F.R. § 68.73(d)(1) requires inspections and tests to be performed on process equipment.
 - At the time of the inspection, the 2022 Compliance Audit identified two of the safeguards for the ammonia PHA that were not included in the facility's inspection program. The inspection team reviewed the facility's inspection tracking system records and confirmed that these safeguards were not included in the facility's inspection program:
 - LSL-201 Low level overhead knockout drum CO2 Stripper, and
 - DPIC-3310 Roots Blower DP Alarm.
7. 40 C.F.R. § 68.79(a) requires the owner or operator to certify that they have evaluated compliance with the provisions of this subpart at least every three years to verify that procedures and practices developed under this subpart are adequate and are being followed.
 - Action item #105546 from the 2019 Compliance Audit had a target completion date of 12/31/2019 and was open at the time of the inspection. The 2022 Compliance Audit did not identify the open action item from the 2019 Compliance Audit as a finding or continued action item.
 - The facility's description of the RMP programs and practices section states, "The audit team reviewed the findings and recommendations from the two previous audits. All the findings and recommendations are recorded in OE Suites. The plant resolved and implemented action items from previous compliance audit recommendations in a timely manner."
8. 40 C.F.R. § 68.79(d) requires the owner or operator to promptly determine and document an appropriate response to each of the findings of the compliance audit, and document that deficiencies have been corrected.
 - Action item #105546 from the 2019 Compliance Audit had a target completion date of 12/31/2019 and was open at the time of the inspection. This open action item suggests that the facility did not promptly document an appropriate response to the finding and document that the deficiency has been corrected.
9. 40 C.F.R. § 68.81(e) requires the owner or operator to establish a system to promptly address and resolve the incident report findings and recommendations. Resolutions and corrective actions shall be documented.
 - 2020-INC-0258 had three action items due in 2020 and two action items due in 2021 that were past due and open at the time of the inspection. The incident was related to a leak of aqua ammonia and potential corrosion issues associated with the C aqua tank.

- 2021-INC-0314 occurred on April 26, 2021 and the facility indicated the incident investigation began on April 27, 2021. However, the Root Cause Analysis (RCA) for the incident was not started until May 3, 2022 and finalized on May 12, 2022, over a year after the incident occurred.

10. 40 C.F.R. § 68.85(b) requires the hot work permit to document that the fire prevention and protection requirements in 29 C.F.R. 1910.252(a) have been implemented prior to beginning the hot work operations; it shall indicate the date(s) authorized for hot work; and identify the object on which hot work is to be performed. The permit shall be kept on file until completion of the hot work operations.

- At the time of the inspection, the facility had similar compliance audit findings related to hot work in both the 2019 and 2022 compliance audits, where hot work permits were found to be missing signatures, firewatch assignments and continuous air monitoring were not performed, and the issued and expired times on the permit are identical. These repeat issues indicate fire prevention and protection requirements in 29 C.F.R. 1910.252(a) are not being implemented adequately.

Inspection Report,

Prepared by:

BETHANY TERPIN

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JASON DRESSLER

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