

United States Environmental Protection Agency / Region 4

Risk Management Program Inspection Report

Sysco Nashville, LLC

Nashville, Tennessee

June 6, 2023

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 ammonia refrigeration process at the Sysco Nashville, LLC (Sysco) facility located in Nashville, Davidson County, Tennessee. This facility was selected for inspection because it hadn't been inspected under the RMP within the last five years. The inspection, which was conducted on June 6, 2023, 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 Sysco facility is located in Nashville, Tennessee. The facility uses anhydrous ammonia as a refrigerant to store food products for distribution. The refrigeration process, consisting of piping, valves, and equipment, cycles ammonia through various physical states (high pressure liquid, low pressure liquid, low pressure vapor, high pressure vapor, then back to high pressure liquid) in order to provide refrigeration for cold food storage. The process is regulated as program level 3. According to facility records, the facility has a maximum of 21,000 pounds of anhydrous ammonia on site. The ammonia refrigeration process at the facility is 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: Amy Federoff, Eastern Research Group (ERG)

Inspector: Marissa Maier, ERG

Date of Facility Visit: June 6, 2023

Facility Identification

Name: Sysco Nashville, LLC

Street Address: 1 Hermitage Plaza

City: Nashville County: Davidson State: Tennessee Zip: 37209

EPA Facility ID No: 100000176748

Dun & Bradstreet (D&B) No: 59158634

Latitude: 36.180374

Longitude: -86.880788

Name, address and phone of corporate parent company:

Owner/Operator: Sysco Corporation

Mailing Address: 1390 Enclave Parkway

City: Houston State: Texas Zip: 77077

Phone: NA

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

Name: Duane Coble

Title: Safety Director

Phone: N/A

Email: gerald.coble@sysco.com

Name and title of emergency contact:

Name: Todd White

Title: Facility Manager

Day phone: (615) 350-2191

24-hour Phone: (615) 289-0676

Email: white.todd@sysco.com

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

Name: Graham Miller

Title: Safety Director

Phone: (615) 350-2210

Email: graham.miller@sysco.com

Name: Todd White

Title: Fleet and Facility Manager

Phone: (615) 350-2191

Email: white.todd@sysco.com

Note: This is not a union facility.

Date and Program Levels of Submitted Risk Management Plan

Date of initial submission: October 02, 2001

Date of most recent submissions: April 14, 2021

Process: Refrigeration System

Process ID: 1000117853

Program Level as reported in RMP: 3

NAICS code: 49312 (Refrigerated Warehousing and Storage)

3.0 Observations

The inspection of the Sysco 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. The discussion was followed by a tour of the facility’s ammonia refrigeration process areas. EPA inspectors then requested paperwork associated with the facility’s Risk Management Plan (RMPlan). The documents were reviewed by EPA inspectors on-site and provided for review off-site. An inspection out-brief was conducted where EPA inspectors described their observations. Observations from the RMP inspection at the Sysco facility are discussed below:

1. 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 (RAGAGEP).
 - At the time of the inspection, the Inspection Team observed the use of ammonia piping, located in the ceiling of the Ammonia Machinery Room (AMR) above the auto purger, as the primary support for other ammonia piping. The use of piping to support other piping is inconsistent with the following RAGAGEP:
 - Section 321.1.1 of American Society of Mechanical Engineers (ASME) B31.3 (2014) states, “The layout and design of piping and its supporting elements shall be directed toward preventing the following:
 - (a) piping stresses in excess of those permitted in this Code
 - (b) leakage at joints
 - (c) excessive thrusts and moments on connected equipment (such as pumps and turbines)
 - (d) excessive stresses in the supporting (or restraining) elements
 - (e) resonance with imposed or fluid-induced vibrations
 - (f) excessive interference with thermal expansion and contraction in piping which is otherwise adequately flexible
 - (g) unintentional disengagement of piping from its supports
 - (h) excessive piping sag in piping requiring drainage slope
 - (i) excessive distortion or sag of piping (e.g., thermoplastics) subject to creep under conditions of repeated thermal cycling

- (j) excessive heat flow, exposing supporting elements to temperature extremes outside their design limits.”
 - Section 13.4.2 of American National Standards Institute/International Institute of Ammonia Refrigeration (ANSI/IIAR) 2 (2014) states, “Refrigerant piping shall be isolated and supported to prevent damage from vibration, stress, corrosion, and physical impact.”
 - Section 13.4.4 of ANSI/IIAR 2 (2014) states, “Anchors, their attachment points, and attachment methods shall be designed to support applied loads.”
 - Section 7.2.7.1 of ANSI/IIAR 9 (2020) states, “General. Piping, tubing, and equipment shall be supported to prevent excessive vibration and movement.”
- At the time of the inspection, the Inspection Team observed that ammonia piping on the exterior of the building associated with the fill port was not adequately labeled to indicate contents, direction of flow, physical state (i.e., liquid or vapor), and pressure level (i.e., high or low). Lack of adequate pipe labeling is inconsistent with the following RAGAGEP:
 - Section 5.14.5 of ANSI/IIAR 2 (2014) and Section 7.2.9.4 of ANSI/IIAR 9 (2020) states, “Ammonia piping mains, headers, and branches shall be identified with the following information:
 - a) ‘AMMONIA’
 - b) physical state of the ammonia
 - c) relative pressure level of ammonia, being low or high as applicable
 - d) Pipe service, which shall be permitted to be abbreviated
 - e) direction of flow.”
 - 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.”
 - Section 4.7.6 of IIAR Bulletin 109 (1997) states, “All ammonia piping should have appropriate pipe markers attached to indicate the use of the pipe and arrows to indicate the direction of flow, such as in IIAR Bulletin 114, ‘Guidelines for: Identification of Ammonia Refrigeration Piping and System Components’.”
- At the time of the inspection, the Inspection Team observed that the emergency eyewash station and safety shower outside the AMR was obstructed by pallet jacks. As a result, it was inaccessible to personnel leaving the AMR. Obstruction of eyewash stations and/or emergency safety showers is inconsistent with the following RAGAGEP:
 - Sections 7.4.2 of American National Standards Institute/International Safety Equipment Association (ANSI/ISEA) Z358.1 (2009) states, “It is the

installer's responsibility to ensure that combination units shall: Be in accessible locations that require no more than 10 seconds to reach. The combination unit shall be located on the same level as the hazard and the path of travel shall be free of obstructions that may inhibit its immediate use.”

- Section 6.7.1 of ANSI/IIAR 2 (2014) states, “Each machinery room shall have access to a minimum of two eyewash/safety shower units, one located inside the machinery room and one located outside of the machinery room, each meeting the requirements in Section 6.7.3.”
- Section 6.7.3 of ANSI/IIAR 2 (2014) states, “Installation Standard. Emergency eyewash/safety shower unit installations shall comply with ANSI/ISEA Z358.1.”
- Section 7.3.7.1 of ANSI/IIAR 9 (2020) states, “Each machinery room shall have access to a minimum of two eyewash/safety shower units, one located inside the machinery room and one located outside of the machinery room, each meeting the requirements in Section 7.3.7.3.”
- Section 7.3.7.3 of ANSI/IIAR 9 (2020) states, “Emergency eyewash/safety shower unit installations shall comply with ANSI/ISEA Z358.1.”
- At the time of the inspection, the Inspection Team observed the storage of boxes and wooden pallets inside of the AMR. The storage of combustibles in the AMR is inconsistent with the following RAGAGEP:
 - Section 6.4 of ANSI/IIAR 2 (2014) and Section 7.3.4 of ANSI/IIAR 9 (2020) states, “Combustible materials shall not be stored in machinery rooms outside of approved fire-rated storage containers.”
- At the time of the inspection, the Inspection Team observed that the pressure relief valve (PRV) vent pipe off the high-pressure receiver was not in contact with the pipe support. Operation of discharge piping without appropriate supports is inconsistent with the following RAGAGEP:
 - Section 15.4.6 of ANSI/IIAR 2 (2014) states, “Discharge piping shall be supported in accordance with Section 13.4.”
 - Section 13.4.2 of ANSI/IIAR 2 (2014) states, “Refrigerant piping shall be isolated and supported to prevent damage from vibration, stress, corrosion, and physical impact.”
 - Section 7.2.7.1 of ANSI/IIAR 9 (2020) states, “Piping, tubing, and equipment shall be supported to prevent excessive vibration and movement.”
- At the time of the inspection, the Inspection Team observed inadequate bump protection on an oil drain line off of the high-temperature recirculator (HTR-1) in the AMR. Failure to protect ammonia-containing equipment from physical damage is inconsistent with the following RAGAGEP:

- Section 5.17.1.1 of ANSI/IIAR 2 (2014) states, “Protection from Physical Damage. Where ammonia-containing equipment is installed in a location subject to physical damage, guarding or barricading shall be provided.”
- Section 13.4.2 of ANSI/IIAR 2 (2014) states, “Refrigerant piping shall be isolated and supported to prevent damage from vibration, stress, corrosion, and physical impact.”
- Section 7.2.7.1 of ANSI/IIAR 9 (2020) states, “Where ammonia-containing equipment is installed in a location subject to physical damage, guarding or barricading shall be provided.”
- Section 11.1 of the American National Standards Institute/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ANSI/ASHRAE) 15 (2016) states, “Means shall be taken to adequately safeguard piping, controls, and other refrigerating equipment to minimize possible accidental damage or rupture by external sources.”
- The facility’s Engine Room Ventilation Calculations (“Sysco Nashville Engine Room Ventilation Calculations (1).pdf”) state that the facility typically keeps the north engine room makeup air damper shut so that “airflow is from outside to south engine room to north engine room to outside via GEF-07.” On the provided mechanical drawings that show the physical layout for the ventilation in the AMRs (“MH203_MECHANICAL ENLARGED PLANS Rev.2 markup.pdf”), GEF-07 or general exhaust fan #7, is located between the South AMR and the North AMR. GEF-07 provides the normal, continuous exhaust for both engine rooms. As a result, when the north engine room makeup air damper is shut, there is limited air flow to the northern portion of the north engine room (sections labeled M, N, and O in “MH203_MECHANICAL ENLARGED PLANS Rev.2 markup.pdf”). Operating AMR mechanical ventilation systems in such a way resulting in the potential for short-circuiting of make-up air directly to the ventilation exhaust is inconsistent with the following RAGAGEP:
 - Section 6.14.5.2 of ANSI/IIAR 2 (2014) states, “Make-up supply locations in the machinery room shall be positioned to prevent short-circuiting of the make-up air directly to the exhaust.”
 - Section 7.3.14.3(2) of ANSI/IIAR 9 (2020) states, “Make-up supply locations in the machinery room shall prevent short-circuiting of the make-up air directly to the exhaust.”
- At the time of the inspection, the Inspection Team observed that the AMR does not have a sign that states the name and address of the installer, the amount of ammonia, the lubricant identity and amount, and the field test pressure applied for the refrigeration system. This lack of signage is inconsistent with the following RAGAGEP:
 - Section 11.2.1 of ANSI/ASHRAE 15 (2016) states, “Each refrigerating system erected on the premises shall be provided with a legible permanent sign, securely attached and easily accessible, indicating:

- a. the name and address of the installer,
 - b. the refrigerant number and amount of refrigerant,
 - c. the lubricant identity and amount, and
 - d. the field test pressure applied.”
 - Section 53.2.4.1 of National Fire Protection Association (NFPA) 1 (2018) states, “General. Refrigeration units or systems shall be provided with appropriate hazard identification signs in accordance with NFPA 704, emergency operational signs, charts, and labels in accordance with the mechanical code, and the following:
 - (1) Name and address of the manufacturer or installer
 - (2) Type and total number of pounds of refrigerant contained in the system
 - (3) Field test pressure applied.”
2. 40 C.F.R. § 68.67(g) requires the owner or operator to retain process hazards analyses (PHAs) and updates or revalidations for each process covered by this section, as well as the documented resolution of recommendations described in paragraph (e) of this section for the life of the process.
- In 2020/2021, the facility upgraded its ammonia refrigeration system following a tornado that damaged the refrigeration equipment on the facility roof. The facility replaced the damaged rooftop equipment with sixteen new penthouse/evaporator units. Despite reusing several existing compressors and pressure vessels, the facility reclassified the ammonia system as a new system following the project. At the time of the inspection, the inspection team requested copies of the “Two most recent process hazard analyses and the current status of any action items.” During the inspection, site personnel indicated that their contractor had “archived” all PHA information prior to the 2020/2021 ammonia refrigeration system upgrade project. However, the facility did not provide any PHA documentation prior to 2021, which indicates that it may not be retaining PHA documents for the life of the process.
3. 40 C.F.R. § 68.73(d)(1) requires the owner or operator to perform inspections and tests on process equipment; 40 C.F.R. § 68.73(d)(3) requires the frequency of the inspections and tests of process equipment to be consistent with applicable manufacturers’ recommendations and good engineering practices, and more frequently if determined to be necessary by prior operating experience; and 40 C.F.R. § 68.73(d)(4) requires the owner or operator to document each inspection and test that has been performed on process equipment. The documentation shall identify the date of the inspection or test, the name of the person who performed the inspection or test, the serial number or other identifier of the equipment on which the inspection or test was performed, a description of the inspection or test performed, and the results of the inspection or test.
- At the time of the inspection, site personnel indicated that the facility and their ammonia contractor, Innovation Refrigeration, decommissioned the facility’s old ammonia refrigeration system in 2020 after a tornado damaged the equipment located on the facility roof. The facility began operating what it classified as a new ammonia

refrigeration system in 2021. This system consisted of sixteen new penthouse/evaporator units; however, the facility reused several existing compressors and pressure vessels, including the High-Pressure Receiver which was built in 1992 (see “Manufacturer Data Report HPR NB# 106518.pdf”). The inspection team requested historical mechanical integrity inspection and testing records for the older, legacy pressure vessels still present and operational at the site following the 2020/2021 ammonia refrigeration system upgrade project. Based on the documentation that the inspection team has received to-date, the facility has not produced/maintained documentation that they have conducted non-destructive testing on these older pressure vessels at the frequency dictated by the following RAGAGEP:

- Section 6.5.1.1 of American Petroleum Institute (API) 510 (2014) states that “Unless justified by a risk-based inspection (RBI) assessment, the period between internal or on-stream inspections and thickness measurement inspections shall not exceed one-half the remaining life of the vessel or 10 years, whichever is less.”

4. 40 C.F.R. § 68.73(d)(2) requires inspection and testing procedures to follow RAGAGEP.

- Work orders for annual ammonia system inspections indicate that the emergency stop (E-stop) button for the ammonia refrigeration system was tested in January 2022. Subsequent testing did not occur until nearly eighteen months later on June 20, 2023, after the on-site inspection. Annual testing of the E-stop button is consistent with the following RAGAGEP:
 - Table 12.2 of ANSI/IIAR 6 (2019) specifies that owners/operators of ammonia refrigeration systems shall “functionally test emergency shutdown switch” annually.
- The facility’s ammonia sensor calibration reports indicate that mechanical room sensor 1 is tested biannually using 300 ppm calibration gas (see May 19, 2022 report “WO#149301_Sysco Nashville, LLC (2).pdf” and December 18, 2022 report “WO #163064_Sysco Nashville - Nashville, TN (1).pdf”). The provided electrical commissioning document (“Electrical Sysco Nashville Commissioning Checklist 05.11.2021.pdf”) indicates that sensor 1 (“Mech room 1”) is a Danfoss Basic gas detection unit with model number EC 300. Per Danfoss’s fact sheets, an EC 300 has a detection range of 0-300 ppm. The Danfoss Basic Users Guide recommends calibrating sensors within 30-90% of the detection range, which would be 90-270 ppm. As a result, the use of 300 ppm calibration gas is outside the manufacturer’s recommendation for the calibration of mechanical room sensor 1. Similarly, the provided electrical commissioning document (“Electrical Sysco Nashville Commissioning Checklist 05.11.2021.pdf”) indicates that the penthouse sensors (“PH1” – “PH16”) are model number EC 100 Danfoss Basic gas detection units with a measuring range of 1-100 ppm. The penthouse sensors are tested biannually using 100 ppm calibration gas (see May 19, 2022 report “WO#149301_Sysco Nashville, LLC (2).pdf” and December 18, 2022 report “WO #163064 Sysco Nashville - Nashville, TN (1).pdf”). As a result, the gas used to calibrate the penthouse sensors

also appears to be outside the manufacturer's recommendation of 30-90% of the detection range (30-90 ppm).

- Section 11.6.3 of ANSI-ASHRAE 15 (2016) states, "Periodic Tests. Detectors, alarms, and mechanical ventilating systems shall be tested in accordance with manufacturers' specifications and the requirements of the authority having jurisdiction."
5. 40 C.F.R. § 68.93(b) requires coordination to include providing to the local emergency planning and response organizations: The stationary source's emergency response plan if one exists; emergency action plan; updated emergency contact information; and other information necessary for developing and implementing the local emergency response plan. For responding stationary sources, coordination shall also include consulting with local emergency response officials to establish appropriate schedules and plans for field and tabletop exercises required under § 68.96(b). The owner or operator shall request an opportunity to meet with the local emergency planning committee (or equivalent) and/or local fire department as appropriate to review and discuss those materials.
- During the inspection, the site contact indicated that the facility has an annual physical meeting with the local Fire Department (FD); however, the facility has not provided the FD with a copy of the facility's Anhydrous Ammonia Emergency Response Plan, as specified and required by 40 C.F.R. § 68.93(b).

Inspection Report,

Prepared by:

**JORDAN
NOLES**

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Jordan Noles, Inspector
North Air Enforcement Section
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Jason Dressler, Section Chief
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