

United States Environmental Protection Agency / Region 4

Risk Management Program Inspection Report

Cargill Meat Solutions Corporation

Nashville, Tennessee

June 7, 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 Cargill Meat Solutions Corporation facility located in Nashville, Davidson County, Tennessee. This facility was selected for inspection because it had never been inspected under the RMP. The inspection, which was conducted on June 7, 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

Cargill Meat Solutions Corporation is located in Nashville, Tennessee. This facility uses anhydrous ammonia for refrigeration purposes. 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 ammonia 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 7, 2023

Facility Identification

Name: Cargill Meat Solutions Corporation

Street Address: 2621 Eugenia Ave.

City: Nashville County: Davidson State: Tennessee Zip: 37211

EPA Facility ID No: 1000 0021 2343

Dun & Bradstreet (D&B) No: 122828317

Latitude: 36.114678

Longitude: -86.757292

Name, address and phone of corporate parent company:

Owner/Operator: Cargill Incorporated

Mailing Address: PO Box 9300

City: Minneapolis State: Minnesota Zip: 55440

Phone: 800-227-4455

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

Name: Dick Koopman

Title: General Manager

Phone: N/A

Email: Dick_Koopman@cargill.com

Name and title of emergency contact:

Name: Victoria Eastman

Title: EHS Manager

Day phone: (316) 680-8945

24-hour Phone: (316) 680-8945

Email: Victoria_Eastman@cargill.com

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

Name: Victoria Eastman

Title: EH&S Manager

Phone: (316) 680-8945

Email: Victoria_Eastman@cargill.com

Name: Kenny Pearson

Title: Process Safety

Phone: (402) 942-5571

Email: Kenny_Pearson@cargill.com

Name: Maddie Zellman

Title: EH&S

Phone: (612) 669-2141

Email: Maddie_Zellman@cargill.com

Name: Jeremy Wharton
Title: Utilities Operations Leader
Phone: (316) 755-5627
Email: Jeremy_Wharton@cargill.com

Name: Devin Coon
Title: Pepperoni Plant Operations Manager
Phone: (740) 418-3929
Email: Devin_Coon@cargill.com

Name: Traci Earls
Title: Complex Manager
Phone: (316) 650-3821
Email: Traci_Earls@cargill.com

Name: Amanda Thompson
Title: General Manager
Phone: (570) 721-1481
Email: Amanda_Thompson@cargill.com

Name: Kourtney Daniels
Title: FSOR Superintendent
Phone: (615) 961-7020
Email: Kourtney_Daniels@cargill.com

Name: Rhonda Schmidt
Title: Process Safety Lead
Phone: (806) 672-4600
Email: Rhonda_Schmidt@cargill.com

Name: Thomas Griffith
Title: Plant Operations Manager
Phone: (615) 393-9127
Email: Thomas_Griffith@cargill.com

Name: Brandon Holcomb
Title: Utilities Supervisor
Phone: (815) 703-2132
Email: Brandon_Holcomb@cargill.com

Name: Roberto Castillo
Title: Maintenance Manager
Phone: (402) 942-4805
Email: Robert_Castillo@cargill.com

Note: This is not a union facility.

Date and Program Levels of Submitted Risk Management Plan

Date of initial submission: August 27, 2010 (As Five Star Custom Foods), March 26, 2018 (As Cargill Meat Solutions Corporation)

Date of most recent submissions: March 24, 2023

Process: Refrigeration System

Process ID: 1000130532

Program Level as reported in RMP: 3

NAICS code: 311612 (Meat Processed from Carcasses)

3.0 Observations

The inspection of Cargill Meat Solutions Corporation 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 Cargill Meat Solutions Corporation 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).
 - During the facility walk-through, the Inspection Team observed a gap beneath the primary door to the ammonia machinery room (AMR). The following RAGAGEP specify that machinery room doors should be tight-fitting:
 - Section 6.10.2 of the American National Standards Institute/International Institute of Ammonia Refrigeration (ANSI/IIAR) 2 (2014) and Section 7.3.9.2 of ANSI/IIAR 9 (2020) states, “Machinery room doors shall be self-closing and tight fitting. Doors that are part of the means of egress shall be equipped with panic hardware and shall be side hinged to swing in the direction of egress for occupants leaving the machinery room. Where the machinery room is not provided with sprinklers, doors communicating with the building interior shall be 1-hour fire rated. Doors to the outdoors shall be fire-rated where required by the Building Code based on the fire rating required for exterior wall openings.”

- Section 8.11.2 of ANSI/American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) 15-2016 states, “Each refrigerating machinery room shall have a tightfitting door or doors opening outward, self-closing if they open into the building and adequate in number to ensure freedom for persons to escape in an emergency. With the exception of access doors and panels in air ducts and air-handling units conforming.”
- During the facility walk-through, the Inspection Team observed the use of ammonia piping, located at ceiling-level in the AMR above the low-temperature recirculator, as the primary support for other ammonia piping. Using piping as the primary support for other piping is inconsistent with the following RAGAGEP:
 - Section 321.1.1 of the 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 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.”

- During the facility walk-through, the Inspection Team observed a long stretch of unsupported, vertical ammonia piping running along the exterior of the building. This section of piping has multiple bends with no support. The presence and use of piping without adequate supports is inconsistent with the following RAGAGEP:
 - Section 321.1.1 of 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 ANSI/IIAR 2 (2014) states, “Refrigerant piping shall be isolated and supported to prevent damage from vibration, stress, corrosion, and physical impact.”
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 - 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.”
- During the facility walk-through, the Inspection Team observed pipes penetrating the AMR wall near the primary entry/egress door. The pipes were not adequately enclosed and sealed through AMR wall penetrations in accordance with the following RAGAGEP:

- Section 6.6.2 of ANSI/IIAR 2 (2014) states, “Pipes penetrating the machinery room separation shall be sealed to the walls, ceiling, or floor through which they pass in accordance with Section 6.2.1. Where Section 6.2.1 requires that the separation have a fire rating, pipe penetrations shall be fire stopped in accordance with the Building Code.”
- Section 7.3.6.2 of ANSI/IIAR 9 (2020) states, “Pipes penetrating the machinery room envelope shall be sealed to walls, ceilings, or floors through which they pass to prevent leakage of ammonia vapor to adjoining spaces and to maintain the fire rating of the machinery room envelope.”
- During the facility walk-through, the Inspection Team observed that the ammonia piping running along the top of the pepperoni-side of the facility roof was not adequately labeled. Lack of adequate pipe labeling for ammonia piping 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:
 1. ‘AMMONIA’
 2. Physical state of the ammonia
 3. Relative pressure level of ammonia, being low or high as applicable
 4. Pipe service, which shall be permitted to be abbreviated
 5. 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.”

- During the facility walk-through, the Inspection Team observed that the AMR did not have signage to indicate 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. Failure to post hazard identification signs with the ammonia manufacturer/installer and the quantity of ammonia in the refrigeration system 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 the 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”
- During the facility walk-through, the Inspection Team observed a permanent sump pump plugged into an outlet in the AMR through use of an extension cord rather than permanent electrical wiring. Use of extension cords to power permanent equipment is inconsistent with the following RAGAGEP:
 - Section 400.12.1 of NFPA 70 (2020) states, “Unless specifically permitted in 400.10, flexible cords, flexible cables, cord sets, and power supply cords shall not be used for the following:
 - (1) As a substitute for the fixed wiring of a structure
 - (2) Where run through holes in wall, structural ceilings, suspended ceilings, dropped ceilings, or floors
 - (3) Where run through doorways, windows, or similar openings
 - (4) Where attached to building surfaces
 - (5) Where concealed by walls, floors, or ceilings, or located above suspended or dropped ceilings
 - (6) Where installed in raceways, except as otherwise permitted in this code

(7) Where subject to physical damage”

- Section 11.1.5.6 of NFPA 1 (2015) states, “Extension cords shall not be used as a substitute for permanent wiring.”
- During the facility walk-through the Inspection Team observed that the facility did not have any ammonia sensors or alarms in the chiller/freezer areas that contain ammonia evaporators. Failure to provide ammonia detection and alarming capabilities in areas that have ammonia refrigeration equipment is inconsistent with the following RAGAGEP:
 - Section 7.2 of ANSI/IIAR 2 (2014) states, “Requirements for Non-machinery Room Spaces. Where an ammonia refrigeration system or equipment is installed outside of a machinery room, the area containing the system or equipment shall comply with this section {...}”
 - Section 7.2.3. of ANSI/IIAR 2 (2014) states, “Level detection and alarm shall be provided in accordance with Section 17.7.1. The detection and alarm system shall comply with Chapter 17.”
 - Section 17.7.1. of ANSI/IIAR 2 (2014) states, “Level 1 Ammonia Detection and Alarm. Level 1 ammonia detection and alarm shall have the following features:
 - At least one ammonia detector shall be provided in the room or area.
 - The detector shall activate an alarm that reports to a monitored location so that corrective action can be taken at an indicated concentration of 25 ppm or higher.”
- During the facility walk-through the Inspection Team observed ammonia piping with breached/damaged insulation as well as uninsulated piping with frost buildup. Uninsulated pipe is inconsistent with the following RAGAGEP:
 - Section 5.10.1 of ANSI/IIAR 2 (2014) and Section 7.2.6.1 of ANSI/IIAR 9 (2020) state, “Condensation and Frost Control. Piping and equipment surfaces not intended for heat exchange shall be insulated, treated, or otherwise protected to mitigate condensation and excessive frost buildup where the surface temperature is below the dew point of the surrounding air during normal operation and in an area where condensation and frost could develop and become a hazard to occupants or cause damage to the structure, electrical equipment, or refrigeration system.”
- During the facility walk-through the Inspection Team observed multiple segments of uninsulated ammonia piping with surface damage and corrosion inside of the

AMR and on ammonia piping running along the building below the walkway around the roof-mounted condensers, EC-1 and EC-2. Piping with surface damage and corrosion shall be further evaluated and treated in accordance with the following RAGAGEP:

- Section 11.1.1 of ANSI/IIAR 6 (2019) states, “Where pitting, surface damage, general corrosion, or a combination thereof, is visually observed on a metal surface of the piping, deficient areas shall be further evaluated per Sections 11.1.1.1 - 11.1.1.3.”
 - Section 11.1.1.1 of ANSI/IIAR 6 (2019) states, “Where pitting, surface damage, general corrosion, or a combination thereof, has materially reduced the remaining pipe wall thickness, the piping remaining wall thickness shall be measured using appropriate techniques.”
 - Section 11.1.1.2 of ANSI/IIAR 6 (2019) states, “Where pitting, surface damage, general corrosion, or a combination thereof, has not materially reduced the remaining pipe wall thickness, the piping metal surface shall be cleaned and recoated to arrest further deterioration.”
 - Section 11.1.1.3 of ANSI/IIAR 6 (2019) states, “Where pitting, surface damage, general corrosion, or a combination thereof, has materially reduced the remaining pipe wall thickness beyond the owner's established acceptance criteria, the piping shall be evaluated to determine suitability for continued operation.”
- 2. 40 C.F.R. § 68.67(e) requires the owner or operator to establish a system to promptly address the 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.
 - The facility conducted a revalidation process hazard analysis (PHA) for its ammonia refrigeration system in May 2020. The facility conducted a separate PHA for the pepperoni line expansion project (“Project Mario”) in 2017. The “Nashville 2020 PHA Recommendation Tracking” table that the facility produced at the time of the inspection, indicated that the facility still had 32 open action items (of 113 total), seven of which were identified during the 2017 PHA for the pepperoni line expansion. Additionally, one of the action items from the November 2021 RMP compliance audit was to close out remaining action items related to findings from the 2020 PHA. Despite these recommendations, numerous PHA action items remained open more than eighteen months after the

November 2021 RMP compliance audit at the time of the onsite inspection. Additionally, the PHA tracking table does not provide an estimated completion data/completion schedule for the remaining open action items.

3. 40 C.F.R. § 68.69(a)(2) 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:

(2) Operating limits:

(i) Consequences of deviation; and

(ii) Steps required to correct or avoid deviation.

- The facility's operating procedures for Receiving Ammonia & Charging Ammonia and V-5 Low Temperature Recirculator Oil Pot Draining do not reference or address the operating limits for the associated equipment, nor do they specify consequences of deviation and steps required to correct or avoid deviations.

4. 40 C.F.R. § 68.69(a)(3)(iii) 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:

(iii) Control measures to be taken if physical contact or airborne exposure occurs.

- The facility's operating procedures for Receiving Ammonia & Charging Ammonia and V-5 Low Temperature Recirculator Oil Pot Draining do not address any control measures to be taken if physical contact or airborne exposure to ammonia occurs.

5. 40 C.F.R. § 68.71(b) requires refresher training to be provided at least every three years, and more often if necessary, to each employee involved in operating a process to assure that the employee understands and adheres to the current operating procedures of the process. The owner or operator, in consultation with the employees involved in operating the process, shall determine the appropriate frequency of refresher training; and 40 C.F.R. § 68.71(c) requires the owner or operator to ascertain that each employee involved in operating a process has received and understood the training required by this paragraph. The owner or operator shall prepare a record which contains the identity of the employee, the date of training, and the means used to verify that the employee understood the training.

- The facility provided training documentation for Walt Valovich, which documented that he received his initial "On the Job" training in 2012. The facility also provided certificates for refresher trainings that Walt Valovich completed in

2022 and 2023. The facility did not provide documentation that Walt Valovich completed refresher trainings every three years between his initial training in 2012 and his subsequent refresher training completed in 2022.

6. 40 C.F.R. § 68.73(d)(2) requires inspection and testing procedures to follow RAGAGEP.
 - The facility's Pressure Relief Valve (PRV) List indicates that the V-5 (low-temperature recirculator vessel) PRV was installed in November 2014 and was due to be replaced in November 2019. Five-year replacement or recertification of the PRVs is consistent with the following RAGAGEP:
 - Table 13.1 of ANSI/IIAR 6 (2019) specifies that a "Time-based frequency PRV recertification or replacement" shall occur five years from installation.
7. 40 C.F.R. § 68.73(e) requires the owner or operator to correct deficiencies in equipment that are outside acceptable limits (defined by the process safety information in § 68.65) before further use or in a safe and timely manner when necessary means are taken to assure safe operation.
 - In December 2019, the facility contracted with DBI, Inc., to conduct baseline non-destructive testing as part of its five-year mechanical integrity inspection. The testing included the compressors, condensers, dryers & fermentators, evaporators, piping, refrigeration make-up air units, and pressure vessels. The mechanical integrity inspection generated a list of 93 total "considerations," which included updating missing seals/caulking; coating piping as needed; and repairing insulation on the HGD, HHTRL, HHTRS, HTRL, HTRS, ITRL, ITRS, LTRL, and LTRS header piping. Seventy-three (73) of these recommendations were still open/unresolved at the time of the inspection in June 2023.
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.
 - The facility conducted its last compliance audit in November 2021. The attached recommendation/action item tracking table indicates that nine (of over 80) findings/action items remain open, including the following: "A review of the 2020 PHA Findings in Enablon indicated 64 PHA findings remain open. PHA action items are required to be closed within the CPG PHA standard, non-capital findings within 6 months and capital required findings shall be closed within 18 months." Inspectors confirmed that at the time of the inspection, the facility still had over 30 open action items from previous PHAs.
9. 40 C.F.R. § 68.93(a) requires coordination to occur at least annually, and more frequently if necessary, to address changes: At the stationary source; in the stationary source's emergency response and/or emergency action plan; and/or in the community emergency

response plan; and 40 C.F.R. § 68.93(c) requires the owner or operator to document coordination with local authorities, including: The names of individuals involved and their contact information (phone number, email address, and organizational affiliations); dates of coordination activities; and nature of coordination activities.

- The facility provided documentation of coordinating meetings with the local fire department (FD) that occurred on July 12, 2019, and in June 2022. The facility indicated that it did not meet with the FD in person in 2020 or 2021 due to the COVID 19 pandemic. However, the facility was unable to provide documentation that they coordinated with the FD virtually or by other means during this period.

Inspection Report,

Prepared by:

JUSTIN STARK Digitally signed by JUSTIN STARK
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Justin Stark, Inspector-In-Training
North Air Enforcement Section
U.S. EPA Region 4

**JORDAN
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Jordan Noles, Inspector
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Jason Dressler, Section Chief
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