



REGION 5

CHICAGO, IL 60604

MEMORANDUM

SUBJECT: CLEAN AIR ACT INSPECTION REPORT
Milk Specialties Global, Fond du Lac, Wisconsin

FROM: Erin DuMontelle, Environmental Engineer
AECAB (MI/WI)

THRU: Sarah Marshall, Section Supervisor
AECAB (MI/WI)

TO: File

BASIC INFORMATION

Facility Name: Milk Specialties Global (the Facility)

Facility Location: 325 Tompkins Street, Fond du Lac, Wisconsin 54935

Date of Inspection: July 1, 2024

EPA Inspector(s):

1. Matthew Walters, Environmental Engineer
2. Erin DuMontelle, Environmental Engineer

Other Attendees:

1. William (Bill) Kraus – Environmental Health and Safety
2. Mike Artery – Director of Operations/Current Acting Plant Manager
3. Keith Lefeber – Project Engineer for Capital Projects

Contact Email Address: MArtery@milkspecialties.com, WKraus@milkspecialties.com

Purpose of Inspection: CAA 112(r) Inspection to assess compliance and investigate the ammonia release that occurred on June 18, 2024

Facility Type: Whey Processing Facility with Ammonia Refrigeration System

Regulations Central to Inspection: Chemical Accident Prevention Provisions, 40 C.F.R. Part 68; CAA Section 112(r)

Arrival Time: 10:00 AM Central

Departure Time: 2:50 PM Central

Inspection Type:

- ☒ Unannounced Inspection
- ☐ Announced Inspection

OPENING CONFERENCE

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

The following information was obtained verbally from Facility personnel unless otherwise noted.

Process Description:

Milk Specialties Global (MSG) processes the whey byproducts of cheese manufacturing and creates protein powders. The whey liquid feedstock comes in by trailer trucks. The raw material is placed in chilled vertical silos before being piped into the process where proteins, carbohydrates, and water are separated. MSG uses a nitric acid solution as a cleaning agent for process equipment.

The chilling system at the Facility is an anhydrous ammonia refrigeration process that uses glycol as the heat transfer fluid. The anhydrous ammonia system is a single stage refrigeration process with nine compressors that generate high pressure ammonia gas. Compressor operation is automatically controlled by PLCs based on refrigeration demand. The high-pressure ammonia gas is condensed to high pressure liquid (HPL) ammonia in three evaporative condensers. The HPL ammonia is collected in a High Pressure Receiver and subsequently expanded to provide cooling to the glycol. The Facility has five glycol chillers where glycol is cooled to approximately 30°F in plate and frame exchangers.

Staff Interview:

The Facility is a 24/7 operation and works on two rotating 12-hour shifts. There are 152 employees on site, but the main maintenance for the ammonia refrigeration system is done by a third-party contractor, Khulman Inc. Khulman maintains the database of inspection, testing, and maintenance records, and MSG did not have access to that database at the time of the inspection. Khulman typically comes onsite on a weekly basis or more frequently as needed. Daily rounds are performed by MSG, and those records are maintained by MSG. MSG is a non-responding source and relies on Khulman and the local fire department to respond to incidents.

2024 Anhydrous Ammonia Release:

On June 18, 2024, employees at the facility were working on the anhydrous ammonia refrigeration system to troubleshoot high compressor discharge pressure, with phone input from Khulman. At the time the release began, the maintenance manager was in the Engine Room at the Refrigeration Control Panel and a maintenance technician was working to replace the water pump filters for the evaporative condensers. The compressors in the engine room were cycling on due to the high discharge pressure. When screw compressor CP-4 cycled on, the oil filter assembly on the compressor failed to maintain its seal at a threaded connection, and oil was able to leak out; this allowed a path for ammonia to be released from the system. The incident oil filter was last replaced in January of 2024. The maintenance manager was able to escape without injury and notify those working outside of the Engine Room of the release. The maintenance manager had been recently promoted and not yet received operator training for the ammonia refrigeration process.

The maintenance supervisor was called to the Engine Room, and he pressed the E-Stop and switched the emergency ventilation system to "ON" at the main entrance to the compressor room following the current Emergency Procedure. The local fire rescue was called and Khulman also responded to the scene. Khulman was able to walk the Fond du Lac Fire Rescue (FDLFR) through the system to be able to close valves and isolate CP-4 to stop the ammonia leak. During the emergency, FDLFR noted that the emergency ventilation fans were not running and became concerned about a buildup of ammonia within the Engine Room. FDLFR issued a shelter-in-place order to nearby residents due to the concern that the buildup of ammonia could result in high concentrations being released into the atmosphere with potential harm to the surrounding community when starting to vent the Engine Room. The responders opened doors within the Facility to reduce the inside ammonia concentration. Khulman closed the king valve on the High-Pressure Receiver as part of its incident response. The Facility completed a refill of the system with 2,002 pounds of ammonia on June 19, 2024.

As part of its incident investigation, MSG determined that the root cause of the release was a failure at Compressor CP-4. Specifically, the threads on the oil filter were found to be flattened. MSG inspected and replaced similar oil filters on other compressors following the release; no other filters showed the same problem as the oil filter on CP-4. MSG determined that a secondary factor contributing to the incident was a shorted wire on the emergency ventilation fan control. MSG believes that the fan breaker tripped when the maintenance supervisor followed the posted emergency shutdown instructions by turning the fan to "ON." MSG determined that the emergency shutdown instructions should be updated since the ventilation fan is interlocked to the ammonia detection system and is also activated by pressing the E-stop.

2023 Nitric Acid Solution Spill:

On June 30, 2023, a truck was unloading a nitric acid solution in Bay 2 at the Facility. The truck was being unloaded by the contracted chemical company. During the unloading process, a break in the chemical supplier's transfer hose caused the nitric acid to be released. The acid sprayed onto nearby drums and caused a reaction between the materials. An employee noted a cloud forming in the loading dock and called for an evacuation of the building. FDLFR was notified and arrived on scene to help neutralize the area. Following the incident, MSG requested transfer hose quality assurance

procedures from the nitric acid solution supplier, but MSG has not received the requested documentation. Corrective actions that MSG performed in response to the incident included installing a splash curtain at Bay 2 and adding signage that restricts access during chemical unloading.

2022 Release from Acid Reuse Tank:

On April 7, 2022, a release of NO_x gas occurred from the Acid Reuse Tank at the Facility as a result of an unintended chemical reaction. Prior to the gas release MSG did not perform a rinse cycle that is intended to remove organic materials from process equipment. A chemical reaction occurred between a nitric acid cleaning solution and the residual organics that had not been rinsed. A plume started to come from the building as a result of the chemical reaction in the Acid Reuse Tank. Initially, the Facility believed the chemical fumes to be chlorine, as demonstrated by MSG's report to the National Response Center (NRC). FDLFR ordered an offsite evacuation for the surrounding area due to the high hazards of chlorine. MSG subsequently determined that it was not possible to form chlorine in the Acid Reuse Tank. Corrective actions taken by MSG in response to the incident included programming changes to ensure the rinse cycle is performed before the acid wash and only collecting acid wash for reuse from the process with lower solids content.

TOUR INFORMATION

EPA Toured the Facility: Yes

Data Collected and Observations:

Reuse Tank Area:

Inspectors observed that the Acid Reuse Tank was enclosed and vented. Facility personnel stated that, in response to the 2022 release, MSG enclosed the reuse tank. The piping that allows the tank to vent to atmosphere has an NO₂ sensor that is tied to a visual and audible alarm within the room.

Engine Room:

There are five access doors into the Engine Room. Inspectors observed that each exit door contains signage that has the instructions for Emergency Shutdown that include turning on the ventilation after pressing the E-stop. There is a Refrigeration Control Panel (RCP) that has a control screen for ammonia refrigeration process equipment, including compressors, condensers, and chillers. MSG does not currently utilize a data logging system to track the pressures and temperatures within the system; daily rounds are used to record values.

The compressor from the June 2024 incident, CP-4, was shut down and locked out at the time of the Inspection; there was a lockout tag on its control panel as well. The oil filter involved in the June 2024 incident was sitting next to the compressor and made available for inspection. The installation date written on the filter assembly was "1-18-24." The relief valves (RVs) on the CP-4 high stage discharge had a set pressure of 300 psig and a tag indicating an installation date of April 2020. A pressure transducer for oil pressure was located immediately downstream of the filter.

There is an E-Stop on the RCP as well as a second E-Stop located at the bottom of the stairs before exiting to the Outside Area. The main escape routes were noted on signage; the facility had recently updated the signage in March.

MSG stores chlorine dioxide cylinders for polisher water treatment in the Engine Room. Three cylinders were present at the time of the Inspection within an enclosure equipped with a gas detection system.

Outside Area:

The outside area is connected to the Engine Room and contains access to the High-Pressure Receiver (HPR), the Condensers, and a small building that contains the water pumps for the condensers. There is an E-stop located on the door leading into the Engine Room. The king valve is roughly six feet from ground level on the HPR. The RVs for the HPR were installed in May of 2019. The condensers sit on elevated platforms above the room containing the water pumps. There are two intake vents for the Engine Room with one located under the stairs to the condenser platform and the other near the HPR. The relief exhaust header from the engine room is accessible from the condenser platform, and it contains a sensor to measure the concentration of ammonia within the header. The entire outside area is fenced in; there was a large gate that is used to allow trailers through to refill ammonia and a smaller gate door used for individual access. The individual access door contains panic hardware to be able to exit.

Chemical Storage:

The facility has a room that is used for chemical storage. It is a mix of drums and intermediate bulk containers (IBCs) on pallets as well as larger storage tanks. The larger storage tanks are filled through piping that connects to the loading bays.

Loading Bays:

The facility has multiple bays that are able to be used for loading product. The bulk storage tank loading station is between Bay 1 and Bay 2 and contains ports for caustic and acid product tanks. There is an eye wash station and a plastic curtain that hangs between Bay 1 and Bay 2.

Photos and/or Videos: were taken during the inspection and are listed in Appendix A.

EPA used an Olympus Touch TG-6 digital camera to take photos.

Field Measurements: were not taken during this inspection.

RECORDS REVIEW

Current RMP states Pete Postuma is the Emergency Contact and RMP person for the Facility.

CLOSING CONFERENCE

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

Requested documents:

1. Mechanical integrity procedures, as required by 40 C.F.R. § 68.73(b)
2. The following testing and inspection records, as required by 40 C.F.R. § 68.73(d)(4):
 - a. Inspection and testing history for CP-4 oil pot and oil filter, including oil filter replacement records, for the last 3 years
 - b. Two most recent system functional test reports
 - c. Most recent calibration report for each ammonia sensor
 - d. Records from operator rounds covering the month of June 2024
3. Description of procedure for quality assurance/sign off for data recorded during operator rounds
4. The following operating procedures, as required by 40 C.F.R. § 68.69:
 - a. Emergency shutdown procedures
 - b. Fresh ammonia loading procedure
 - c. Procedure for replacing CP-4 oil filter
 - d. Line and equipment opening procedure (*i.e.*, line break procedure)
5. Relief system design and design basis for CP-4, as required by 40 C.F.R. § 68.65(d)(1)(iv)
6. Engine room ventilation system design, as required by 40 C.F.R. § 68.65(d)(1)(v)
7. Piping and instrumentation diagrams (P&IDs), as required by 40 C.F.R. § 68.65(d)(1)(ii)
8. Two most recent periodic evaluations of the performance of contractor Kuhlman, Inc., as required by 40 C.F.R. § 68.87(b)(5)
9. Scope of work for contractor Kuhlman, Inc.
10. Invoice showing quantity of ammonia added to the process following the accidental release
11. Documentation of the most recent coordination with the Fond du Lac Fire Department, as required by 40 C.F.R. § 68.93(c)
12. Site emergency action plan
13. Bulk chemical unloading procedures
14. Procedures for arrangement and storage of materials in the chemical storage room
15. Incident reports including documentation of any RCAs and corrective actions, as well as any associated Fond du Lac Fire Department reports, for the following:
 - a. Ammonia release on 6/18/24
 - b. Nitric acid spill on 6/30/23
 - c. Release from Acid Reuse Tank on 4/7/22

Concerns: EPA noted concerns regarding the facility's current operations:

1. A number of operators with access to the Engine Room have not been fully trained on the refrigeration equipment.
2. The company currently does not review the SOPs for contractors in regard to their equipment management.
3. There were PRVs that had been past their expiration date.
4. The exit signage currently notes incorrect information.
5. The ventilation system tripped during the previous incident.

DIGITAL SIGNATURES

Report Author:

 Digitally signed by Dumontelle,
Erin
Date: 2024.08.20 11:28:24
-05'00'

Section Supervisor:

**SARAH
MARSHALL**  Digitally signed by SARAH
MARSHALL
Date: 2024.08.20 14:39:26
-05'00'

APPENDICES

Appendix A: Digital Image Log

APPENDIX A: DIGITAL IMAGE LOG

Inspector Name: Erin DuMontelle

Archival Record Location: *R5 Electronic Record Center\Enf_Milk Specialties_WI_24\Inspection 2024.07.01\MSG - Inspection Photos*

Image Number	File Name	Date and Time (Central)	Description of Image
1	P7010011.JPG	7/1/2024 12:52 PM	Acid reuse tank
2	P7010012.JPG	7/1/2024 12:52 PM	Acid reuse vent pipe and NO ₂ gas meter sampling port
3	P7010013.JPG	7/1/2024 12:53 PM	Reuse tank NO ₂ alarm
4	P7010014.JPG	7/1/2024 12:55 PM	Door 28 outside of Engine Room
5	P7010015.JPG	7/1/2024 12:55 PM	Signage and emergency stop for Door 28
6	P7010016.JPG	7/1/2024 12:55 PM	Signage and ammonia alarm for Door 28
7	P7010017.JPG	7/1/2024 1:00 PM	Refrigeration Control Panel (RCP)
8	P7010018.JPG	7/1/2024 1:00 PM	Screen on RCP
9	P7010019.JPG	7/1/2024 1:04 PM	Table of Contents for operating procedures binder in Engine Room cabinet
10	P7010020.JPG	7/1/2024 1:08 PM	Compressor CP-4 – back side
11	P7010021.JPG	7/1/2024 1:09 PM	Threads for oil filter attachment on Compressor CP-4
12	P7010022.JPG	7/1/2024 1:09 PM	Incident oil filter assembly from Compressor CP-4
13	P7010023.JPG	7/1/2024 1:10 PM	Filter threads – Angle #1
14	P7010024.JPG	7/1/2024 1:10 PM	Filter threads – Angle #2
15	P7010025.JPG	7/1/2024 1:13 PM	Rotary Screw Compressor CP-4 name plate
16	P7010026.JPG	7/1/2024 1:13 PM	Compressor CP-4 shell chamber name plate
17	P7010027.JPG	7/1/2024 1:14 PM	Compressor CP-4 RVs
18	P7010028.JPG	7/1/2024 1:15 PM	RV name plate – blurry

19	P7010029.JPG	7/1/2024 1:15 PM	RV name plate – retake
20	P7010030.JPG	7/1/2024 1:17 PM	Compressor CP-4 – front side
21	P7010031.JPG	7/1/2024 1:18 PM	Door 29 – from inside of Engine Room
22	P7010032.JPG	7/1/2024 1:19 PM	View from RCP area – left
23	P7010033.JPG	7/1/2024 1:20 PM	View from RCP area – right
24	P7010034.JPG	7/1/2024 1:21 PM	Oil filter installed on Compressor CP-5
25	P7010035.JPG	7/1/2024 1:25 PM	Door 29 – from outside of Engine Room
26	P7010036.JPG	7/1/2024 1:26 PM	HPR
27	P7010037.JPG	7/1/2024 1:27 PM	King Valve on HPR
28	P7010038.JPG	7/1/2024 1:27 PM	HPR RVs – blurry
29	P7010039.JPG	7/1/2024 1:27 PM	HPR RVs – retake
30	P7010040.JPG	7/1/2024 1:28 PM	HPR RVs
31	P7010041.JPG	7/1/2024 1:31 PM	Evaporative condensers water pump room
32	P7010042.JPG	7/1/2024 1:31 PM	Evaporative condensers water pump room
33	P7010043.JPG	7/1/2024 1:31 PM	Ceiling area of water pump room
34	P7010044.JPG	7/1/2024 1:37 PM	Ammonia sensor on relief piping
35	P7010045.JPG	7/1/2024 1:39 PM	Engine Room ventilation intake – right
36	P7010046.JPG	7/1/2024 1:40 PM	Engine Room ventilation intake – left
37	P7010047.JPG	7/1/2024 1:46 PM	Engine Room evacuation map and replacement map
38	P7010048.JPG	7/1/2024 1:47 PM	Glycol chiller GC-1
39	P7010049.JPG	7/1/2024 1:49 PM	Door 57 – outside

Facility Name: Milk Specialties Global
Facility Location: 325 Tompkins Street, Fond du Lac, WI 54935
Date of Inspection: July 1, 2024

40	P7010050.JPG	7/1/2024 1:50 PM	Door 31 – outside
41	P7010051.JPG	7/1/2024 1:50 PM	Alarm system near Door 31
42	P7010052.JPG	7/1/2024 1:50 PM	Alarm system near Door 31
43	P7010053.JPG	7/1/2024 1:55 PM	Nitric Acid Solution Storage Tank
44	P7010054.JPG	7/1/2024 1:57 PM	Nitric Acid Solution Storage Tank Label
45	P7010055.JPG	7/1/2024 2:05 PM	Bulk Chemical Unloading Station
46	P7010056.JPG	7/1/2024 2:05 PM	Spray Curtain at Bulk Chemical Unloading Station