



REGION 5

CHICAGO, IL 60604

MEMORANDUM

SUBJECT: CLEAN AIR ACT INSPECTION REPORT
Arxada LLC, Mapleton, Illinois

FROM: Karyn DeFranco, Physical Scientist
AECAB (MN/OH)

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

TO: File

BASIC INFORMATION

Facility Name: Arxada LLC (Arxada)

Facility Location: 8316 West U.S. Route 24, Mapleton, Illinois

Date of Inspection: July 11, 2024

EPA Inspectors:

1. Karyn DeFranco, EPA Region 5, Physical Scientist
2. Victoria Nelson, EPA Region 5, Environmental Engineer
3. Philip Myers, EPA National Enforcement Investigation Center (NEIC)
4. Conor Goulding, EPA NEIC

Other Attendees:

1. Jacob Neuenschwander, Arxada, EHS Manager
2. Rogan Kipp, Arxada, Plant Manager
3. Chad Culver, Arxada, EHS Specialist
4. Eric Daly, Arxada, Engineer and Maintenance Manager

Contact Email Address: Jacob Neuenschwander - jacob.neuenschwander@arxada.com

Purpose of Inspection: On-site EPA NEIC Geospatial Measurement of Air Pollution, Remote Emissions Quantification (GMAP) survey

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Facility Type: Miscellaneous chemical production and manufacturing

Regulations Central to Inspection: The Illinois State Implementation Plan; the facility's construction permits

Arrival Time: 9:11 AM

Departure Time: 11:58 AM

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 Arxada unless otherwise noted.

Company Ownership: Ownership changed in July of 2021 from Lonza Specialty Ingredients to private equity firms

Process Description:

Arxada is a specialty chemical manufacturing facility that has approximately 75 employees and operates 24 hours, seven days a week. The facility primarily manufactures amines and quaternary ammonium compounds (Quats). The facility uses raw materials such as C8-C18 alcohol, dimethylamine anhydrous (DMA), monomethylamine (MMA), copper catalyst, solvents, etc. Typically, the direct amination processes raw material in batch reactors, the product is then transferred to intermediate storage tanks and later reacted in the Quats reactors. Quats are generally produced by processing amines intermediate material with water, hydrogen peroxide and solvents in a Quats reactor. After the Quats are made, they are blended to customer specification on the south side of the Quats storage tank area. The final Quats products are stored in storage tanks prior to loading.

Staff Interview:

- EPA observed emissions with the FLIR from a conservation vent on top of IPA tank T378. The facility informed EPA that a higher capacity conservation vent was put on this tank approximately 1 month ago;
- Carboquats products also use glycerin, methanol, ethylene glycol and propylene glycol;
- Other Quats typically use ethanol or isopropyl alcohol;

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- The Carboquats building contains four reactors: R223 is a large Quats reactor on the second floor, not used for Carboquats; R225 is the Carboquats reactor on the third floor; R560 and R561 are direct amination systems that convert DMA directly to bis(2-hydroxyethyl)-D8-amine;
- Five Quats and Carboquats are filtered through the Quat Filtration Process through a Funda filter to remove a salt byproduct produced in the process;
- The Facility has two wastewater treatment tanks. One wastewater treatment tank has sodium lauryl sulfate (SLS), the other wastewater treatment tank has Quats wastewater and is where the SLS is added to treat the wastewater.
- After SLS treatment, wastewater is hard-piped to basin and then to the onsite wastewater treatment plant at the Facility;
- The facility stated that they do not use ethylene oxide or ethoxylated alcohol as a raw material;

TOUR INFORMATION

EPA Toured the Facility: Yes

Data Collected and Observations:

At the time of the on-site inspection, half of the plant was running: the Quats process; distillation; refining; loading; and amination. The direct amination system was not running. Tank #700 is the wastewater residue tank and was under construction at the time of the onsite inspection. EPA observed a visible leak from a line at the base of the tank.

EPA visualized emissions with the FLIR for the following equipment:

- IPA tank T378 conservation vent;
- T368A DMA Scrubber outlet; and
- Quats storage tanks goose necks from: T305; T306; and T307.

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

Field Measurements: were taken during the inspection.

Field measurements were taken with the GMAP. Results are not included in this report.

CLOSING CONFERENCE

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

Requested documents:

- Process flow diagram for Quats and Carboquats processes;
- P&IDs for the DMA scrubber, Quats reactors and Carboquats reactors;
- Plot plan with tank numbers;

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- Status sheet for the facility and information on tank fill and contents and everything that was running in all reactors during time of our inspection (07/11/2024 between 9am-12pm);
- Copy of the most recent Funda scrubber/filtration test;
- SDS sheets for all material in hazardous tank farm and Benzyl Chloride;
- DMA Scrubber 15-minute averages (in Excel format) for scrubber parameters from February 11, 2024 through July 11, 2024;

Concerns: EPA noted concerns of emissions detected with the GMAP as well as emissions visualized with the FLIR at the DMA scrubber and several tanks (IPA T#378, DMA Scrubber, T700, Quats Storage tanks).

DIGITAL SIGNATURES

Report Author: **VICTORIA NELSON** Digitally signed by VICTORIA NELSON
Date: 2024.08.29
10:09:55 -05'00'

Section Supervisor: **SARAH MARSHALL** Digitally signed by SARAH MARSHALL
Date: 2024.08.29
13:53:06 -05'00'

APPENDICES

1. Appendix A: Digital Image Log and Video Log

Facility Name: Arxada LLC
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APPENDIX A: DIGITAL IMAGE LOG AND VIDEO LOG

Inspector Name: Victoria Nelson

Archival Record Location: AECAB Library >
Enf_Arxada_IL_24 > Enf_Arxada_IL_InspRep_24 >
Inspection Photos and FLIR

Image or Video Number	File Name	Date and Time (Central Daylight Time)	Description of Image or Video
1	FLIR0005.jpg	7/11/2024 10:08 AM	Photo of scrubber for dilute DMA
2	FLIR0006.jpg	7/11/2024 10:08 AM	Photo of scrubber for dilute DMA
3	FLIR0007.jpg	7/11/2024 10:08 AM	Photo of scrubber for dilute DMA
4	FLIR0008.jpg	7/11/2024 10:08 AM	Photo of scrubber for dilute DMA
5	FLIR0009.jpg	7/11/2024 10:08 AM	Photo of scrubber for dilute DMA
6	FLIR0010.jpg	7/11/2024 10:08 AM	Photo of scrubber for dilute DMA
7	FLIR0011.mp4	7/11/2024 10:10 AM	OGI video of scrubber for dilute DMA and isophthalic acid tank with potential hydrocarbon emissions
8	FLIR0012.mp4	7/11/2024 10:49 AM	OGI video of potential hydrocarbon emissions from goose neck vent on top of Tank T305
9	FLIR0013.mp4	7/11/2024 10:54 AM	OGI video of potential hydrocarbon emissions from goose neck vent on top of Tank T306

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10	FLIR0014.mp4	7/11/2024 10:56 AM	OGI video of potential hydrocarbon emissions from goose neck vent on top of Tank T307
11	FLIR0015.mp4	7/11/2024 10:58 AM	OGI video of weighted thief hatch on top of Tank T312
12	IMG_0594.JPG	7/11/2024 11:13 AM	Photo of scrubber for dilute DMA
13	IMG_0595.JPG	7/11/2024 11:35 AM	Photo of connection to Tank #700
14	IMG_0597.JPG	7/11/2024 11:50 AM	Photo of goose neck vent on top of Tank T305
15	IMG_0598.JPG	7/11/2024 11:52 AM	Photo of goose neck vent on top of Tank T306
16	IMG_0599.JPG	7/11/2024 11:54 AM	Photo of goose neck vent on top of Tank T307
17	MVI_0596.MP4	7/11/2024 11:35 AM	Video of Tank #700 showing liquid leak