



Region 6 - Enforcement & Compliance Assurance Division
INSPECTION REPORT

Inspection Date(s):	04/13/2022	
Media Program:	Air	
Regulatory Program(s)	Title V	
Company Name:	Lotte Chemical Louisiana LLC	
Facility Name:	Lotte Chemical Louisiana LLC	
Facility Physical Location:	2200 Bayou D'Inde Pass Road	
(city, state, zip code)	Westlake, LA 70669	
Mailing address:	2200 Bayou D'Inde Pass Road	
(city, state, zip code)	Westlake, LA 70669	
County/Parish:	Calcasieu Parish	
Facility Phone Number	337-990-6345	
Facility Contact:	Kaili Patterson	Environmental Supervisor
	Kaili.patterson@lottechem.com	
FRS Number:	110070227146	
Identification/Permit Number:	0520-00488-V3	
Media Identifier Number:	LA0000002201900502	
NAICS:	325110, 325199	
SIC:	2869	
Personnel participating in inspection:		
Nicholas Bobbs	EPA/OECA/OCE/AED	Inspector
Richard Helmich	EPA/OECA/OCEFT/NEIC	Chemist
Agustin Martinez	EPA/OECA/OCEFT/NEIC	Technician
Ali Gitipour	EPA/ORD/CEMM/AMCD	Physical Scientist
Elena Mayard	LDEQ/OEC/SD	Inspector
Kaili Patterson	Lotte Chemical	Environmental Supervisor
Heather Holbrook	Lotte Chemical	Environmental Coordinator
Andrew Lavin	Lotte Chemical	EHSS Manager
EPA Lead Inspector Signature/Date	NICHOLAS BOBBS <small>Digitally signed by NICHOLAS BOBBS Date: 2022.07.08 15:38:44 -04'00'</small>	
	{Inspector name}	Date
Supervisor Signature/Date	JAMES LEATHERS <small>Digitally signed by JAMES LEATHERS Date: 2022.07.08 15:24:04 -05'00'</small>	
	{Supervisor name}	Date

Section I – INTRODUCTION

PURPOSE OF THE INSPECTION

EPA inspectors Richard Helmich, Agustin Martinez, Ali Gitipour, and I, Nicholas Bobbs, and LDEQ inspector Elena Mayard (“We”, “Us”) arrived at Lotte Chemical Louisiana, LLC (the “Facility”, the “Site”, or “Lotte”) at 8:00 AM on April 13, 2022 for an unannounced Clean Air Act (“CAA”) inspection. We met with Kaili Patterson, Environmental Supervisor, Heather Holbrook, Environmental Coordinator, and Andrew Lavin, EHSS Manager. I presented my credentials to Kaili Patterson and informed her that this was an EPA inspection to determine compliance with the facility’s Title V Air Permit and the Clean Air Act. The scope of the inspection is a partial compliance evaluation (“PCE”) including a survey of the facility using the Geospatial Measurement of Air Pollutants (“GMAP”) Vehicle.

FACILITY DESCRIPTION

The Monoethylene Glycol (“MEG”) plant, owned and operated by Lotte Chemical Louisiana, LLC (Lotte), is a monoethylene glycol manufacturing facility. The Lotte plant has a companion facility which is an Ethylene Plant operated by LACC, LLC US. The Lotte MEG plant and LACC Ethylene plant are adjacent to each other and there is no physical barrier between the plants. The two plants share an environmental staff and share some air pollution control equipment and a wastewater unit. The Lotte plant receives ethylene feedstock from the LACC plant, as well as other sources, and oxidizes the ethylene in the presence of a catalyst to make the intermediate product ethylene oxide (EO). The EO is then converted to make MEG and higher homologue glycols – diethylene glycol (DEG) and triethylene glycol (TEG), by the direct (non-catalytic) reaction of refined EO and water.

Section II – OBSERVATIONS

The GMAP surveyed the entire facility. The complete GMAP data can be found in the report for the April 2022 GMAP project.

MEG Unit

The GMAP vehicle surveyed the entire MEG unit. The GMAP vehicle detected elevated EO readings downwind of the SW side of the MEG unit. [AOC 1] Facility personnel informed us that the SW section of the plant is where EO is combined w/ water in long tube reactors to make glycols. Facility personnel also told us that acetaldehyde is produced as byproduct of the EO to glycol reaction. The produced acetaldehyde is sent to a blower and then to the MEG unit’s thermal oxidizer. The facility personnel told us that they monitor for EO using electro-chemical cell sensors, and that they’ve found that acetaldehyde is an interferant for EO. The GMAP vehicle collected two summa cannisters concurrent with EO spikes to verify the EO concentration.

The area of the MEG unit where the GMAP recorded elevated EO concentrations also contained an enclosed process wastewater sump, labeled F-970. I observed steam and VOC emissions from two drains that connect to the wastewater sump. [AOC 2] The sump drain under D-910, the knockout pot for the

thermal oxidizer, had VOC emissions which I measured using a ppbRae PID. The highest total VOC concentration seen from this sump drain using the PID was 113 ppm. Mr. Helmich recorded a video using a FLIR GF320 camera, MOV-0186 at 11:23 AM, of the VOC emissions from the sump drain under D-910. The sump drain under D-970 also had VOC emissions, and the highest total VOC concentration measured with the PID was 70 ppm.

I recorded two videos using a FLIR GF306 camera. I recorded MOV_0172 at 9:40 AM of a large stack connected to the boiler which provides steam to the plant. I recorded MOV_0173 at 9:48 AM of a stack in the MEG unit. The MEG unit stack had a steam plume along with trailing VOCs. I recorded MOV_0174 at 10:06 AM of a shorter stack connected to the thermal oxidizer for the plant. A VOC plume was seen from the thermal oxidizer stack.

Pygas Tanks

The GMAP vehicle detected elevated benzene concentrations downwind of tanks T-1806 and T-1807. [AOC 3] Facility personnel informed us that these tanks both contained pygas (pyrolysis gasoline) and that both tanks were internal floating roof tanks. The facility personnel also told us that all emissions from tanks T-1806 and T-1807 are vented to the thermal oxidizer and flare. I surveyed the tanks using the FLIR GF306 camera but did not identify any emission sources.

LACC Ethylene Plant

The GMAP vehicle surveyed the LACC ethylene manufacturing plant but did not have any notable detections. Facility personnel informed us that the ethylene plant was currently shut down due to turnaround activities.

Process Wastewater Storage Tanks

The GMAP vehicle surveyed the process wastewater storage tanks located directly south of the facility's wastewater treatment unit. Facility personnel informed us that these tanks were temporary storage tanks that contained process wastewater which was drained from the wastewater treatment unit's equalizer tank and contained material from the chemical cleaning of the saturator. The GMAP vehicle detected elevated benzene and total VOC concentrations downwind of the temporary wastewater storage tanks. [AOC 4] There were approximately 12 temporary wastewater storage tanks. There was one carbon filter for every two tanks. Mr. Helmich and I surveyed the wastewater storage tanks area using the FLIR camera and PID but did not identify any specific sources. The PID detected elevated total VOC concentrations in the wastewater storage tank area.

Section III – AREAS OF CONCERN

EPA inspectors Nicholas Bobbs, Richard Helmich, Agustin Martinez, and Ali Gitipour and LDEQ inspector Elena Mayard conducted a closing conference at Lotte Chemical Louisiana, LLC at 12:00 PM on April 13, 2022 for the inspection. Facility representatives Kaili Patterson, Environmental Supervisor, Heather

Holbrook, Environmental Coordinator, and Andrew Lavin, EHSS Manager were present during the closing conference. During the closing conference, Inspector Bobbs reviewed the three Areas of Concern noted during the inspection.

1) The GMAP recorded elevated ethylene oxide concentrations near MEG Unit

The GMAP vehicle recorded elevated ethylene oxide concentrations near the MEG unit. At the time of this report we are waiting for confirmation of the ethylene oxide detections from the summa cannister samples collected onsite.

2) The drains connected to the enclosed process wastewater sump was emitting VOCs

We identified two drains that connect to the process wastewater sump that were emitting VOCs. It is unknown whether these emissions are represented in the facility's permit applications to LDEQ or the facility's emissions inventory submittals to LDEQ. It is also possible that these emissions contributed to the ethylene oxide detections identified in AOC 2.

3) The GMAP detected elevated benzene concentrations near Pygas tanks T-1806 and T-1807

The GMAP detected elevated benzene concentrations downwind of tanks T-1806 and T-1807. A specific emission point on these tanks could not be identified with the monitoring equipment we had at the time of the inspection. Upwind GMAP measurements confirmed that the benzene concentrations are not due to another source upwind of the Pygas tanks.

4) The GMAP detected elevated benzene and total VOC concentrations near the temporary process wastewater storage tanks

The GMAP detected elevated benzene and total VOC concentrations downwind of the temporary process wastewater storage tanks. The facility personnel told us that the carbon filters attached to the wastewater storage tanks are monitored for VOCs every 12 hours to check for breakthrough.

Section IV – FOLLOW UP

No additional information was received by EPA after exiting the Facility on April 13, 2022. Additional information regarding the observations made by the GMAP at the facility can be found in the main GMAP Project Report.

Section V – LIST OF APPENDICES

Appendix 1 – Video Log – 4 FLIR videos taken 04/13/22

Appendix 1

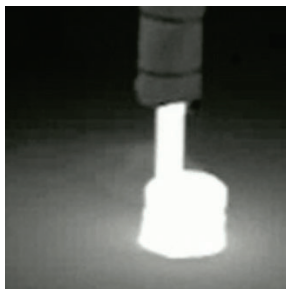
Video Log



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Video Log

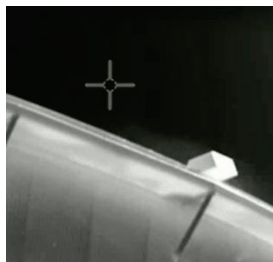
Location: Lotte Chemical Louisiana LLC		
City: Westlake	Calcasieu Parish	State: Louisiana



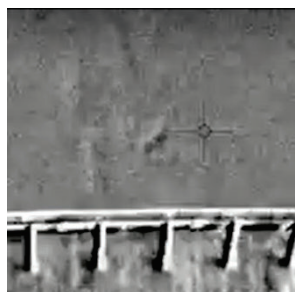
File Name: MOV_186.mp4
 Date taken: 04/13/2022
 Time taken: 11:23 am
 Videographer: Richard Helmich
 Description: OGI video of emissions from the sump drain under D-910.



File Name: MOV_172.mp4
 Date taken: 04/13/2022
 Time taken: 9:40 am
 Videographer: Nicholas Bobbs
 Description: OGI video of emissions from a large stack connected to the boiler which provides steam to the plant



File Name: MOV_173.mp4
 Date taken: 04/13/2022
 Time taken: 9:48 am
 Videographer: Nicholas Bobbs
 Description: OGI video emissions from of a stack in the MEG unit.



File Name: MOV_174.mp4
 Date taken: 04/13/2022
 Time taken: 10:06 am
 Videographer: Nicholas Bobbs
 Description: OGI video of emissions from a shorter stack connected to the thermal oxidizer for the plant