



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, ILLINOIS 60604**

DATE: See Date of Section Chief Signature Below

SUBJECT: CLEAN AIR ACT INSPECTION REPORT
Hallstar Industrial Solutions, Bedford Park, Illinois

FROM: Victoria Nelson, Environmental Engineer
AECAB (MI/WI)

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

TO: File

BASIC INFORMATION

Facility Name: Hallstar Industrial Solutions (Hallstar)

Facility Location: 5851 West 73rd Street, Bedford Park, Illinois

Date of Inspection: July 26, 2021

EPA Inspectors:

1. Victoria Nelson, Environmental Engineer
2. Emma Leeds, Environmental Scientist

Other Attendees:

1. Dan Fitzgerald, Hallstar, Director of Manufacturing, North America

Contact Email Address: Dan Fitzgerald, dfitzgerald@hallstar.com

Purpose of Inspection: To evaluate compliance with the Clean Air Act and the facility's operating permit

Facility Type: Esters chemical manufacturing

Regulations Central to Inspection: Standards of Performance for Volatile Organic Liquid Storage Vessels for which Construction, Reconstruction, or Modification Commenced after July 23, 1984 at 40 C.F.R. Part 60, Subpart Kb

Arrival Time: 10:15 AM Central Time
Departure Time: 1:00 PM Central Time

Inspection Type:

- Unannounced Inspection
- Announced Inspection

OPENING CONFERENCE

- Presented Credentials
- Stated authority and purpose of inspection
- Provided Small Business Resource Information Sheet
- Provided CBI warning to facility

The following information was obtained verbally from Mr. Fitzgerald unless otherwise noted.

Process Description:

Hallstar manufactures batch esters to be used, in some applications, as high-end plasticizers in rubber and plastic products. Raw materials largely include fatty acids, alcohols, adipic acid (solid), methanol, and glycol ethers. Materials are weighed before introduction to a reactor. The process begins by reacting the carboxylic acids groups of fatty acids with longer chain alcohols. The reaction occurs in one of five reactors at elevated temperatures as high as 450 degrees Fahrenheit. A portion of Hallstar's batches involve a transesterification reaction, achieved with glycol ethers, which produces methanol as a by-product, or a direct esterification reaction, which produces water as a by-product. Four of the reactors have a maximum capacity of 4,000 gallons. The fifth reactor has a capacity of 1,500 gallons. Batch times vary from 12-40 hours.

The reactors and other process equipment are controlled by a closed-vent system that routes vapors containing volatile organic compounds (VOC) to a thermal oxidizer. The thermal oxidizer has a set point of 1575 degrees Fahrenheit. A methanol distillation column and receivers recover methanol from the transesterification reaction and are also controlled by the thermal oxidizer. Raw materials and products are stored onsite at a number of large storage vessels. Any wastewater generated by the process is treated at the onsite wastewater treatment system and discharged. Sludge is also recovered at the wastewater treatment system and is either sold as a low-grade plasticizer or sent off-site for disposal.

Staff Interview: Hallstar has 45 employees at the site in Bedford Park, Illinois, and operates the facility for 24 hours a day, seven days a week. The facility was constructed in 1979 or 1980, and has had the same owner since 1986.

TOUR INFORMATION

EPA Tour of the Facility: Yes

Data Collected and Observations:

During the inspection, EPA toured the building where the five reactors and associated process vessels, product storage tanks, and reaction wastewater storage tanks are housed. At least 10 of the storage tanks containing either product or reaction wastewater had open manways. Mr. Fitzgerald claimed these tanks were empty, and explained that the tanks in this area only have residual material removed if there is a process upset. Next, EPA inspectors observed the thermal oxidizer operating with an average temperature of 1615 degrees Fahrenheit. Outside, adjacent to the thermal oxidizer was a number of storage tanks for raw materials storage. EPA inspectors detected odors at the top of several of the storage tanks and observed at least one storage tank, "S/T-42," that was not seated properly and open to allow the escape of hydrocarbon emissions. EPA inspectors also observed the adipic acid storage silo and inactive tanker unloading bays.

Photos and/or Videos: were taken during the inspection.

EPA inspectors took photos with a digital camera and screened for hydrocarbon emissions with a Forward-Looking Infrared camera (FLIR). In total, three photos and two FLIR videos were taken during the inspection.

Field Measurements: were not taken during this inspection.

CLOSING CONFERENCE

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

Requested documents:

Hallstar provided the following requested records following the inspection and claimed them as Confidential Business Information:

- Recent Thermal Oxidizer Stack Test Report
- Recent draft Federally Enforceable State Operating Permit
- Storage Tank Inventory

Concerns: EPA inspectors observed odors and open manways at product, raw materials, and wastewater storage tanks.

DIGITAL SIGNATURES

Report Author: **Nelson, Victoria**  Digitally signed by Nelson, Victoria
Date: 2021.09.20 16:32:51 -05'00'

Section Chief: **SARAH MARSHALL**  Digitally signed by SARAH MARSHALL
Date: 2021.09.21 07:10:48 -05'00'

Facility Name: Hallstar Industrial Solutions

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APPENDICES AND ATTACHMENTS

- 1.* Appendix A: Digital Image and Video Log

Facility Name: Hallstar Industrial Solutions

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APPENDIX A: DIGITAL IMAGE AND VIDEO LOG

1. Inspector Name: Victoria Nelson (photos); Emma Leeds (FLIR videos)	2. Archival Record Location: R5 Electronic Record Center – ECAD/AECAB Library /Enf_Hallstar_IL_21 /Enf_Hallstar_IL_InspRep_21
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Image Number	File Name	Date and Time (Central Time)	Description of Image
1	IMG_1244.JPG	7/26/2021; 11:25:33	Open reaction water storage tank, “S/T – 25”
2	IMG_1245.JPG	7/26/2021; 11:59:59	Unbolted manway at storage tank
3	IMG_1246.JPG	7/26/2021; 12:11:53	Unseated manway at storage tank, “S/T-42”

Video Number	File Name	Date	Description of Video
1	MOV_0060.mp4	7/26/2021	Thermal oxidizer stack
2	MOV_0061.mp4	7/26/2021	Unseated manway at storage vessel, “S/T-42”