



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

SUBJECT: CLEAN AIR ACT INSPECTION REPORT
Tate & Lyle Solutions USA, LLC, Lafayette, Indiana

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

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

TO: File

BASIC INFORMATION

Facility Name: Tate & Lyle Solutions USA, LLC (Tate & Lyle)

Facility Location: 2245 North Sagamore Parkway, Lafayette, Indiana

Date of Inspection: April 4, 2022

EPA Inspectors:

1. Victoria Nelson, Environmental Engineer
2. Dakota Prentice, Environmental Engineer
3. Tess Russell, Environmental Engineer

Other Attendees:

1. Marvin Wiederhold, Tate & Lyle, EHSS Manager
2. Phil Guntle, Tate & Lyle, Environmental Manager
3. Kenny Burnell, Tate & Lyle, EHS Intern
4. Chris Wirkowski, Tate & Lyle, Cogen Project Manager
5. Kyle Hess, Tate & Lyle, Starch Area Manager
6. Becky Hayes, Indiana Department of Environmental Management, Senior Environmental Manager

Contact Email Address: Phil Guntle - Phil.Guntle@tateandlyle.com

Purpose of Inspection: To evaluate compliance with the Clean Air Act and the facility's Title V Permit

Facility Type: Corn Wet Mill and Starch Manufacturer

Arrival Time: 1:00 PM Eastern Time

Departure Time: 5:15 PM Eastern Time

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 the attendees unless otherwise noted.

Company Ownership: There has been no recent change in ownership. Tate & Lyle changed the name of the facility owner, effective April 2022.

Process Description:

Corn is brought in by truck and cleaned and sieved prior to steeping. At steeping, corn is soaked in a solution of sulfur dioxide, lactic acid, and water that is cycled through a series of tanks in a counter-current flow. The steepwater is monitored for sulfur dioxide concentration, pH, and temperature to determine the need for refresh. Fermentation is controlled via these parameters to produce the target lactic acid in the steepwater. Spent steepwater then goes to an evaporator and condenser to reduce moisture and form heavy steepwater. A scrubber controls sulfur dioxide emissions from the 14 steep tanks. Following steeping, the corn goes through a series of mechanical separation steps to produce the four main corn separation byproducts: protein, germ, fiber, and starch. Mechanical presses are used to remove from the corn slurry light steepwater which is recycled back to the steeping process. The gluten/protein is separated out and dried to produce an animal feed product. Germ is separated, dried, and sent off-site for corn oil production by a third party. Fiber is dried to produce animal feed and heavy steepwater is added for nutritional purposes. The final byproduct, starch, is dried and sent to the starch manufacturing lines. There are two steam tube dryers — one for germ drying and one for fiber drying. There are two flash dryers used for gluten drying and starch drying. Emissions from the dryers are controlled by a scrubber and RTO in series before exiting through stacks.

Starch from the wet mill is used to produce modified and unmodified starches that are used for food-grade and industrial applications, including as starch adhesives. Modified starches are formed in 33 reactors. Eleven reactors are used for modification of starches with propylene oxide and are vented to a scrubber after each batch. Propylene oxide storage tanks are controlled by a vapor balance system during railcar unloading. Other modified starches are formed using acids

such as hydrochloric acid or sulfuric acid. Modified starches undergo a series of wash and dewatering steps via mechanical presses and blenders. The starches are finally dried to specification in a number of dryers before being packaged and shipped out.

Wastewater from steeping goes to an anaerobic digester. Biogas from the digester fuels the animal feed dryer following gluten processing. Excess biogas goes to a scrubber and then to a main flare, or an emergency flare. High sulfate streams bypass the digester and go to the two aeration basins.

Staff Interview: The facility was originally built in 1966 and operates 24 hours a day for seven days a week with two, 12-hr shifts. Tate & Lyle produces roughly 300 modified and unmodified starch products at the facility. While the facility produces mostly food-grade starches, the starches used for industrial and food grade applications are the same material; what matters is where the material is dried. For example, Tate & Lyle makes a food starch referred to as “Pure Food Powder.” This Pure Food Powder is identical to the pearl starch Tate & Lyle makes for industrial starch adhesive applications.

At steeping, the operators have a target range of sulfur dioxide concentration for the steepwater. If lactic acid concentration is low, the operators can lower temperature and sulfur dioxide concentration to promote lactic acid production.

Tate & Lyle is planning to expand production of propylene oxide modified starches.

High levels at the influent wastewater tank can cause odors from the facility.

TOUR INFORMATION

EPA Tour of the Facility: Yes

Data Collected and Observations:

EPA inspectors toured the Steephouse Area and observed emissions using the FLIR camera from a manway at Steep Tank 10. EPA also toured the Evaporator and Modified Starch Control Room. Reactor 246 was open during the inspection for the addition of starch slurry. The reactors used for propylene oxide starch modification are rinsed after each batch. Using the FLIR camera, EPA observed potential trail-off of hydrocarbon emissions from the Feedhouse flare and Boiler stack.

Photos and/or 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:

- Most recent stack tests for each scrubber and regenerative thermal oxidizer
- Confirmation of repair of the Steep Tank 10 leak

DIGITAL SIGNATURES

Report Author: VICTORIA NELSON Digitally signed by VICTORIA NELSON
Date: 2022.06.03 10:02:33 -05'00'

Section Supervisor: SARAH MARSHALL Digitally signed by SARAH MARSHALL
Date: 2022.06.03 10:06:34 -05'00'

Facility Name: Tate & Lyle Solutions USA, LLC (Tate & Lyle)

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Date of Inspection: April 4, 2022

APPENDICES AND ATTACHMENTS

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

Facility Name: Tate & Lyle Solutions USA, LLC (Tate & Lyle)
Facility Location: 2245 North Sagamore Parkway, Lafayette, Indiana
Date of Inspection: April 4, 2022

APPENDIX A: DIGITAL IMAGE AND VIDEO LOG

1. Inspector Name: Dakota Prentice - digital camera; Tess Russell - FLIR camera	2. Archival Record Location: Region 5 Electronic Records Center
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Image Number	File Name	Date and Time (Eastern Time)*	Description of Image
1	IMG_0027.JPG	4/4/2022 15:46:48	Steep tanks
2	IMG_0028.JPG	4/4/2022 16:28:46	Millhouse stack
3	IMG_0029.JPG	4/4/2022 16:36:18	Influent and bypass wastewater tanks
4	IMG_0030.JPG	4/4/2022 16:42:29	Aeration basin

*The times logged in the digital camera were two hours different from the time during the inspection. The times are corrected in this table.

Video Number	File Name	Date	Description of FLIR Video
1	MOV_2623.mp4	4/4/2022	Manway at Steep Tank 10
2	MOV_2624.mp4	4/4/2022	Gooseneck vent at Steep Tank 10
3	MOV_2625.mp4	4/4/2022	Steep tank manway
4	MOV_2626.mp4	4/4/2022	Feedhouse flare
5	MOV_2627.mp4	4/4/2022	Millhouse stack
6	MOV_2628.mp4	4/4/2022	Boiler stack