



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

PO Box 47600, Olympia, WA 98504-7600 • 360-407-6000

March 20, 2024

Craig McKinney, Senior Environmental Engineer
LANXESS Corporation
1296 Third Street NW
Kalama, Washington 98625

Re: Class 1 (Non-Sampling) Water Quality Inspection on February 22, 2024

Dear Craig McKinney:

Enclosed is a copy of the report for the non-sampling water quality inspection I conducted at LANXESS Corporation (LANXESS) on February 22, 2024. The purpose of the inspection was to determine LANXESS's level of compliance with NPDES permit number WA0000281.

The inspection included a visual examination of the anaerobic treatment system (ANTS); biological treatment (BIOX) plant; other wastewater treatment system units; Outfalls 001, 003, 011, and 012; intake cooling water structure and filter backwash water filters; and portions of the main process area. LANXESS appeared to comply with their NPDES permit at the time of the inspection. I recommend a few items LANXESS should follow-up on in the enclosed inspection report.

If you have any questions about this inspection report, please contact me at (360) 819-6426 or greg.gould@ecy.wa.gov. For all other NPDES-related questions, please contact Lyddie Austin at (564) 233-8039 or lyddie.austin@ecy.wa.gov.

To request ADA accommodation for disabilities, or printed materials in a format for the visually impaired, contact Ecology at 360-280-4325 or ecyadacoordinator@ecy.wa.gov. Persons with impaired hearing may call Washington Relay Service at 711. Persons with a speech disability may call TTY at 800-833-6384.

Sincerely,

Gregory Gould, P.E.
Industrial Section
Solid Waste Management Program

Enclosure



Water Quality Compliance Inspection Report Industrial Section

Facility Name & Address: LANXESS Corporation
1296 Third Street NW
Kalama, Washington 98625

NPDES Permit Number: WA0000281

Date of Inspection: February 22, 2024

Type of Inspection: Announced Compliance Inspection-Without Sampling

Time On Site: 9:25 AM to 2:05 PM

Areas Evaluated: Permit, Records/Reports, Facility Site Review, Effluent/Receiving Waters, Flow Measurement, Laboratory, Operations & Maintenance, Sludge Handling/Disposal, Pollution Prevention, Stormwater

Photographs Taken: No

Ecology Representatives: Greg Gould (Lead Inspector), Lyddie Austin

Facility Representatives: Craig McKinney, Senior Environmental Engineer, (360) 673-0285
Colin Stacy, IPW Project Engineer, (360) 673-2550
Ellie Gillaspie, Lab Manager, (360) 673-2550
Bill McKay, Deputy Site Director, (360) 673-0238
George Garten, PTSEHSEQ North America Corporate Environmental Sustainability Engineer, (870) 864-1557

Report by: Greg Gould

Supervisor Approval by: Shingo Yamazaki

Report Date: March 19, 2024

Lyddie Austin and I arrived at LANXESS Corporation (LANXESS) at approximately 9:25 AM on February 22, 2024, for an announced Class 1 (non-sampling) water quality inspection and site visit. We met with Craig McKinney and Colin Stacy, who accompanied us during the inspection,

which included a visual examination of the anaerobic treatment system (ANTS); biological treatment (BIOX) plant; other wastewater treatment system units; Outfalls 001, 003, 011, and 012; intake cooling water structure and filter backwash water filters; and portions of the main process area. We discussed the findings of the inspection with Craig McKinney, Colin Stacy, Bill McKay, and George Garten. We exited the facility at approximately 2:05 PM.

Site Background

LANXESS owns a 155-acre property on the Columbia River near the town of Kalama, Washington. The facility is on the northern end of the Kalama Industrial Park, bounded at the north by a man-made wetland, west by the river, and east by Interstate 5. LANXESS is a manufacturer of organic chemicals. The chemical plant operates 24 hours a day, 7 days a week. Using toluene as the raw material, the plant produces an estimated 170,000 tons of chemicals per year. The products include benzoic acid, benzaldehyde, benzyl alcohol, benzyl amine, sodium and potassium benzoate, cinnamic aldehyde, dibenzyl amine, benzyl acetate, benzyl salicyclate, and Lilience®. The products are used in food preservatives, fragrances, perfumes, adhesives, resins, coatings, dyes, detergents, sunscreens, and solvents.

The facility has a National Pollutant Discharge Elimination System (NPDES) permit, number WA0000281, for the discharge of treated wastewater and non-contact cooling water into the Columbia River. The NPDES permit became effective on March 1, 2021, and expires on February 28, 2026.

Description of Wastewater Treatment Plant

The wastewater treatment plant (WWTP) consists of a flow equalization system, ANTS plant, and BIOX plant. The system can treat up to 400 gallons per minute (gpm) of wastewater, including contaminated groundwater from the North and West Impacted Areas, stormwater from process and non-process areas, process wastewater, and laboratory wastewater.

Flow Equalization System

The flow equalization system is comprised of numerous collection and equalization tanks within each of the main process areas. Alarm systems are set up on many of the equalization tanks to ensure that the WWTP operates as designed. LANXESS uses two Modu-tanks to store and equalize wastewater before treating the wastewater.

Anaerobic Treatment System (ANTS)

The ANTS provides pretreatment for acid wastewater from the benzoic acid processes and the wastewater generated during production of hexyl cinnamic aldehyde. The system consists of three digesters and two clarifiers. The system is designed for a chemical oxygen demand (COD) loading of 28,000 pounds per day and a maximum flow of 50 gpm. LANXESS pumps the ANTS

effluent to tank T-22 and surge tank T-90. T-22 and T-90 also hold wastewater from the American Petroleum Institute (API) oil/water separator. Wastewater from the tanks flows to the BIOX plant.

Biological Treatment Plant (BIOX)

The BIOX plant consists of two aeration tanks, three clarifiers, and a digester unit. Wastewater enters aeration tank T-91A and then aeration tank T-92. The tanks contain blowers for air sparging. The optimum temperature of wastewater in T-91A is from 24 to 29 degrees Celsius (°C).

Wastewater in T-92 overflows to two secondary clarifiers, T-96 and T-96A, which operate in parallel. Each clarifier has an apparatus to skim floating sludge and deposit it in a sump, where it is pumped back to T-91A. The clarifier bottoms are returned back to T-91A as recycled activated sludge. Flows from the top of the clarifiers enter the third “polishing” clarifier T-93. Operators can maintain constant hydraulics to the system by pumping T-93 bottoms back to aeration tank T-91A as needed. According to LANXESS’s Wastewater Treatment Plant Operation and Maintenance Manual (O&M Manual), employees monitor the depth to the sludge from water surface in the clarifiers daily to maintain an optimal depth to sludge of greater than 8 feet. The O&M Manual states that the total maximum depth of liquid in the clarifiers is 14 feet.

The BIOX plant is designed to handle a 5-day biological oxygen demand (BOD₅) loading of 5,006 pounds per day. Staff sample T-91A feed twice a day for BOD₅. They also monitor for ammonia, phosphorus, and mixed liquor suspended solids. LANXESS controls the BOD₅ and hydraulic loading to the plant through routine sampling and uses weir boxes to double-check flow rates to T-91A.

LANXESS adds polymers to the clarifiers as a flocculant. A higher molecular weight polymer is added to the sludge in the SOMAT sludge press to improve de-watering. During the day and night shifts, staff take water samples from the aeration tanks, clarifiers, and the final effluent. Operators visually compare the sample jars and check for solids coagulation.

Sludge Management

Waste sludge (called industrial wastewater biological solids) from the BIOX plant clarifiers (T-96 and T-96A) flows to the sludge holding tank and then to a SOMAT unit. The SOMAT dewateres the waste sludge to about 7 to 10 percent solids. Water removed by the SOMAT returns to aeration tank T-91A. Ecology and the EPA approved a petition from LANXESS to delist the industrial wastewater biological solids as hazardous waste. The approvals state that LANXESS may send the delisted sludge to a solid waste landfill.

Site inspection

Wastewater Treatment System

We inspected the South Sump which collects stormwater and eventually is routed to the API oil/water separator. Craig McKinney said that all sumps are on a 5-year mechanical integrity inspection schedule.

We inspected the API oil/water separator. Craig McKinney said LANXESS cleans out the solids from the API oil/water separator approximately once per year and manages the solids as dangerous waste. I noted a hose draining water partially into the API oil/water separator and partially on the ground. Craig McKinney identified the water as wastewater coming from the Modu-tank T-103A, which typically has high COD wastewater. We observed wastewater pooling on the ground and settling in crack in the asphalt road. Craig McKinney moved the hose so all wastewater was entering the API oil/water separator. Craig McKinney said LANXESS cleans the API oil/water separator annually and the last maintenance work was November 9, 2023.

We observed the ANTS and Colin Stacy described the wastewater process. Colin Stacy said that at the time of inspection, digester T-86 and clarifier T-88 were offline for maintenance. I noted no issues with the ANTS at the time of inspection. Colin Stacy said that LANXESS operates well below the COD and flow design criteria for the ANTS.

We observed the BIOX, and Colin Stacy described the wastewater process. We inspected aeration tank T-91A and the weir boxes. We viewed the following weir boxes (WB):

- WB T-103B - Untreated wastewater flow from Modu-tank T-103B,
- WB T-22 – Main feed (includes ANTS plant effluent and API oil/water separator effluent),
- WB T-96 RAS - Bottoms from clarifier T-96,
- WB T-96A RAS - Bottoms from clarifier T-96A, and
- WB T-93 - Bottoms from clarifier T-93.

We observed clarifiers T-96 and T-96A. I noted a few solids floating on the surface of the water, which Colin Stacy stated was normal. I observed the clarifier overflow water was clear. I noted some of the channels for the overflow water appeared covered with algae or other material in both clarifiers. Colin Stacy stated that staff clean the algae along the outside of the clarifier about once per week, but operators are limited by the length of the brush and hose, so cannot clean the entire clarifiers. Colin Stacy said there was a six-foot sludge blanket in the clarifiers, which was functioning as usual.

At the time of the inspection, the SOMAT was running. We observed the SOMAT screw press that dewateres the industrial wastewater biological solids. Colin Stacy said water from the SOMAT screw press goes to tank T-98 and eventually is returned to aeration tank T-91A. Colin Stacy said LANXESS samples solids from the SOMAT twice a weekly, the target is 7-8%, and the most recent sample was 5.6%.

We inspected the Modu-tanks T-103A and T-103B. Both tanks had some water and appeared to be operating properly.

Outfalls

The outfalls and sampling stations are near the intake pump house by the Columbia River. Monitoring Point 002, which is BIOX effluent, flows through a weir box before entering a mixing basin. At the time of the inspection, the BIOX effluent was clear.

An automated composite sampler normally collects 500 mL/hour from the Monitoring Point 002 weir box. The compositor unit also has a refrigerator to cool the sample. We observed the digital thermometer in the refrigerator which was 2.9°C (below the required 6.0°C). LANXESS has the thermometer calibrated every year. The flow and pH at Monitoring Point 002 were 261 gpm and 8.05 standard units. There is no effluent limit on flow, but the design criteria limit is 400 gpm. LANXESS's Monitoring Point 002 pH discharge limit is between 6.0 and 9.0 standard units.

The treated process wastewater from Monitoring Point 002 combines with non-contact cooling water in the mixing basin and LANXESS continuously discharges it through Outfall 001 to the Columbia River through a submerged diffuser port. We observed the mixing basin which appeared clear, had no odor, and no debris. In addition, the temperature at Outfall 001 fluctuated around 18.1°C, which was below the permit limit of 40.7°C.

Outfall 003 is rarely used. Any discharge through Outfall 003 goes to the adjacent wetland. Discharge to this outfall only occurs in the situation where the holding capacity of the berm enclosing tanks T-70 and T-71 is exceeded during heavy rain. The last time LANXESS discharged to Outfall 003 was in January 2002.

I noted no issues with the Monitoring Point 002, mixing basin, and Outfall 003 at the time of inspection.

Intake Cooling Water Structure and Filter Backwash Water Filters

We inspected the intake pump house, which includes the traveling screens and pumps. We also inspected the filter backwash water filters, which are located just north of the intake pump house. At the time of inspection, LANXESS was discharging water through Outfalls 010 and 011 (filter backwash discharges). I noted the intake flow meter showed a range between 8,160 and

9,500 gpm. I noted no issues with the intake cooling water structure and filter backwash water filters at the time of inspection.

Process Areas

Craig McKinney explained that LANXESS routes all stormwater that falls within the process area to the API oil/water separator. In addition, we inspected the dry well area in the product storage lot near the east gate. Craig McKinney described LANXESS's process for sampling stormwater at one dry well. Craig McKinney said that LANXESS has annual preventive maintenance on each dry well to remove build up solids. I noted no issues with the stormwater collection system in the process area and dry well area at the time of inspection.

Laboratory

We inspected LANXESS's onsite laboratory and Ellie Gillaspie toured us through the laboratory. LANXESS's laboratory is accredited for pH, TSS, and BOD₅ analyses from February 10, 2024, to February 9, 2025, which LANXESS renews every year. Staff keep logs for sampling, analytical results, and calibration results associated with the pH, TSS, and BOD₅ analyses. LANXESS keeps paper copies for 5 years and online copies indefinitely.

For the BOD₅ check, the LANXESS laboratory uses a standard solution supplied by Voluette Analytical. I noted the standard solution supplied by Voluette Analytical expires in October 2028. LANXESS's laboratory analyzes BOD₅ in the final effluent more frequently than the weekly permit requirement. LANXESS reports the additional data in their monthly discharge monitoring reports. LANXESS performs three BOD₅ tests on each sample at 10:1, 5:1, and 2:1 dilutions. LANXESS averages the results for all valid tests to come up with the daily average. LANXESS verifies the method is working correctly by running a blank sample and standard with each BOD₅ test.

For the TSS calibration, the LANXESS laboratory purchases a cellulose solution from Spectrum and makes the standard. I noted that the standard solution had an expiration date of 2/12/2024, which Ellie Gillaspie said LANXESS will make a new standard solution soon. The laboratory runs a blank, standard, and duplicate for each TSS analysis. LANXESS checks the scales every day internally and an external company calibrates the scales annually (the last calibration was on July 5, 2023). LANXESS performs two TSS tests on each sample and averages the results to come up with the daily average. Tork Will said that LANXESS has an internal policy to only use standard solutions for six months, after which LANXESS will make a new standard solution. Ellie Gillaspie said LANXESS sends the weight set off-site for calibration annually and the last calibration was October 2023.

LANXESS keeps 4, 7, and 10 buffers for pH calibration. I reviewed and noted that the laboratory did not store the solutions past the manufacturer's expiration. Ellie Gillaspie said LANXESS's

internal policy is to only use pH buffer solutions for six months after opening them. I noted that the pH 4 buffer internal policy expiration date was 7/1/2024 and the manufacturer's expiration date was 9/25/2025. I noted that the pH 7 buffer internal policy expiration date was 8/13/2024 and the manufacturer's expiration date was 7/25/2025. I noted that the pH 10 buffer internal policy expiration date was 8/13/2024 and the manufacturer's expiration date was 1/7/2025. LANXESS performs pH calibration tests every workday.

At the time of the inspection, the thermometer in the laboratory refrigerator which stores the composite sample was 1.5°C. LANXESS performs an annual calibration on the laboratory refrigerator thermometer which was last completed on 4/19/2023.

I requested the logbooks for TSS and BOD₅ analyses for July 2023, which Ellie Gillaspie easily found. I compared what LANXESS reported on discharge monitoring reports (DMRs) to the logbooks.

We noted on LANXESS's DMR that for the 5/20/2022 sample the BOD₅ influent was 1,967 milligrams per liter (mg/L). Ellie Gillaspie checked the logbooks for this date and confirmed this was the correct concentration. The reported loading on the DMR was 3,466 pounds per day (lbs/day). Using the 0.43 million gallons per day (MGD) flow from the DMR, we calculated the loading to be 7,054 lbs/day (1,967 mg/L * 0.43 MGD * 8.34 conversion factor), not 3,466 lbs/day. The permit says the maximum daily BOD₅ influent loading is 5,006 lbs/day. On February 28, 2024, Craig McKinney emailed us stating that the flow from tank T-22 was used in the 5/20/2022 BOD₅ influent loading calculation. Craig McKinney stated that tank T-22 is the ANTS effluent. We noted that it was not clear to us where LANXESS samples BOD₅ for the BIOX plant influent.

I noted no problems with the laboratory at the time of inspection.

Conclusion

LANXESS appeared to comply with their NPDES permit at the time of the inspection.

I recommend LANXESS train and remind operators to place hoses on top of the API to ensure that all wastewater enters the API and no wastewater spills onto the ground.

I recommend LANXESS update their O&M Manual to specify the optimal clarifier sludge depth. The O&M Manual says the depth to the sludge from the water surface in the clarifiers is optimally set to eight feet. During the inspection, the depth to the sludge from the water surface in the clarifiers was six feet and this was functioning as usual.

As discussed in the closing meeting, we recommend that LANXESS be clearer on the location for BOD₅ sampling that meets the NPDES permit requirement for Special Condition S2.A(1) for Wastewater Treatment Plant Influent. The BOD₅ sampling location should be representative of

the BOD₅ loading to the BIOX plant. As also discussed in the closing meeting, we recommend LANXESS consider if the loading design criteria for the ANTS and BIOX plant documented in the operations and maintenance manual is accurate for current wastewater management and operations. For example, LANXESS mentioned performing a treatment efficiency study to update the loading design criteria for the ANTS and BIOX plant.