



United States Environmental Protection Agency
Region 7
Enforcement and Compliance Assurance Division

Air Branch

Air Branch Inspection Report
Unannounced Full Compliance Evaluation
ADM Corn Processing - Columbus
3000 East 8th Street
Columbus, NE 68601
FRS# 110000448043

Inspection Date(s):
March 19-20, 2024

Sean Bergin, Inspector, ECAD, Air Branch

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and provides a clear indication of the end of this report.**

INSPECTION OVERVIEW

INSPECTION OBJECTIVE

The objective of the full compliance evaluation (FCE) inspection was to determine compliance of the facility with the Clean Air Act (CAA), specifically those requirements listed in Table 3 below.

Table 1 lists the inspection team members.

Table 1. PROJECT TEAM MEMBERS		
Team Member	Organization	Project Role
Sean Bergin	EPA Region 7, ECAD, Air Branch	Project manager (PM)
Hunter Strom	EPA Region 7, ECAD, Air Branch	Field team member
William Schriener	Nebraska Department of Environment and Energy	Inspector

FACILITY CONTACT INFORMATION

Table 2 Alphabetical lists the primary facility contacts during the inspection.

Table 2. FACILITY CONTACT INFORMATION		
Name, Title	Phone No.	Email Address
Robert Bauer	402.562.5081	Robert.bauer@adm.com
TJ Gassen	402.564.6353	Tj.gassen@adm.com
Todd Good	402 564-6353	Todd.good@adm.com
Mike Larsen	402.562.5081	Mike.larsen@adm.com
Dave Lawrence	402.562.5081	Dave.lawrence@adm.com

FACILITY OVERVIEW

ADM Corn Processing – Columbus (ADM) operates under two Title V operating permits, one for the wet mill and one for the dry mill, both issued by Nebraska Department of Environment and Energy (NDEE), on December 22, 2021. The facility is subject to the following regulations and standards subject to review during this inspection (**Table 3**):

Table 3. APPLICABLE PERMIT CONDITIONS, REGULATIONS AND STANDARDS	
Code of Federal Regulation	Standard Name
40 CFR Part 60	Subpart A, General Provisions; Subpart Db, Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units; Subpart De – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units; Subpart DD, Standards of Performance for Grain Elevators; Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984; and Subpart VV, Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals

Table 3. APPLICABLE PERMIT CONDITIONS, REGULATIONS AND STANDARDS	
Code of Federal Regulation	Standard Name
	Manufacturing Industry for which Construction, Reconstruction, or Modification Commenced After January 5, 1981, and on or Before November 7, 2006; Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
40 CFR Part 63	Subpart A, General Provisions; Subpart FFFF, National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing; Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines; and Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters.

The corn processing facility consists of a wet mill, a dry mill, and a cogeneration (COGEN) plant. The wet mill, constructed in 1991, utilizes a wet milling process and produces ethanol, high fructose corn syrup, starch, and animal feed products. The dry mill was constructed in 2006 and uses the dry mill process to produce fuel grade ethanol. The dry mill is operated by Vantage Corn Processors LLC, which is wholly owned by ADM. The COGEN plant operates solid fuel boilers to produce steam and electricity for the facility. The facility operates 24-hours a day and employs approximately 350 people.

EPA's Enforcement and Compliance History Online website shows that ADM has been listed as in violation with volatile organic compound (VOC) emissions since February 2, 2023, and in violation with sulfur dioxide (SO₂) emissions since October 29, 2020, due to failed stack tests. The sources have been re-tested and are currently in compliance, according to Mr. Bauer.

The most recent inspection of ADM was conducted by the NDEE on August 9, 2022. No violations or concerns were found at the time of the inspection.

FACILITY OPERATIONS SUMMARY

Corn is received by truck and stored in silos for use by the wet mill or dry mill plants. At the wet mill plant, grain receiving, storing, and milling operations are controlled by bin vent filters and baghouses. Steeping and milling operations are controlled by scrubbers and a regenerative thermal oxidizer (RTO). Fermentation operations are controlled by scrubbers and the RTO. Starch, germ and gluten drying operations, storage, and loadout are controlled by scrubbers and baghouses. Ethanol loadout is controlled by a vapor recovery system and an enclosed flare. High fructose corn syrup production, storage, and loadout are controlled by scrubbers and the RTO. Visible emission surveys are required in lieu of performance testing for particulate matter (PM) emissions.

The dry mill facility's operations are similar. Grain receiving and processing are controlled by baghouses. Fermentation, distillation, and nitrogen stripping are controlled by scrubbers and the RTO. Ethanol loadout is controlled by a vapor recovery system and enclosed flare. Feed production is controlled by baghouses.

The COGEN boilers are controlled by limestone injection, ammonia injection, and baghouses. A Continuous Opacity Monitoring System is used to monitor opacity, and a Continuous Emission Monitoring System is used for nitrogen oxides (NO_x), SO₂, and carbon monoxide (CO) emission monitoring.

The facility is a major source of PM, SO₂, NO_x, CO, VOCs, and Hazardous Air Pollutants (HAPs).

FIELD ACTIVITIES SUMMARY

Mr. Strom and I met with Mr. Schriener at an off-site location and proceeded to the facility, conducting a drive by surveillance inspection as we approached the facility. We did not observe any visible emissions or unusual activity at the time. We arrived at the facility on March 19, 2024, at approximately 8:00 a.m. We made entry at the front gate, identified ourselves and were directed to follow a security truck to the main office building. We entered the main office building, and I introduced myself and members of the inspection team, presented my credentials, and provided my business card to Mr. Bauer. Mr. Good joined us during introductions and remained for the opening conference. I conducted an opening conference during which I explained that the purpose of the visit was to conduct an inspection to determine compliance with the CAA, specifically, to determine compliance with the regulations and standards listed in Table 3. I explained that after asking for some general business information, I would observe work practices, process units, emission units, and control equipment, and review associated records demonstrating compliance with the permits and regulations. I explained to Messrs. Bauer and Good that the facility would have an opportunity to make a claim of business confidentiality at the end of the inspection.

I requested a schematic diagram of the facility (**Appendix A**), and Mr. Bauer described the facility layout. I asked Mr. Bauer to describe how and where the records ADM is required to maintain by its Title V permits are kept. Mr. Bauer explained that the most recent two years of records are in the building and organized by quarter. Records older than that are scanned and maintained onsite. I requested the fourth quarter records of 2023 to begin the review and informed Mr. Bauer that we would appreciate a facility tour whenever he was ready.

We were given a facility safety briefing by Mr. Bauer, who also gave the facility tour. Per his request, we wore steel toed boots, hard hats, safety glasses, and gloves during the tour.

Following the facility tour, we broke for lunch at approximately 12:15 p.m. and returned to the inspection at approximately 1:00 p.m.

Upon our return I told Mr. Bauer that we would like to use the Forward Looking Infrared (FLIR) GF320 Optical Gas Imaging camera on the dry mill side of the facility to take images of the tanks subject to 40 CFR 60, Subpart Kb, the RTO, the loadout area and loadout flare and conduct leak testing with a Toxic Vapor Analyzer (TVA) 2020 on the components subject to 40 CFR 60, Subpart VV, in the loadout and tank areas. Mr. Bauer made arrangements for the field work while Messrs. Schriener, Strom and I reviewed records.

At approximately 2:00 p.m. we met with Messrs. Lawrence and Larson, obtained a hot work permit, and conducted leak detection and FLIR observations until approximately 4:00 p.m. The inspection team reviewed records until approximately 5:00 p.m. and adjourned for the day.

On March 20, 2024, at approximately 8:00 a.m. the inspection team reconvened with Mr. Bauer at the conference room. The inspection team reviewed records until approximately 10:00 a.m. and then met with Messrs. Lawrence and Larson. We obtained a hot work permit and conducted FLIR observations on the wet mill tanks subject to Subpart VV, the wet mill RTO, anaerobic digester combustion devices, and the COGEN stack until approximately 12:00 p.m. The wet mill has a loadout area, but only one railcar can be loaded at a time so the loadout in the dry mill is used instead. The wet mill loadout has not been used since 2010. We returned to the conference room and reviewed records until approximately 2:00 p.m.

I conducted a closing conference with Messrs. Bauer and Gassen. I provided the facility with copies of the Receipt for Documents and the Confidential Business Information forms (**Appendix B**). Mr. Bauer did not make a claim of confidentiality. We departed the facility at 2:45 p.m. Photographs taken at the time of the inspection can be found in **Appendix C**. FLIR images can be found in **Appendix D**.

Observations and potential findings from the facility tour, records review, and sampling/measurement activities are noted in the Investigation Observation and Potential Findings section below.

Measurement and or Sampling Activities

The inspection team conducted leak detection activities with a TVA and a FLIR camera during the on-site inspection under my direction. Components in the tank farm and loadout areas of the dry mill, subject to the monitoring requirements of 40 CFR Part 60, Subpart VV, were tested by Mr. Strom. I used a FLIR camera to observe tank vents of tanks subject to 40 CFR Part 60, Subpart Kb, in the dry and wet mill areas, as well as the thermal oxidizers, loadout flare,

combustion devices of the anaerobic digester, and the COGEN stacks. Table 4 summarizes field measurement activities.

All environmental measurement activities were performed in accordance with the EPA Region 7 quality system. Mr. Strom followed manufacturer and EPA processes for instrument calibration of the TVA. Instrument calibration was documented on a field sheet which can be found in **Appendix E**.

Table 4 summarizes field measurement activities.

Table 4. FIELD MEASUREMENT ACTIVITIES			
Location Identifier	Date(s) and Time	Method and/or Procedure ¹ , and Equipment	Measurer Name
Dry mill tank farm and loadout area.	3.19.2024 1300– 1600 hrs.	Method: EPA Method 21: Determination of Volatile Organic Compound Leaks Region 7 Procedure: <i>Toxic Vapor Analyzer (TVA)</i> Equipment: Thermo Fisher Scientific, Model No. TVA2020, and Serial No. 202017072446	Strom
Dry mill tank farm and loadout area and wet mill tank farm.	3.19.2024 1300- 1600 hrs. 3.20.2024 1000- 1200 hrs.	Region 7 procedure: <i>FLIR GF320 Infrared Camera</i> Equipment: Teledyne, GF320, Serial No. 44402263	Bergin
¹ The current version of each procedure, at the time of the investigation, was followed.			

INVESTIGATION OBSERVATIONS AND POTENTIAL FINDINGS

Ambient weather, as well as site conditions and activities, were documented in field records. I made the following observations during the inspection. I discussed all observations with facility representatives during the closeout meeting unless otherwise noted in the observation description.

These observations are not final compliance determinations. The EPA Region 7 Air Branch case review team will make the final compliance determinations based on its review of this report and other technical, regulatory, and facility information.

An aerial map with some areas annotated can be found in the inspection folder.

Two ADM employees conduct the required leak detection and repair (LDAR) monitoring. I spoke with Messrs. Lawrence and Larson during the facility tour, and while conducting inspection monitoring, Mr. Lawrence told me that they fix leaks when they are identified. They do not wait until a leak has met the leak definition before fixing it, possibly a reason why ADM reports

very few leaks in their LDAR reports. He also stated that they always wait two-times the response time when initiating leak detection at a component. ADM uses TVA 2020 instruments for leak detection.

During the inspection Mr. Strom conducted leak detection monitoring at the dry mill tank farm and loadout area. Seventeen valves, four pumps, and two connectors were monitored. No leaks were identified.

On March 19, I used a FLIR camera and observed the dry mill tanks subject to 40 CFR 60, subpart Kb. Images from those observations show possible emissions from the tank vents of four tanks: Day Tank 2, Tank 3, denaturant tank, and Tank 8. On March 20, 2024, I used a FLIR camera and observed the wet mill tanks subject to 40 CFR 60, Subpart Kb. Images from those observations show possible emissions from Day Tank B.

The FLIR was also used to observe emissions from the Dry Mill Regenerative Thermal Oxidizer, the Wet Mill RTO, and the COGEN stack.

Following the inspection, I reviewed the FLIR images. On April 11, 2024, I emailed Mr. Bauer requesting the results of the most recent annual tank inspections, the results of the most recent 5-year tank inspections, the results of the most recent API 653 tank inspections, and the emission calculations for the tanks in the wet mill and dry mill tank farms. The information was received from ADM on April 15, 2024, via email and had not been analyzed by the time of report submission.

The tanks subject to Subpart Kb are inspected through the hatch annually, and full tank inspections are conducted every five years, as required by the Subpart. Mr. Bauer provided me with the dates of the most recent tank inspection dates which can be found in the inspection folder.

Mr. Bauer told me that all required records are retained onsite for two years. After that the records are scanned and retained electronically. However, the dry mill was shut down from April 2019 through April 2020, and there are no dry mill records for that period of time.

Most of the equipment associated with required monitoring and recordkeeping is continuously monitored for all permitted parameters. For example, baghouses with required daily pressure drop monitoring are continuously monitored with the data available in the control room. When the morning shift operators arrive for their shift, they receive a Daily Environmental Sheet (DES) which contains all permitted equipment in their area of responsibility and the various parameters that have daily (or in some cases weekly) monitoring requirements. Parameters that are not within the required range are highlighted on the DES. The operator completes their rounds and records the reading for each parameter for all equipment. Field testing is also conducted for variables such as pH or visible emissions checks.

At the time of the inspection, we reviewed the DESs for the third and fourth quarters of 2023. No daily forms were missing. All of the forms were completed. Any daily form with a parameter out of range contained written comments. For any visible emissions survey where emissions were detected, a Method 9 was conducted. Mr. Strom checked the equipment listed on the daily forms with the facility equipment list, and all equipment listed in the permits with monitoring requirements had monitoring parameters on the daily forms. A sample DES can be found in the Inspection Folder.

Maximo software is used track all equipment maintenance. Mr. Bauer told me that Standard Operating Procedures are written for all equipment, based in part on manufacturer's recommendations. Some preventive maintenance work orders were reviewed at the time of the inspection.

The amount of treated biogas flared is limited to 540,000,000 cubic feet per year. Last year ADM flared 70,157,225 cubic feet of treated biogas. The amount of untreated biogas flared is limited to 8,600,000 cubic feet. Last year ADM flared 1,870,808 cubic feet of untreated biogas. Mr. Bauer said that most biogas emissions are sent to the RTO, and they have never exceeded the biogas limits.

Mr. Bauer told me that ADM rarely has upsets with the boilers. There was a power outage in April 2023 (bird strike) which caused an upset, but other than that incident, there have been no recent upsets.

40 CFR 60, Subpart Db applies to the two steam generating units, coal fired boilers COGEN I-A and COGEN I-B. Subpart Db requirements include emission limits for NO_x from the natural gas boilers as well as the coal fired boilers and requires that the facility monitor emissions from each boiler to determine continued compliance with the limit. The CFB boilers also have PM, SO₂, and opacity limits under the rule. These boilers are equipped with continuous emission monitoring systems (CEMs) to show compliance with this NSPS. Visible emission observations are conducted to satisfy opacity limits.

The natural gas fired combustors (DM07A-DM07D), associated with DDGS drying, are subject to 40 CFR 60 Subpart De. Emissions from the combustors are controlled when operating and are continuously monitored. Operating parameters are based on the most recent performance test as required by the permit.

Grain conveying and milling operations are subject to 40 CFR 60, Subpart DD. Emissions are controlled by baghouses; therefore, testing was not required. Visible emission observations are conducted daily as required by the operating permit and confirmed during the records review.

The dry mill's ethanol process line is subject to 40 CFR Part 63, Subpart FFFF. Required records of scrubber operations and visible emissions are maintained. This was confirmed during the records review. Performance testing for SO₂, VOCs and HAPs, are conducted every 5 years as required.

The engines are subject to 40 CFR Part 63, Subpart ZZZZ. During the records review, I confirmed that the required engine maintenance is conducted, and operating hours are maintained. I reviewed a recent fuel receipt and confirmed that the sulfur content of the fuel used does not exceed 15 parts per million .

The dry mill's DDGS Dryers with Combustors (DM07A-DM07O) and the COGEN's Coal Fired Boilers (EU-9-1 and EU9-2) are subject to 40 CFR Part 63, Subpart DDDDD. Performance testing is required and performed every 5 years. The revised results of the most recent performance test were received by NDEE on April 3, 2024, demonstrating emissions below permitted limits. Operating parameters are based on the most recent performance test results. Daily visible emission observations are conducted.

Potential Finding 1: Emissions from Kb tanks
Observation Summary: FLIR observations show emissions from five tanks subject to Subpart Kb.
Citation:
Evidence: Appendix D, FLIR images.
Description of Observation: Emissions can be observed exiting vents of the Day Tank 2, Storage Tank 2, denaturant tank, and QC Tank 3 in the dry milling tank farm. Emissions can be observed exiting vents of Day Tank B in the wet milling tank farm.

End of report.