

**DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
ACTIVITY REPORT: Scheduled Inspection**

B857035147

FACILITY: THE ANDERSONS ALBION ETHANOL, LLC		SRN / ID: B8570
LOCATION: 26250 B DR N, SHERIDAN TWP		DISTRICT: Kalamazoo
CITY: SHERIDAN TWP		COUNTY: CALHOUN
CONTACT: Evan Dankert, Safety & Compliance Administrator		ACTIVITY DATE: 06/22/2016
STAFF: Dale Turton	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT:		
RESOLVED COMPLAINTS:		

An inspection was conducted of the grain receiving and ethanol production facility. Evan Dankert (Safety & Compliance Administrator, Doug Deland (Plant Manager), and Harley Darnell (Production Supervisor) were present during the inspection.

The entire operation is covered by Renewable Operating Permit (ROP) MI-ROP-B8570-2015. The ROP includes conditions that limit the loadout of ethanol and denaturant to 90 million gallons per year. Subtracting the imported denaturant (gasoline), this plant is effectively capable of producing about 84 million gallons per year of ethanol. The grain received is now exclusively corn, and the ethanol is made only from corn.

The company has also been recently issued Permit to Install #144-15 for plant expansion. This expansion will raise the total production of ethanol to about 135 million gallons per year of ethanol and 140.75 million gallons per year of total loadout. This expansion is now being constructed and will not be completed until 2017. Other permits that have not yet been incorporated into the ROP are #120-05J for the new grain dryer, and yet to be approved permit #144-15A for a new generator.

**ELEVATOR AREA**

All of the emission units in this area have a condition requiring continuous fugitive dust control. The area is swept as needed and a more thorough cleaning is done once per month. The area looked fairly clean during the inspection.

**EUGRAINDRY** - One 62.1 MMBtu/hr (average) natural gas fired grain dryer(10,000 bushels/hr throughput capacity at 5 points moisture removal) has just been installed since the recent approval of permit to install #120-05J. The two existing grain dryers that were at the facility have been removed. The new dryer has the capacity to dry more corn than the two old dryers combined. For 2015, records show that there were 4.6 million bushels dried, vs. the limit of 8 million.

The column plate perforations on the dryer appear to comply with the 0.094 inch size limit. This dryer is expected to be used most heavily during the late summer and fall when grain is being harvested and when corn needs to be dried. They are generally not used during the first half of the year. The natural gas usage is being monitored with a separate meter and is being recorded to assure that they stay under the permit limit of 100 million cubic feet per 12 month period. A monthly VE observation is being done and recorded.

**EUGRAINSHIPPED** – There was no corn shipped out of the facility during the year 2015.

**EUGRAINRECEIVE** – All of the delivery trucks are now bottom discharge into the grate. There is a vacuum system beneath the grate that pulls into a pulse jet baghouse (C-200). Baghouse C-200 was observed while a truck was unloading. There were no VE's observed. The differential pressure gauge was reading 0.2 inches H<sub>2</sub>O. For the year 2015, records show that they received less than the maximum allowed by the ROP. Most of the corn is received in the fall and winter after harvest season, although deliveries continue year-round. A monthly VE observation is being done and recorded.

**EUINTERNALOP** – For the year 2015, they handled less than the maximum allowed by the ROP. The outdoor piles emissions are included in the reported emissions for this EU. The outdoor piles are moved into the storage silos included in EUGRAINSTORED during the spring or summer.

**EU-CYCLONE**

The collected Dried Distillers Grain (DDG) is conveyed from the dryer building to the storage building. The transfer cyclone and baghouse collect the DDG and control the emissions. The collected DDG is transferred to the adjacent storage building for loadout.

The differential pressure gauge for the baghouse (P-70) was reading 0.8 inches of H<sub>2</sub>O. There were no visible emissions observed. Records are being kept of the required monthly visible emission readings on the baghouse.

The hours of operation are being kept, which is the total time in a year minus the 3 or 4 days of downtime for the plant.

**EU-LOADOUT**

This equipment is used to load and ship the DDG out by railcar or by semi-truck. From inside the adjacent enclosed storage building, a loader pushes or drops the accumulated DDG into the grate and onto the conveyor. The conveyor and elevator transport the product up to the weigh hopper before it is moved over to and dropped into the truck or car. Only one truck or a rail car can be loaded at any given time, not both at the same time.

A pulse jet baghouse (P-90) controls the dust from this process. This baghouse handles the dust pickup points at the discharge chutes. The differential pressure across the baghouse during the inspection was 0.8 inches of H<sub>2</sub>O.

They more recently installed a large hood surrounding the discharge chute to pick up any dust not collected by the original system and to collect dust that may be billowing out of the truck compartment. This is controlled by a new baghouse (P-91). The differential pressure across the baghouse during the inspection was 0.5 inches of H<sub>2</sub>O.

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There were no visible emissions observed from either baghouse and there was not any significant amount of dust escaping the drive through enclosure. Records are being kept of the required monthly visible emission readings on the baghouses.

**EU-COOLINGTWR**

It is being maintained and operated properly. No emissions are reported for this equipment.

**EU-DIESELPUMP**

This is the 300 HP emergency fire water pump generator.

This is subject to both the NSPS for stationary compression ignition internal combustion engines (subpart 60 IIII, and the standards for stationary RICEs (subpart 63 ZZZZ).

The hours are being recorded from the no-resettable hour meter. The unit was installed in 2005 and the hour meter was reading 1424 hrs. during the inspection. The diesel engine was inspected and had maintenance work in May Of 2015.

The stack is horizontally discharged.

There are using ultra low sulfur fuel with a maximum of 15 ppm S.

**EU-WDGS**

Some of the DDG is diverted after only passing through one of the two dryers and sent to an outside covered storage area. This area appeared to be holding much less that the allowed capacity of 160,000 cubic ft. They only divert the amount of material each day that would be expected to be picked up by local farmers. No foul odors were detected emanating from this area.

**EU-NH3STGTANK**

This tank has been decommissioned. It is still in place but can't currently be used. They are keeping it in the permit in case they ever want to use it again.

**FGCORNHAND**

This consists of the following emission units: TRUCKPIT, RECEIVINGCONV, CORNELEV1

This receiving area is long enough to drive the truck inside and close one or both doors. They only use hopper bottom dumping into the grate. At the time of the inspection, a truck was observed unloading into the truck pit. It was a calm day, the doors were open and there were no VE's observed being emitted from the enclosure. The company is performing and keeping records of the monthly visible emission readings as required by the permit.

The grate, and other related conveyors, screens etc. are controlled by a pulse jet baghouse C-20. The baghouse was being operated properly and the differential pressure gauge was being maintained. The differential pressure was reading 0.8 inches of water during the inspection. There were no visible emissions observed from the baghouse during the inspection.

**FGCORNBINS**

This consists of the following emission units: Corn Bin1&2, and the Day Bin.

There were no visible emissions observed. Records are being kept of the required monthly visible emission readings from the bins.

**FGMILL**

This consists of the following emission units: four mills, conveyors, screens, and elevator.

~~The emissions are controlled by a pulse jet baghouse. The baghouse was being operated properly and the differential pressure gauge was being maintained. The differential pressure was reading 4.1 inches of water during the inspection.~~

There were no visible emissions observed. Records are being kept of the required monthly visible emission readings on the grain milling operation.

**FGFERM**

This consists of the following emission units: FERMENTER1, 2, 3, 4, & 5, and BEERWELL. The emissions are controlled by a packed bed scrubber (Fermentation Scrubber) (C-40).

There are five batch fermentation vessels in total. At any given time, there are usually 4 vessels working. The fifth vessel is usually being filled, being emptied, or being cleaned. The process is steady and remains about the same at all times. Four fermenters are almost always being vented. The vessel being cleaned is closed off from venting. During the first 2-3 hours of a vessel filling stage the emissions from that one vessel is diverted to the purge scrubber before switching to the fermentation scrubber.

The one beer well tank always has material in it, usually more than 40% full. This is continuously being drained off and is intermittently being filled from one of the fermentation vessels as the batches are completed.

The company is monitoring and recording the scrubbing liquid flow rate and the differential pressure across the scrubber. Neither of these readings is available outside at the scrubber location. This data appears on the computer screen in the control room and inside the building on a gauge located next to the fermenters. At the time of the inspection, the fresh water flow to the scrubber was 55-58 gpm.

The exit gas from this scrubber is about 99% CO<sub>2</sub>. It is sent over to Continental Carbonic for them to make solid carbon dioxide (dry ice). At the time of the inspection, the CO<sub>2</sub> was being sent over at the rate of 7951 pph. It is only rarely that they don't send the gases over to Continental, but they do keep records of the duration if it happens.

The company is tracking and recording the hours of operation. This was reported as 100% of the hours in a year (8760) for 2015.

#### **FGPURGE**

This consists of the following emission units: FERMENTER1, 2, 3, 4, &5. The emissions are controlled by a packed bed scrubber (C-120).

This scrubber is only used during the first 2-3 hours or so at the beginning of filling an empty fermentation vessel. There is too much oxygen in the head space of the tank to allow for it to be sent over to Continental Carbonic, so it can't go in the fermentation scrubber.

The company has records of each time a fermentation vessel is filled, thus when the purge scrubber is utilized. There is a meter that records the time the purge scrubber valves are open. There was not a fermentation vessel in the purge timeframe during the inspection, so the scrubber was not operating.

#### **FGMETH**

The overflow from the fermentation scrubber goes to the methanator. This consists of the following emission units: METHANATOR1&2. A flare controls the VOC emissions only when the dryers are off line.

The emissions were being directed to the dryer as required by the permit. Emissions sent to the dryer eventually tie into the thermal oxidizer. It is very rare that the gases will not go to the dryer and instead go to the flare.

#### **FGOXID**

This consists of the following emission units: RECTIFIER, SIDESTRIPPER, BEERCOLUMN, YEASTTANK, DRYER1&2, TO&WHRB, CENTRIFUGE1, 2, 3, & 4, 190PROOFCONDENSER, and 200PROOFCONDENSER. The emissions are controlled by a thermal oxidizer, followed by a heat recovery steam generator (HRSG).

The thermal oxidizer (C-10) controls the off gases from the 2 dried distillers grain (DDG) dryers, the 4 centrifuges, both ethanol condensers, the yeast tank, the mixer, and 2 slurry tanks.

The HRSG is subject to 40 CFR 60 Subpart Db (NSPS for boilers). The CEMS was reading 44.4 ppm NOx and 2.7% Oxygen. The thermal oxidizer was being operated at 1533 degrees F. The permit requires a minimum temperature of 1475 degrees F, which is 50 degrees less than the temperature the oxidizer was last tested and passed at. A RATA was performed on the CEMs during January 2015.

Records are being kept of the natural gas being burned in the TOX. Natural gas was being burned at the rate of 3419 SCFM during the inspection.

There were not any visible emissions, other than the steam plume, from the stack discharge. Records are being kept of the required monthly visible emission readings.

Emission calculations and records are compiled and reported from the Maumee, Ohio headquarters.

#### **FGLOADOUT**

This consists of the following emission units: LOADOUT-TRK (truck), LOADOUT-RL (rail). The VOC emissions are controlled by a flare.

Records indicate the amount of denatured alcohol throughput was 77 million gallons during 2015, which is less than the permit limit of 84 million gallons. They are also under the permitted amount of denaturant throughput 5.75 million gallons.

The flare is on an interlock system. Trucks or railcars can't begin loading product without the flare operating. The flare has an electronic ignition and is fired on natural gas. This was not observed in operation since there was not any loading occurring at the time. Records show that this temperature is highly variable depending on whether the vapors are ethanol or if it has pure gasoline vapors in it. There were no VE's due to the flare.

**FGNSPSTANKS**

This consists of the following emission units: 190PROOF, 200PROOF, DENATURANT, DENATTANK1&2.

The tanks are subject to 40 CFR 60 Subpart Kb (NSPS for tanks). The tanks are outfitted with internal floating roofs as required in the permit. They can be seen through a hatch opening on the roof of the tanks.

The tanks are occasionally emptied and inspected. The floating roofs can then be inspected from below. AQD staff cannot be involved in those inspections due to confined space concerns.

**FGNSPSVV**

The facility is subject to the NSPS Subpart VV. This requires a leak detection and repair (LDAR) program for the pumps, valves, flanges, etc. in liquid and vapor service.

The company had submitted the LDAR program in July 2007. The program describes the people involved in implementing the plan, the equipment and methods for monitoring, the frequency of monitoring, and the plan they will follow if leaks are detected.

We have been receiving the semi-annual reports that describe the monthly leaks that were discovered and their response for repair.

Currently the valves, flanges, and pumps are monitored with the FID/PID analyzer on the monthly or quarterly schedule as required. Daily visual checks are done to look for dripping liquid.

**FGFACILITY**

This group limits the plant-wide emissions of NOx, VOC, CO, HAPs, CO2e, PM, PM10, and PM2.5, and requires the malfunction abatement plan, odor management plan, emergency response plan, and compliance with the grain elevator NSPS..

Calculations of the plant-wide emissions are being done and the report is sent in with the MAERS report. shows that the 12-month (2013) emission limits were:

NOx – 70 tons  
VOC – 29 tons  
CO – 6 tons  
PM10 – 6 tons

The Malfunction Abatement Plan and the Odor Management Plan has been submitted and they are being followed.

A sign with the emergency phone numbers and warning against unauthorized entry is posted at the facility entrance.

**Plant-Wide Baghouses**

Many of the differential pressure gauges (magnehelics) have a scale of (-15 to +15 inches) water. Since all of the fans for the baghouses controlling the elevator grain receiving, corn handling truck pit, milling, DDG cyclone, and the DDG loadout are inducing draft on the baghouses, they will always be negative pressure during operation. Staff observed that a 0-15 scale magnehelic could be installed on all of these filters to double the sensitivity of the gauge and simply just measure the absolute pressure differential across the bags.

NAME Dale Twiston

DATE 6/30/2016 SUPERVISOR MQ 6/30/2016