

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

B651941104

FACILITY: ALBEMARLE CORPORATION		SRN / ID: B6519
LOCATION: 1421 KALAMAZOO ST, SOUTH HAVEN		DISTRICT: Kalamazoo
CITY: SOUTH HAVEN		COUNTY: VAN BUREN
CONTACT: Andrew Baner , Senior Environmental Specialist		ACTIVITY DATE: 08/01/2017
STAFF: Amanda Chapel	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT:		
RESOLVED COMPLAINTS:		

On August 1, AQD’s Amanda Chapel and Dennis Dunlap (staff) conducted an unannounced inspection of Albemarle Corporation (facility) located in South Haven, Van Buren County. The purpose of the inspection was to determine compliance with Permit to Install (PTI) No. 141-07G and all applicable state and federal air regulations. The following will summarize facility operations and compliance status.

We arrived at the facility at 9:30am. There were no visible emissions or odors detectable from the road leading up to the facility. We parked and entered the main entrance. We introduced ourselves to the secretary at the front desk, presented our inspection credentials, informed her that we were there to complete an unannounced air quality inspection, and asked for Mr. Andrew Baner. While waiting in the lobby, we watched a short safety video on the safety protocol at the facility. Mr. Baner retrieved us from the waiting area and we followed him back into an office. Once there, I explained our purpose for the visit and requested a site tour and time to review records.

The last inspection of the facility was on August 20, 2013 and the facility was in compliance. They have about 162 staff that work a variety of shifts, mainly 12-hour shifts, and operate 7 days a week. There are two boilers and two generators. The two boilers are Cleaver Brooks. The newest one is 14.65 MMBtu/hr according to the plate and has a 1996 date. The second boiler is used as a backup to the first. It is 8.37 MMBtu/hr and has a date of 7/10/1978 on the plate. These are exempt under Rule 282(2)(b)(i).

There are two fuel oil emergency generators that run on #2 ultra-low sulfur fuel. The stability generator is a Kohler installed in 2002. It is existing with respect to the MACT and not subject to the NSPS IIII. The hours run meter read 3360 hours. The second generator is to power the fire pump. It is a Generac 280 hp and the hours meter read 142 hours. It is new with respect to the MACT and NSPS IIII. Both generators are serviced by the same outside company. Maintenance is performed once a year. The oil and filter are changes, hoses checked, and they are run less than 50 hours a year, mainly for readiness testing which is automatically done and power outages. Both the boilers and generators were observed during the inspection of the facility.

Mr. Baner took us first to view the tank farm. We observed all the tanks listed in the permit. The tanks contain chemicals such as xylene, isopropyl alcohol, heptane, toluene, methanol, and others. Some of the tanks were empty at the time of the inspection. The tank EU-TK0613, 5,700 gallon Tetrahydrofuran (THF) storage tank, is connected through the packed bed scrubber to the regenerative thermal oxidizer (RTO). The HCl bulk storage tank (EU-TK0603), also vents to the packed bed scrubber then to the RTO. The rest of the tanks have conservation vents. All emissions are tracked in FGTANKFARM.

The packed bed scrubber uses city water to operate. Caustic is added to control the pH. There is a pH meter before and after the caustic addition to quantify the pH change. This is monitored continuously. There are also flow meters and differential pressure monitors across the scrubber. This is all logged in the internal data system, Delta V. Everything that is run through the RTO is first run through the packed bed scrubber.

There is indoor non-flammable drum storage of raw materials as well as separate flammable drum storage. A sampling booth to sample the raw materials is in this room. This vents outside. We next entered wet production in Plant 1 East. Here there are centrifuges and tanks which are used to make batch process products. The tanks are vented through the scrubber to the RTO. In Plant 1 East, there is a dedicated hydrogenator which operates under Rule 290.

The soil vapor extraction (SVE) system that was run because of prior contamination has been shut down since October 2014. This system operated under Rule 290. A report of the rebound test was sent to the

DEQ and the facility has proposed to decommission the SVE system.

In the same room as the SVE system is a tank which stores the wastewater from the entire plant. Here, the facility separates off the floating solvent and sends it to the waste solvent tank in the tank farm. This is mostly toluene and xylene. It is disposed as hazardous waste. What is left is less than 1% HAPs, mostly methanol (less than 10,000 ppm). This is pumped out to equalization tank 1 with a pH adjustment. It is then pumped to the neutralization tank where the pH is adjusted to 7-8.5. It is then sent to equalization tank 2 and then to the waste water treatment plant (WWTP) on site. Plant 1 West was built in the early 1990s and it contains similar tanks and a centrifuge.

Plant 2 contains tanks as well as a hydrogenator/reactor. All the processes are done in batch form, nothing continuous. The hydrogenator/reactor can be changed to vent to the RTO or not depending on the configuration. The change is done by switching piping to the equipment. At the time of the inspection, it was a reactor. The Plant 2 scrubbers remain in the permit as a backup before routing to the packed bed scrubber and the RTO. Plant 2 N scrubber adds caustic and has a continuous monitor of the pH, flow, and water level. The plant 2 S scrubber has been down for years. The cost to repair it exceeds the need for it. It is not used at all by the facility but can be repaired to continue use. Plant 2 and Plant 1 W use one line to route to the packed bed scrubber. Plant 1 E and the finishing area use a second, separate line to route to the packed bed scrubber. There are separate lower explosive limits (LEL) monitors on these lines which can shut down the processes if it exceeds the set limits. While we were on site, a tanker came to load out waste solvents. No odors were detected during this process.

The RTO has a knockout pot to remove any excess liquids. There is negative pressure applied with the blower to the RTO chambers. There are redundant LEL monitors like the ones described above, to monitor the explosive limits. The RTO was set at a minimum of 1600 F. The two beds run in an opposite configuration where one is heating up as the other is cooling down. Two probes are in the combustion chambers and two in the scrubber area. The differential pressure was 2.2 inches of water.

The wastewater treatment plant (WWTP) operates under Rule 290. Emissions are also included in FGFACILITY. Waste from the equalization tank is sent to the WWTP sequence batch reactor basins, which there are two. The sequence batch reactors operate opposite of each other. They charge with ammonia for nutrients. Typical basin retention time is 20 days. The clean material is sent to the decant basin to be fed into the city wastewater treatment plant. The aerobic digester runs for about 5 minutes, two times a day. The WWTP dewater through the centrifuge. The facility monitors for COD, TSS, ammonia and other factors. These are sampled continuously.

The cold cleaner on site is located in one of the maintenance areas. The lid was closed and the cold cleaner sticker from the DEQ was on the lid. The MSDS for the cold cleaner was found just below it. The liquid in the cleaner is solvent naphtha Stoddard solvent. The label on the cold cleaner states that the Stoddard solvent is 0.04 psia at 68F and 0.13 psia at 100F. This is exempt under Rule 281(2)(h).

Finally we viewed the finishing area. The dryer and milling operations are connected to the dust collector. The gauge read 0.88 inches of water. There are needles indicating the upper and lower limits in the permit, 0.5 and 5 inches of water. The dust collector is checked once per year, during shutdown. Emissions from the dryer are routed to the packed bed scrubber and then to the RTO. There is a finishing storage area warehouse which stores the final product before it is shipped out from the facility. After the tour, we broke for lunch for an hour.

Dennis and I returned at 1pm and met Mr. Baner to review the records for the facility.

#### **EUPROCESSUNITS and EUHCLTANKS**

There are monthly records for each pollutant emitted. Not every pollutant is emitted every month and pollutants that are no longer produced are not removed from the permit. There was 947 pounds of VOC were emitted June 2017. Other pollutants produced in June 2017 are acetone (0.0187 lb/hr), diethylamine (0.0000 lb/hr), ethanol (0.00199 lb/hr), heptane (0.0046 lb/hr), isopropyl alcohol (0.00024 lb/hr), xylene (0.00292 lb/hr), dimethylformamide (0.0000 lb/hr), and isopropyl acetate (1.00004 lb/hr).

Batch recipes including chemical steps are input into the emissions modeling program, Emissions Master, used at the facility. This then calculates the emission rates in pounds per batch and pounds per hour of each pollutant generated by that specific recipe. Emission rates in pounds per month are then calculated and compared to the monthly emission limit. An example model of the process was requested

to be sent via email and was received on August 3, 2017.

A MAP was received on April 25, 2013. No changes have been made since 2013. The minimum temperature is set in the RTO is 1600F calculated on a 3 hour rolling time period. This is done using the Delta V system.

Both EUPROCESSUNITS and EUHCLTANKS appear to be in compliance with the permit.

#### EUPMEQUIPMENT

The dust collector located in the finishing area is inspected at least once per year. The dust collector is rarely used since any dust that is collected is wasted product. The differential pressure gauge for the water column was 0.85 at the time of the inspection. The gauge is monitoring the pressure on a continuous basis. The weekly records of the differential pressure were reviewed. There did not appear to be any times when the pressure was above or below the limit. The dust is also visually checked weekly.

EUPMEQUIPMENT appears to be in compliance with the permit.

#### FGTANKFARM

All the tanks included in FGTANKFARM have conservation vents which are installed and maintained. These are checked annually. Records for the individual tank throughputs were requested and received via email on August 3, 2017. The records show the monthly changes in the volume of each chemical in the tanks. A copy of the record is included with the report. VOC records are being kept for FGTANKFARM. In June 2017, the 12-month rolling time period calculation showed 1432.62 pounds of VOC emitted. This is well below the limit of 2 tons per year in a 12-month rolling time period. The tanks TK4103A, TK4103B, TK4301A, TK401C, and TK4301D can be hooked up to the RTO based on the permit. Mr. Baner indicated that these tanks are never hooked up to the RTO and instead have conservation vents.

FGTANKFARM appears to be in compliance with the permit.

#### FGCONTROLTANKS

Out of the listed tanks, only TK0613 is controlled by the RTO at all times. The other listed tanks have conservation vents installed. The RTO is operating within the outlines satisfactory operating conditions as detailed above. The 12-month rolling records for tank throughput that were submitted via email contain throughput information for all the tanks including TK0613. In June 2017, the THF tank 13,779 gallons stored.

FGCONTROLTANKS appear to be in compliance with the permit.

#### FGFACILITY

The permit limit for VOC in FGFACILITY is 89 tons per year. According to calculations, the total 12-month rolling VOC emissions for the facility, as of June 2017, are 5413.56 pounds or 2.7 tons. This is well below the VOC permitted limit. The individual HAP emissions limit is 8.9 tons per year and total HAP emissions limit is 22 tons per year. The calculated amount is 4165.08 pounds or 2.08 tons, which is below 22 tons per year. The highest HAP emitted at the facility is Methanol. There was 3433.304 pounds emitted in a 12-month rolling time period or 1.71 tons. This is well below the allowed permit limit.

#### 40 CFR Part 63 VVVVV

This NESHAP is in reference to chemical manufacturing. Included with the report is the facility's breakdown of the requirement, current practices, and verification of the requirements found in the NESHAP. Containers are covered or lids are closed at all times except for cleaning or sampling. Truck loading is vented into empty tank to reduce emissions. Truck unloading is vented back into the tank itself through conservation vents.

Leak inspections are done quarterly. No leaks were found during the inspections so no repairs were necessary. The facility operates with a startup/shut down/malfunction plan. No small heat exchanged is done at the facility. Testing was done on the RTO on 11/13/12 and the destruction efficiency was above 95%. All HAPs, including urban HAPs, are being tracked at the facility. Hydrozene is the only urban HAP at the facility and it is track uncontrolled.

There are no continuous processes at the facility; only batch so combined streams are not an issue.

Halogenated streams were not tested because the facility falls below the 10,000 pounds/year threshold. Documentation for this can be found in the attached document. There are no metal HAPs emitted from the facility. There are also no partially soluble HAPs applicable at the facility because the effluent is less than 10,000 ppm, which is mostly methanol.

The notification of compliance status was sent to the EPA on 2/19/10. Semiannual compliance have not been necessary since applicable events have not occurred.

The facility appears to be in compliance with 40 CFR Part 63 VVVVVV.

Dennis and I thanked Mr. Baner for his help and taking us around the facility. We left at 3:00pm. The facility appears to be in compliance with all applicable permit conditions and regulations.

NAME Austin Chyrl

DATE 8/16/17

SUPERVISOR MD 8/18/2017