

DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
ACTIVITY REPORT: On-site Inspection

B167758534

FACILITY: Allnex USA Inc.		SRN / ID: B1677
LOCATION: 2715 MILLER RD, KALAMAZOO		DISTRICT: Kalamazoo
CITY: KALAMAZOO		COUNTY: KALAMAZOO
CONTACT: Riggs Nicole , EHS Manager		ACTIVITY DATE: 06/08/2021
STAFF: Monica Brothers	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Announced, Scheduled, On-site Inspection		
RESOLVED COMPLAINTS:		

This was an announced scheduled inspection. Allnex is a chemical manufacturer that makes a wide variety of resins, additives, and crosslinkers for use on wood, metal, plastic, and other surfaces. The facility in Kalamazoo makes only one type of resin molecule but can make different forms of the same resin. The PPE requirements here are steel-toed boots, safety glasses, hearing protection, hard hats, and no contacts. They are currently operating under MI-ROP-B1677-2018a, and they were last inspected on August 6, 2019.

Staff, Monica Brothers, arrived at the facility at 9:00 am, signed in with the security guard at the gate, and met with Nicole Riggs, EHS Manager. We first went into a conference room to discuss some initial questions and look at some records. Nicole had previously sent me some records to review prior to the on-site inspection, but some of the other records were easier to view at the facility. The facility began operations in 1925, and then eventually split the facility into Allnex and Cytec in 2013. Cytec was then recently bought by a company called Solvay. Allnex makes only one resin molecule but can make it in various forms depending on customer needs. Some of their largest customers are PPG, Valspar, Goodyear, Pirelli, Bridgestone, and Axalta. Allnex was recently deemed a major source of HAPs by the EPA and required to install a scrubber for their Cyrez process and obtain an ROP. After our initial discussion and records review, we took a tour of the facility.

#### EUMACT EEEE: Transfer Racks

The facility does not currently load any material that is above 5% HAP, so no records of the volume through the transfer racks are kept.

#### FGBoilers: EUBOILER1 and EUBOILER3

There are 2 boilers at the facility, Boiler 1 and Boiler 3. Boiler 1 is a Cleaver Brooks 29.29 MMBTU/hr boiler that was installed on January 15, 1971. It can produce 24,000lbs steam/hour at 150psi. Boiler 3 is a 72 MMBTU/hr boiler that was installed on February 1, 1986. It can produce 60,000lbs steam/hour at 150psi. They still provide steam to Solvay even though the two companies have split.

#### FGCYREZ: EUCYREZSTTK, EUCYREZHDTK, EUCYREZBLND, and EUCYREZPKG

This is the powder plant building, which mixes the same resin made in the resin plant with different types of silica, depending on customer demands, to produce a powder product. The powder plant operates 5 days per week, Monday through Friday. This is a batch process. The resin gets pumped from the 2 large storage tanks to a small storage tank that sits right outside the powder plant building. From there, the resin gets pumped into a mixing vessel inside the

building and then large bags of silica get dropped in. The dust from this process is controlled by a Donaldson Torit baghouse and water scrubber.

Records: They do daily baghouse pressure drop readings, which I reviewed. At the time of inspection, the pressure drop reading was 3.4 inches, which is compliant with the requirement that it needs to always be above 1 inch. They also do daily scrubber average flow rate readings. The scrubber is interlocked, so the process is unable to run without the scrubber operating. During the inspection the flow rate monitor was reading 26.83 gpm. The flow rate is monitored with continuous (every 15 minutes) readings, which are stored in a computer database. They are also required to have monthly and 12-month rolling VOC emissions calculations, with a limit of 18.0 TPY. I viewed these records, and they are consistently under this limit, with 3.22 tpy in May 2021 being the highest value observed since September 2020.

#### FGMRPT: Methylated Resins Building

FGMRPT is the methylated resins production building. The process was running during the inspection, and the cryogenic condenser was operating at -58.62 degrees, and the scrubber flow rate was reading 30.74 gmp. The resin plant runs 24 hours per day.

They have a control room for this process, where they can continuously monitor all of the parameters associated with each piece of equipment, like the seal pot and methanol scrubber liquid levels, the condenser outlet temperature, the flows through the scrubbers, etc.

The main reactor is where the initial reaction takes place by combining methanol, formaldehyde, and melamine and heating the mixture. This first reaction creates 75% of the final product molecule. The mixture then goes into holding tanks before entering a thin-film evaporator to get rid of extra water, formaldehyde, and methanol that were left over from the first reaction. Distillation columns are used to separate these materials from one another so that they can be reused in future reactions. After the thin-film evaporator, the resin then comes back into the building and into another tank where more methanol is added, along with nitric acid for pH balance. The next step is to remove the salts that have formed in the reactions in a solid bowl centrifuge (SBC). The now de-salted resin then gets pumped into a different building for a final filtration step in a candle filter. The finished product then gets pumped to two large outdoor tanks.

The vapors that are produced during these processes are controlled by various techniques. Concentrated vapors are routed to the seal pot, where most of them get liquefied. The vapors that still remain after this step then go to the methanol scrubber, which uses both fresh and recycled methanol. Leftover vapors from the methanol scrubber then go to the vapor recovery unit and cryogenic condenser, and then finally exit the stack. Non-concentrated vapors from the resin-making processes go to the water scrubber. The cryogenic condenser has a high outlet vapor alarm, and the temperatures are monitored continuously. According to their Renewable Operating Permit, the outlet vapor temperature must be -30°C or lower while using fresh methanol in the scrubber, and -50°C or lower while using recycled methanol, except for 2,351 hours per 12-month rolling time period when the temperature can be up to -30°C while using recycled methanol.

**Records:** The highest 12-month rolling value for VOC emissions from the cryogenic condenser, during 2021, was about 26 TPY in May 2021, which is below their 49 TPY limit. The highest 12-month rolling value for VOC emissions from the water scrubber, during 2021, was about 1.5 TPY, also in May. This is also under their limit of 6.4 TPY. The highest 12-month rolling value for lbs of resin produced was about 41 million lbs in December 2020, which is also below the 76.6 million lbs limit. They had liquid level indicators on the seal pot and methanol scrubber, pump operating indicators on the methanol scrubber, and a water flow rate indicator on the water scrubber. They continuously keep track of the flows, liquid levels, and condenser outlet temperatures in a computer program that alerts them to any numbers that go over their respective setpoints. They have an alarm setpoint for -55C, even though their ROP now allows for temperatures up to -30C while using fresh methanol, or 2,351 hours between -50C and -30C while using recycled methanol. They have only operated above -55C a few times so far, and they are far under the hours limit for temperatures between -50C and -30C. They are keeping track of their hours of operation at each operating mode, what days they are using recycled methanol in the scrubber, continuous outlet vapor temperature and flow rate records, and daily and hourly averages of outlet vapor temperatures when fresh and recycled methanol are used, respectively. They also have a corrective-actions log for malfunctions, but Nicole said that they have not yet had any malfunctions to record.

#### **FGMACT DDDDD: Boilers at major sources of HAPs**

The boilers use only natural gas. They are required to have tune-ups every 13 months, and those records are attached. They are keeping maintenance records appropriately.

#### **FGMACT OOO: EURECFORMTK, EUMFORMCELTK, EUFRMEOHTK, EURECMEOHTK, EURXN**

They have a monitoring system for their pressure release valves that automatically identifies any pressure release, immediately alerts maintenance employees with alarms, and records the time and durations of the release. They also have a manual system to detect releases, by means of yellow caps on the valves. If there is a release, the yellow cap will come off, which would be very noticeable to maintenance personnel. All of the pressure release devices have their own IDs. They are keeping the required records of the dates when leaks were detected, when they were repaired, method of repair, maintenance records, and calibration checks.

#### **FGMACT ZZZZ: existing emergency generators exempt from permitting but subject to Subpart ZZZZ**

They have one emergency generator and one fire pump at Allnex. They both have a non-resettable hour meter. The emergency generator is a Magna One AC generator that sits right outside the boiler house. It is a 288 hp diesel unit that was installed before 1997, and the hour meter showed 862.6 hours. Nicole said that they do weekly checks on each generator and run them for about 30 minutes. There is also a diesel-fired 335hp fire pump that was installed in 1977 and rebuilt in 2002. It is a Cummins unit, and the hour meter showed 1484.58 hours. Nicole showed me the records for how many hours per year the generator and the fire pump are run, and they were all under the limits for maintenance checks and for non-emergency operations. They also have records of the yearly maintenance done on the units.

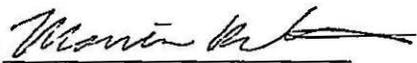
#### **FGCOLDCLEANERS:**

In the maintenance building, there is also a parts washer. It is a Recycle-Kleen unit with the lid closed and the rules posted. It is not heated or agitated. An MSDS was obtained, and it says that the solvent is 100% VOC, with a density of 6.4-6.7 lbs/US gallon. Nicole said that Recycle-Kleen comes to switch out the solvent when needed.

Sandblaster:

In the maintenance building, there is a small sandblasting unit. It has a filter control unit attached to it that filters the air before it is vented outside. It can be considered exempt under Rule 285(I) (vi).

After the tour of the facility, we went back to the conference room to summarize the inspection and answer any other questions. I thanked Nicole for her time and left the facility at about 11:00 am. At the time of this inspection, the facility seemed to be in compliance with their permit requirements.

NAME 

DATE 8/24/21 SUPERVISOR RIL 8/30/21