

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

B167766708

FACILITY: Allnex USA Inc.		SRN / ID: B1677
LOCATION: 2715 MILLER RD, KALAMAZOO		DISTRICT: Kalamazoo
CITY: KALAMAZOO		COUNTY: KALAMAZOO
CONTACT: Brandon Phillips, EHS Manager		ACTIVITY DATE: 03/14/2023
STAFF: Monica Brothers	COMPLIANCE STATUS: Compliance	
SUBJECT: Unannounced scheduled inspection		SOURCE CLASS: MAJOR
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 June 8, 2021.

Staff, Monica Brothers, arrived at the facility at 9:30 am, signed in with the security guard at the gate, and met with Brandon Phillips, EHS Manager. We first went into a conference room to discuss some initial questions and look at some records. 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 deemed a major source of HAPs by the EPA in 2017 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. During the tour, a rangefinder was used to verify the minimum stack heights in the facility's ROP.

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. During the inspection, Boiler 1 was running at 9,211 lbs steam/hour, and Boiler 3 was operating at 26,890 lbs steam/hour. The rangefinder was used to verify the minimum stack heights for Boiler 1 and Boiler 3, which each have a minimum stack height requirement of 50 feet above ground level. Using the rangefinder, the height of each of these stacks was right around the 50-foot mark.

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. The rangefinder was used to verify the minimum stack height for the one stack in FGYZEZ (SVCYR631003), which has a minimum stack height requirement of 50 feet above ground level. Using the rangefinder, the height of this stack was right around the 50-foot mark.

Records: They do daily baghouse pressure drop readings, which I reviewed. At the time of inspection, this process was not operating, so I could not take a pressure reading from the baghouse. 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 26.8 gpm. Unlike the baghouse, the water scrubber stays on even when the FGYZEZ process is not running. 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 3.68 tpy in June 2022 being the highest value observed since 2021.

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 -59.07 degrees, and the scrubber flow rate was reading 31.6 gmp, using fresh methanol. 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.

The rangefinder was used to verify the minimum stack heights for both stacks in FGMRPT (SVMR631509 and SVMR631501), which each have a minimum stack height requirement of 45 feet above ground level. Using the rangefinder, the height of each of these stacks was around the 55-foot mark.

Records: The highest 12-month rolling value for VOC emissions from the cryogenic condenser, since 2021, was 27.2 TPY in February 2023, which is below their 49 TPY limit. The highest 12-month rolling value for VOC emissions from the water scrubber, since 2021, was 1.5 TPY in June 2022. This is also under their limit of 6.4 TPY. The highest 12-month rolling value for lbs of resin produced was about 40,979,303 lbs in June 2022, 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 shutdowns and malfunctions.

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 Brandon showed me the most recent one, which was conducted in November 2022. 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 read 901.57 hours the last time they recorded it on February 20, 2023. Brandon 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 1541.89 hours the last time they recorded it on February 20, 2023. Brandon 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, with the most recent one being conducted in November 2022.

Rule 290: Modaflow and UF410:

In 2019, Allnex submitted an exemption demonstration document for new processes called Modaflow and UF410, which are considered exempt under Rule 290. The new processes are operated within the FG CYREZ processes, but instead of using only the resin made in the FG MRPT side of the plant at this location, it uses resin from other Allnex facilities that is brought in by drums or totes. The resin is then transferred directly from the drums or totes into the blender, where it is mixed with a carrier (solid) material before going to the packaging area. I viewed the Rule 290 records for these processes, and they are consistently under the respective Rule 290 limits for each air contaminant. They are also complying with the Rule 290 requirements for particulate emissions. These Rule 290 emission units should be included in their next ROP renewal.

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. They are using the same solvent (Safety-Kleen Premium Solvent (Virgin and Recycled)) as they were during the last inspection in 2021. Brandon 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. The facility seemed to be in compliance at the time of this inspection.

NAME 

DATE 3/21/23

SUPERVISOR R/L 4/6/23