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

B591873753

FACILITY: H.B. Fuller Co.		SRN / ID: B5918
LOCATION: 2727 Kinney Ave NW, GRAND RAPIDS		DISTRICT: Grand Rapids
CITY: GRAND RAPIDS		COUNTY: KENT
CONTACT: Mark Farkas , Facility Manager		ACTIVITY DATE: 08/14/2024
STAFF: Laura Martin	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: 2024 unannounced, scheduled inspection		
RESOLVED COMPLAINTS:		

On Friday, August 14, 2024, the Department of Environment, Great Lakes and Energy (EGLE) Air Quality Division (AQD) staff Laura Martin (LM) conducted a scheduled, unannounced inspection at H.B. Fuller Co. located at 2727 Kinney Ave. NW, Grand Rapids. The purpose of the inspection was to determine the facility's compliance with state and federal air pollution regulations. AQD staff was accompanied on the inspection by Andrew Shineldecker (AS) and Scott Pelhank (SP).

LM arrived at the facility at approximately 1:30 pm on Wednesday, August 14, 2024. No odors and no visible emissions were noted upon arrival.

Facility Description

H.B. Fuller is a chemical manufacturing company that creates a variety of adhesives, pastes, resins and polyurethanes used mostly by industries. The company is currently in operation under one Opt-Out Permit to Install (PTI) No. 275-04D with synthetic minor limits on Volatile Organic Compounds (VOCs) and Hazardous Air Pollutants (HAPs).

Compliance Evaluation

H.B. Fuller maintains both electronic and handwritten records. A majority of the records required by the PTI were reviewed on-site during the inspection.

EUHOCKMEYERPASTE

This emission unit includes a paste mixing unit and vacuum pump. This emission unit makes hot melt adhesives and various liquid products and is connected to a baghouse for particulate control. H.B. Fuller must maintain daily records of the number of cleaning events, the types of solvent used for each cleaning event, the daily number of batches produced, and quantity of raw solvent material used during batch production. H.B. Fuller staff stated that EUHOCKMEYERPASTE does not produce batches that utilize raw, flammable solvent ingredients in this vessel. Records were requested for the time period of July 2023 through June 2024. Most records were reviewed onsite, some hard copies can be found in the file for review.

After a review of the records provided by H.B. Fuller it was concluded that the facility is keeping the records as required. Pressure drop logs and visible emissions observations for the baghouse serving EUHOCKMEYERPASTE are completed on physical forms that were reviewed on-site and appear to be completed as required by the PTI.

While not explicitly measured during the inspection, stack dimensions appeared to be consistent with PTI No. 275-04D.

EUMHTMIXER

This emission unit includes a 1,100-gallon MHT paste mixer vessel equipped with a vacuum pump. The EUMHTMIXER utilizes one water cooled condenser and is connected to a baghouse for particulate control. The most recent Operation and Maintenance (O&M) Plan / Malfunction Abatement Plan (MAP) was submitted to the AQD on October 23, 2017, and was reviewed.

EUMHTMIXER is equipped with one condenser that was observed in operation at the time of the inspection. The outlet temperature for the condenser was 55°F during the inspection, which is within the satisfactory operating level of a maximum of 80°F. Temperature readings are recorded via continuous monitoring equipment. The condenser is also equipped with indicators that will alert if the cooling water outlet temperature is either approaching or exceeds 80°F. H.B. Fuller staff explained that a facility protocol requires staff to begin cool down procedure around 70°F in order to allow for an increased temperature prior to cooling down. Records were requested June 2023 through July 2024. No alarms were noted during the review where the cooling water outlet temperature exceeded 80°F. H.B. Fuller also utilizes a vapor return system for excess vapors with this emission unit.

H.B. Fuller must maintain daily records of the number of vessel cleaning events, daily records of the solvent used during each vessel cleaning event, daily records of the quantity of each solvent raw material used during batch production, daily records of the number of batches produced, and records of the date and time the alarm activated for the exhaust temperature of the conservation vent condenser, the length of time the exhaust temperature was above 80°F and the actions taken to correct the problem. Some records were requested for the time period June 2023 through July 2024 and can be found in the file for review. Most records were reviewed onsite. H.B. Fuller staff stated that EUMTHMIXER does not produce batches that utilize raw, flammable solvent ingredients. After a review of the records provided by H.B. Fuller it was concluded that the facility is keeping the records as required. Pressure drop and visible emission logs for the baghouse serving EUMHTMIXER were reviewed onsite for the time period of June 2023 through July 2024.

The two stacks associated with EUMHTMIXER were identified during the inspection. Though the exact dimensions were not measured, it appears that the stack dimensions are consistent with PTI No. 275-04D.

FGPREPOLYMER2

This flexible group is for the adhesive production using reactor vessels and includes the following emission units: EUPOLYREACTOR, EUREACTORA, EUREACTORB, EUREACTORC, EUREACTORD, EUREACTORE, EUREACTORF, EUREACTORG, and EUPASTEMIX. EUPASTEMIX includes a paste mixer and corresponding ancillary equipment used to blend various other solid or liquid materials. All other emission units in this flexible group include a vessel and corresponding ancillary equipment.

Reactors D, E, F and G also contain solvent condensers. Diisocyanate emissions are controlled by two parallel activated carbon beds. There is a third bed installed, but only used when necessary, close to carbon replacement times. Particulate emissions are controlled by a baghouse.

The VOC emissions for FGPREPOLYMER2 are limited to 10.7 tons per year (tpy) based on a total 12-month rolling time period. The Methylene diphenyl diisocyanate (MDI) emissions are limited to 0.00006 tpy per 12-month rolling time period. FGPOLYMER2 has Toluene diisocyanate (TDI) emissions that are limited to 0.02 tpy per a 12-month rolling time period. Lastly, FGPREPOLYMER2 is limited to 1,100 batches of prepolymer per each emission unit based on a total 12-month rolling time period. The following table shows the number of batches produced by each reactor during the 2023 calendar year.

Reactor Vessels	Number of Batches Produced in 2023
EUPOLYPOLREACTOR	218
EUREACTORA	347
EUREACTORB	570
EUREACTORC	261
EUREACTORD	558
EUREACTORE	558
EUREACTORF	347
EUPASTEMIX	398

Records for FGPREPOLYMER2 including 12-month rolling emission limits and vessel cleaning events were requested for the time period of June 2023 through July 2024, as well as reviewed onsite. Batches produced during the 2023 calendar year were reviewed on-site and appear to be maintained as required.

As reported via MiEnviro, the TDI and MDI emissions were well under the permitted limit at 0.0000002 lbs combined during the 2023 calendar year. Based on the records reviewed onsite as well as received via email, all emission units included in FGPREPOLYMER2 never exceeded 600 batches each per 12-consecutive months.

FGPREPOLYMER2 must have in place a O&M Plan/MAP in order to operate. The most recent O&M Plan/MAP was submitted to the AQD on October 23, 2017, and was reviewed.

The vessels contained in FGPREPOLYMER2 do not utilize solvents for cleaning.

Temperature monitoring devices appeared to be installed for each emission unit in FGPREPOLYMER2. H.B. Fuller has onsite three carbon adsorption beds that are used to control diisocyanate emissions. Two of the beds are used daily while the third bed is used as backup when approaching a scheduled carbon change. H.B. Fuller stated that the adsorption beds are changed every six months, but that they are working to monitor for more accurate time periods based on their production and when breakthrough will occur. Breakthrough is when the activated carbon beds are saturated and no longer able to adequately control isocyanate emissions which correlates to 20 parts per billion by volume (ppbv). Maintenance records were provided documenting three carbon bed changes that occurred throughout the 2023 calendar year. No documented differential pressure exceeded 20 ppbv. After a review of the records for the carbon beds it appears that H.B. Fuller is operating the carbon absorption beds in a satisfactory manner.

The two stacks associated with FGPOLYMER2 were observed during the inspection and appeared to be consistent with the dimensions identified in PTI No. 275-04D.

FGPARTICULATE

This flexible group is for the adhesive production using vessels in which liquids and powders are mixed. This flexible group is for the following emission units: EUHOCKMEYERPASTE, EUMHTMIXER, EUPOLYREACTOR, EUREACTORA, EUREACTORB, EUREACTORC, EUREACTORD, EUREACTORE, EUREACTORF, EUREACTORG, and EUPASTEMIX. Descriptions of these units are described in previous sections of this report. The particulate matter (PM) emissions for FGPARTICULATE are limited to 0.12 lb per 1,000 pounds of exhaust gases, calculated on a dry gas basis and a 0.53 lb/hr limit per testing. Compliance with these emission limits is assured by properly operating and maintaining the baghouses consistent with good air pollution control practices.

FGPREPOLYMER2 must have in place a O&M Plan/MAP in order to operate. The most recent O&M Plan/MAP submitted to the AQD on October 23, 2017, and was reviewed.

During the inspection H.B. Fuller staff stated that no asbestos is used onsite for formulation ingredients. The cartridge fabric filter on the particulate handling processes of the adhesive and sealant manufacturing facility, high speed dispersers, mixers or FGPREPOLYMER2 appeared to be installed and operating in a satisfactory manner. The dust collector for FGPARTICULATE was in operation at the time of the inspection and the pressure drop reading was at 1.8 inches of water. H.B. Fuller staff stated that the normal operating range for the baghouse was 1.5 - 6 inches of water. Daily pressure drop and visible emission readings were reviewed onsite. After reviewing the records provided, it appears that the baghouse is being operated in a satisfactory manner. H.B. Fuller staff had not noted any visible emissions. This is denoted in the records as "clear" for visible emission observations.

The one stack associated with FGPARTICULATE was observed during the inspection and appeared to be consistent with the dimensions identified in PTI No. 275-04D.

FGSILICONE

This flexible group includes emission units EUMIXER010 and EUMIXER011, two new mixers that are used to produce silicone products, a vacuum pump and water-cooled condenser. The most recent permit modification included this addition to the facility. Control equipment includes the activated carbon bed for VOC control and a new baghouse for particulate control. These two mixers are the only equipment currently routed to the new baghouse and only one of the two mixers had begun production at the time of the inspection. The normal operating range of this baghouse is 2 – 8 inches of water and was reading at approximately 5.8 inches of water during the inspection. Records of daily pressure drop were reviewed on-site, and it appears that H.B. Fuller is operating as required by the PTI.

H.B. Fuller was required to submit an O&M Plan/MAP for FGSILICONE within 90 days of permit issuance which would have been February 14, 2023. At the time of the inspection, LM was unable to locate an O&M Plan/MAP that was submitted to the AQD between permit issuance on November 17, 2022, and the 90-day deadline of February 14, 2023. LM reached out to H.B. Fuller staff and the environmental consultant to inquire about the item. H.B. Fuller consultant, Ray Hahn (RH), responded with the document dated February 2023, but could not locate an email or shipping receipt to show that it was successfully submitted to the AQD. RH stated that while this may have been an oversight, H.B. Fuller has been operating by the guidelines laid out in this document since February 2023.

Based on the document date and statement that the O&M plan/ MAP is being utilized for proper operation of FGSILICONE, a violation notice will not be issued at this time. It should be noted that in order to be in compliance with the PTI all submission deadlines shall be properly met moving forward.

LM discussed the timeline of completion for EUMIXER011, and H.B. Fuller staff stated that they hoped to be able to complete installation and begin trial operation by the end of the year or early 2025.

FGFACILITY

This flexible group includes all equipment at the facility including equipment covered in the PTI No. 275-04D, grand-fathered equipment and all exempt equipment. The VOC emissions for this flexible group are limited to 75 tpy per a 12-month rolling time period. Also, the HAP emissions for this flexible group are limited to less than 9 tpy for individual HAP emissions and less than 22.5 tpy total HAP emissions per 12-month rolling time period. Emission records were requested for the time period of June 2023 through July 2024. The highest 12-consecutive month VOC emission occurred during the 12-month period ending in July 2024 when 0.0537 tons of VOCs were emitted. The highest 12-consecutive month individual HAP emission occurred during the 12-month period ending in July 2024 when 0.0006 tons of Toluene was emitted. The highest 12-consecutive month total HAP emissions occurred during the 12-month periods ending in July 2024, when 0.00753 tons of total HAP was emitted.

Conclusion

Based on the review of the records provided and the facility walk through, H.B. Fuller appears to be in compliance with Opt-Out PTI No. 275-04D.

NAME _____ DATE 9/24/24 SUPERVISOR _____