

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

B591859987

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: 08/20/2021
STAFF: Michael Cox	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: Scheduled Unannounced Inspection		
RESOLVED COMPLAINTS:		

Air Quality Division (AQD) staff Michael Cox (MTC) arrived at the facility at 8:30 am on Friday August 20, 2021, to complete a scheduled, unannounced inspection. No odors and no visible emissions other than steam were noted upon arrival.

### Facility Description

H.B. Fuller is a chemical manufacturing company that creates a variety of solvent cements, resins and polyurethanes used mostly by industries. The company is currently in operation under one Opt-Out Permit to Install (PTI) No. 275-04C.

### Compliance Evaluation

Upon entering the facility, AQD staff MTC met with Mr. Mark Farkas, Plant Manager. Mr. Farkas accompanied MTC on the facility inspection and provided requested maintenance documentation. Mr. Ray Hahn with Civil and Environmental Consultants, Inc. provided the records required by PTI No. 275-04C except for maintenance documentation already provided by Mr. Farkas.

### EUSOLVCEM

This emission unit includes an adhesive mixing and drumming process that includes two mixers and one drum filling station used to produce a solvent based adhesive cement. The most recent Preventative Maintenance (PM) / Malfunction Abatement Plan (MAP) on file from H.B. Fuller was reviewed prior to the site inspection. The PM/MAP was submitted on October 23, 2017, in response to a Violation Notice (VN) dated August 31, 2017. The two condensers were observed in operation at the time of the inspection. The outlet temperatures for the two condensers were observed at 55° F and 60°F respectively during the inspection, which is within the satisfactory operating level of 80°F. The two condensers are also equipped with indicators that will alert if the cooling water outlet temperature exceeds 80°F. Records were requested from January 1, 2020, through August 20, 2021. No alarms were noted during the review where the cooling water outlet temperature exceeded 80°F.

EUSOLVCEM is equipped with a vapor return system. H.B. Fuller representatives explained that during operation the unit is loaded with solvents and the vapor return system allows vapors emitted from the solvents to return to the bulk storage tanks instead of escaping to the atmosphere. Per special condition (SC).VI.4.a-e, H.B. Fuller must keep track and record the daily number of vessel cleaning events, solvents used during the cleaning events, quantity of solvent raw materials used during batch production, batches produced, and records of dates, times, duration and corrective actions taken when the outlet water temperature for either condenser exceeded 80°F. Records were requested for the time period of January 1, 2020 through August 20,

**2021. After a review of the records, it appears that H.B. Fuller is keeping the records as required.**

**The seven stacks associated with EUSOLVCEM were identified during the inspection. Stack dimensions appear to be consistent with PTI No. 275-04C.**

### **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. Per SC.VI.3-4 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. Records were requested for the time period of January 1, 2020, through August 20, 2021. H.B. Fuller staff stated that EUHOCKMEYERPASTE does not produce solvent containing materials. 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 for the baghouse serving EUHOCKMEYERPASTE were also provided for the time period of January 1, 2020, through August 20, 2021. See comments below regarding baghouse operation in FGPARTICULATE for further information.**

**One stack listed for EUHOCKMEYERPASTE was verified during the inspection. Stack dimensions appear consistent with PTI No. 275-04C.**

### **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 PMP / MAP submitted to the AQD on October 23, 2017, was reviewed prior to the site inspection.**

**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 80°F. Temperature readings are recorded in a control room. The condenser is also equipped with indicators that will alert if the cooling water outlet temperature exceeds 80°F. Records were requested from January 1, 2020, through August 20, 2021. 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.**

**Per. SC.VI.4.a-e, 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. Records were requested for the time period of January 1, 2020, through August 20, 2021. 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 for the baghouse serving EUMHTMIXER were also provided for**

the time period of January 1, 2020, through August 20, 2021. See comments below regarding baghouse operation in FGPARTICULATE for further information.

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. 275-04C.

### FGPREPOLYMER2

This flexible group is for the adhesive production using reactor vessels. Diisocyanate emissions are controlled by two parallel activated carbon beds. Particulate emissions are controlled by a baghouse. This flexible group is for the following emission units: EUPOLYREACTOR, EUREACTORA, EUREACTORB, EUREACTORC, EUREACTORD, EUREACTORE, EUREACTORF, EUREACTORG, and EUPASTEMIX. Descriptions and additional information observed during the inspection are discussed further below.

Emission Unit	Description
EUPASTEMIX	This emission unit includes a paste mixer and corresponding ancillary equipment used to blend various other solid or liquid materials. Particulate emissions are controlled by a baghouse.
EUPOLYREACTOR	This emission unit includes a vessel and corresponding ancillary equipment used primarily for manufacturing prepolymers and also for blending polyols. Diisocyanate emissions are controlled by a two parallel activated carbon beds. Particulate emissions are controlled by a baghouse.
EUREACTORA	This emission unit includes a vessel and corresponding ancillary equipment used primarily for blending polyols. Diisocyanate emissions are controlled by two parallel activated carbon beds. Particulate emissions are controlled by a baghouse.
EUREACTORB	This emission unit includes a vessel and corresponding ancillary equipment used primarily for manufacturing prepolymers and also for blending polyols. Diisocyanate emissions are controlled by

two parallel activated carbon beds. Particulate emissions are controlled by a baghouse.

**EUREACTORC**

This emission unit includes a vessel and corresponding ancillary equipment used primarily for blending polyols. Diisocyanate emissions are controlled by two parallel activated carbon beds. Particulate emissions are controlled by a baghouse.

**EUREACTORD**

This emission unit includes a vessel, solvent condenser, and corresponding ancillary equipment used primarily for manufacturing polyurethane prepolymers and also for blending polyether or polyester polyols. Diisocyanate emissions are controlled by two parallel activated carbon beds. Particulate emissions are controlled by a baghouse.

**EUREACTORE**

This emission unit includes a vessel, solvent condenser, and corresponding ancillary equipment used primarily for manufacturing polyurethane prepolymers and also for blending polyether or polyester polyols. Diisocyanate emissions are controlled by two parallel activated carbon beds. Particulate emissions are controlled by a baghouse.

**EUREACTORF**

This emission unit includes a vessel, solvent condenser, and corresponding ancillary equipment used primarily for manufacturing polyurethane prepolymers and also for blending polyether or polyester polyols. Diisocyanate emissions are controlled by two parallel activated carbon beds. Particulate emissions are controlled by a baghouse.

**EUREACTORG**

This emission unit includes a vessel, solvent condenser, and corresponding ancillary equipment used primarily for manufacturing polyurethane prepolymers and also for blending polyether or polyester polyols. Diisocyanate

emissions are controlled by two parallel activated carbon beds. 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. Also, FGPOLYMER2 has Toluene diisocyanate (TDI) emissions that are limited to 0.0044 pounds per hour (pph) per test protocol, and 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.

Records for FGPREPOLYMER2 for monthly, 12-month rolling emission limits, batches produced, and vessel cleaning events were requested for the time period of January 1, 2020, and August 20, 2021. The highest 12-consecutive month VOC emission occurred during the 12-month period ending in May 2021 when 3.60 tons of VOC was emitted. The highest 12-consecutive month MDI emission was noted to be 0.00000669 ton which occurred during the 12-month period ending in July 2021. The highest 12-consecutive month TDI emissions occurred during the 12-month period ending in May 2021 when 0.000000187 ton of TDI was emitted. From the records reviewed, all emission units included in FGPREPOLYMER2 never exceeded 500 batches each per 12-consecutive months.

Per SC.III.1 FGPREPOLYMER2 must have in place a MAP/PMP in order to operate. The most recent PMP / MAP submitted to the AQD on October 23, 2017 and was reviewed prior to this inspection.

Temperature monitoring devices appeared to be installed for each emission unit in FGPREPOLYMER2. H.B. Fuller has on site two carbon adsorption beds that are used to control diisocyanate emissions. H.B. Fuller stated every six months that the adsorption beds are changed, regardless of the condition. Maintenance records were provided documenting the most recent two carbon bed changes which occurred on November 24, 2020, and again on June 1, 2021. 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). At the time of the inspection the isocyanate monitoring device read 0.14 ppbv. Records were requested for the time period of January 1, 2020, through August 20, 2021. The highest reading observed was on March 27, 2021, at 6.10 ppbv which is well within the limit of 20 ppbv. The daily isocyanate emission recordings reviewed were concluded to be acceptable. The normal operating range of the carbon bed differential pressure is 8 to 20 psig. At the time of the inspection the differential pressure gauge read 15 psig. Records of the carbon bed differential were requested for the time period of January 1, 2020, through August 20, 2021. After a review of the records for the carbon bed differential pressure 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. 275-04C.

## 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. These emission limits are assured by properly operating and maintaining the baghouses consistent with good air pollution control practices. Per SC.III.1 FGPREPOLYMER2 must have in place a MAP/PMP in order to operate. The most recent PMP/MAP submitted to the AQD on October 23, 2017 and was reviewed prior to the site inspection.

During the inspection H.B. Fuller staff stated that no asbestos is used on site for formulation ingredients. The cartridge fabric filter appeared to be installed and operating in a satisfactory manner. The dust collector was in operation at the time of the inspection and the pressure drop reading was at 1.9 inches of water. H.B. Fuller staff stated that the normal operating range for the baghouse was 1-6 inches of water. AQD staff requested documentation to verify the stated range. The dust collector manual recommended operating range for the pressure drop is 1-6 inches of water. Daily pressure drop and visible emission readings were requested for the time period of January 1, 2021, through August 20, 2021. After reviewing the records provided, some excursions were noted where the pressure drop was outside of the specified range, however it appears that the baghouse is being operated in a satisfactory manner.

Per SC.VI.4 H.B. Fuller must record daily visible emission observations. Records of the daily visible emission observations were requested for the time period of January 1, 2020, through August 20, 2021. After a review of the records provided it appears that 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. 275-04C.

#### **FGFACILITY**

This flexible group includes all equipment at the facility including equipment covered in the PTI No.275-04C, 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 January 1, 2020, through August 20, 2021. The highest 12-consecutive month VOC emission occurred during the 12-month period ending in January 2020 when 10.02 tons of VOC was emitted. The highest 12-consecutive month individual HAP emission occurred during the 12-month period ending in March 2020 when 1.424 tons of Hexane was emitted. The highest 12-consecutive month total HAP emissions occurred during the 12-month periods ending in March and April 2020, when 4.18 tons of total HAP was emitted.

#### **Conclusion**

**A final discussion was completed with AQD staff and Mr. Farkas. 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. 275-04C.**

NAME Michael T. Cox

DATE 9/22/21

SUPERVISOR HH