

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

B651973203

FACILITY: W. R. Grace & Co.-Conn.		SRN / ID: B6519
LOCATION: 1421 KALAMAZOO ST, SOUTH HAVEN		DISTRICT: Kalamazoo
CITY: SOUTH HAVEN		COUNTY: VAN BUREN
CONTACT: Daniel Carr, Environmental Manager		ACTIVITY DATE: 07/17/2024
STAFF: Mariah Scott	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: On July 17, 2024, Air Quality Division staff conducted an unannounced air quality inspection of the W.R. Grace and Co., formerly Albemarle (B6519) facility.		
RESOLVED COMPLAINTS:		

On July 17, 2024, Air Quality Division (AQD) staff (Mariah Scott, hereafter Staff) conducted an unannounced air quality inspection of the W.R. Grace and Co. (B6519) 1421 Kalamazoo St., South Haven, MI facility (hereafter W.R. Grace). Staff arrived at 11:30 am, made initial contact with the receptionist, Annette, and stated the purpose of the visit. Outside the facility, staff observed no odors and no visible emissions. The weather was around 76°F, with a wind of 12 mph wind from the NW. During the inspection, Staff were accommodated by Daniel Carr and Frank Bommarito. Staff observed the emission units and pollution control equipment at the facility as part of the onsite inspection.

W.R. Grace is a chemical processor, is a synthetic minor for HAPS and VOC and a minor source of SOx, CO, and PM. The facility is subject to 40 CFR 60 Subpart Dc for small industrial steam-generating units and 40 CFR 63 Subpart VVVVVV for chemical manufacturing. The facility has an estimated 204 staff, operating 24 hours a day and seven days a week, in two, twelve-hour shifts.

Staff asked and W.R. Grace stated that the facility has three exempt natural gas boilers (appear to be exempt under Rule 282(2)(b)(i)).

- The EU0217 14.65 MMBtu boiler (serial number 0L096093, installed January 01, 1998)
- Two BO-3301-A1 and BO-3301-A2 each 7.877 MMBtu, 200hp (serial numbers 264868 and 266541, installed on January 17, 2024) were operational.
- The previous 8.37 MMBtu/hr boiler was offline since the last year.

They have three diesel emergency generators, which appear to be subject to 40 CFR Part 63 Subpart ZZZZ NESHAP for Stationary Reciprocating Internal Combustion Engines (RICE). The two engines constructed and installed prior to June 12, 2006 would be considered an existing, stationary RICE. These machines receive regular annual maintenance from a third party and are operated for test purposes less than 50 hours per year (see facility provided maintenance and hours logs). (2545.6 BTU/h per 1 hp.)

- Generac 280hp (serial number 2115768, 373.0 hours on meter, 712,768 BTU/hr)
- Kohler 80hp (serial number 0756381, 494.3 hours on meter, 203,648 BTU/hr)
- Taylor power systems 299hp (serial number TPS515732, 11.5 hours on meter, 766,134 BTU/hr, installed January 16, 2024).

The one cold cleaner (appears to be exempt under Rule 281(2)(h)) uses mineral spirits (MSDS provided). The lid was closed during inspection. Labels were provided during the inspection and photographs of their installation were provided.

The facility also has two electric air compressors (both S3203A-4), an aqueous ammonia tank (appears to be exempt under Rule 284(2)(h)), and two hot boxes run on steam from the boilers to heat solids.

W.R. Grace was last inspected by the AQD on August 4, 2020, and appeared in compliance at that time with Permit PTI 141-07J.

Facility submitted a construction waiver request on September 15, 2022 while their PTI for installation of reactors, a centrifuge, various support tanks, and a new warehouse is being considered. The waiver was granted. An original signature from Frank Bommarito, the authorized representative, in agreement with the waiver conditions was received on October 12, 2022. The facility described

undergoing an annual maintenance check shutdown, when all plant operations are shutdown, reactors are emptied and idled, and all tanks have their vents closed.

The walk-through inspection required safety glasses, steel-toed boots, and hard hat, as well as facility provided safety training reading, flame resistant clothing, and cut resistant gloves. Staff observations, information stated by W.R. Grace, and review of the records provided by W.R. Grace during and following the inspection are summarized below:

EUPMEQUIPMENT Conditions

Particulate emitting equipment vented to the large dust collector.

- I. Emission Limits (not assessed as part of inspection)
- II. Material Limits (n/a)
- III. Process/operational restriction(s)

Permit requirement	Appear Compliant?
1. The permittee shall not operate the dust collector unless a malfunction abatement plan (MAP) as described in Rule 911(2), for the dust collector, has been submitted	Yes, MAP Submitted via email on August 31, 2021. Facility described having no issues with their MAP.

- IV. Design/equipment parameter(s) (Records provided included 4403 - Dust collector pressure calibration log, 4403 - Dust collector maintenance log, EUPMEQUIPMENT pressure logs)

Permit requirement	Appear Compliant?
1. The permittee shall not operate EUPMEQUIPMENT unless the respective cartridge filters are installed, maintained, and operated in a satisfactory manner. Satisfactory operation includes, but is not limited to, maintaining a differential pressure of 0.2 to 5 inches of water column.	Yes, was 0.333 inches of water at 12 pm and area was well maintained.

- V. Testing/sampling (not assessed as part of inspection)
- VI. Monitoring/recordkeeping (Records provided included 4403 - Dust collector pressure calibration log, 4403 - Dust collector maintenance log, EUPMEQUIPMENT pressure logs)

Permit requirement	Appear Compliant?
1. The permittee shall monitor, in a satisfactory manner, the EUPMEQUIPMENT cartridge filters differential pressure on a continuous basis.	Yes, the notable differential pressure deviation was in October 2022, where the machine was shutdown for maintenance. Other deviations appeared to be single, isolated 15-minute readings outside the allowed differential pressure range or annual shutdowns for maintenance.
2. The permittee shall keep, in a satisfactory manner, weekly records of the cartridge filter differential pressure for EUPMEQUIPMENT.	Yes, records were provided.

In the last inspection, there were multiple instances of readings exceeding the maximum differential pressure reading of 5.0 inches of water allowed in the permit. After that, if a reading of 4.5 inches water was entered into the tracking software, it had to be followed up with maintenance actions and brought to the attention of Mr. Carr. For this inspection, a violation notice will not be sent due to the now isolated nature of recorded incidents, timely response of the facility to an actual maintenance issue, and appearance that the added safeguards avoided prolonged future occurrences.

VII. Reporting (n/a)

VIII. Stack and vent restrictions:

SVPMEQUIPMENT stack does not appear to have been modified since the previous inspection August 4, 2020. The stack appears in compliance with PTI 141-07P.

IX. Other requirement(s) (n/a)

FGPROCESS Conditions

Equipment including reactors, various tanks, pumps, and other vessels, a tetrahydrofuran (THF) storage tank, and an HCl bulk storage tank. The process plant consists of tanks, pumps, vessels, which are all routed to the packed-bed scrubber system (with the "Plant 2 scrubbers" available for operation) before ultimately passing through the regenerative thermal oxidizer (RTO). The Plant 2 scrubbers are used if the load ability of main scrubbers is unable to handle surplus. This process is upstream of any pre-treatment. Batch reactors with condensable VOCs are also piped to a condenser before the scrubber. The RTO, scrubber, and caustic storage for the scrubber are located outside, adjacent to the tank farm. The Plant 2 scrubber is located within the facility. The facility said they were looking to replace the RTO in the next 18-24 months.

Emission Unit ID	Emission Unit Process Equipment Description	Control Devices
EU-TK0613	5,700-gallon Tetrahydrofuran (THF) storage tank	Conservation vent, packed-bed scrubber system, and RTO.
EUPROCESSUNITS	Process equipment including reactors, various tanks, pumps, and other vessels.	Packed-bed scrubber system and RTO. Batch reactors with condensable VOCs are also piped to a condenser before the scrubber.
EUHCLTANKS	10,000-gallon HCl bulk storage tank (TK0603).	Conservation vent, packed-bed scrubber system, and RTO.

I. Emission Limits (The permit includes the complete list of requirements. Records provided included June 2022- May 2024 EUPROCESS unit emissions, where all records appear in compliance. Not all pollutants in the permit are emitted each month.)

II. Material Limits (n/a)

III. Process/operational restriction(s)

Permit requirement	Appear Compliant?
1. The permittee shall not operate EUPROCESSUNITS unless a malfunction abatement plan (MAP) as described in Rule 911(2), for the RTO is implemented and maintained.	Yes, the newest version of MAP was submitted via email on April 25, 2013. Facility described having no issues with their MAP.

IV. Design/equipment parameter(s) (Maintenance and flow logs for the Plant 2 scrubber, maintenance records for RTO, conditions recorded for RTO and pack-bed scrubber)

Permit requirement	Appear Compliant?
1. When using the Plant 2 scrubbers as a method of emissions control necessary to meet required emission limits, the permittee shall not vent any EUPROCESSUNITS equipment to the Plant 2 scrubbers unless the Plant 2 scrubbers are installed, maintained, and operated in a satisfactory manner. Satisfactory operation includes, but is not limited to, maintaining an eductor minimum flow rate of 22 gallons per minute for each of the Plant 2 scrubbers.	Yes, Scrubber 2 was not in operation during the inspection, but appeared well maintained. Maintenance and flow logs for the Plant 2 Scrubber were also provided.
2. When using the Plant 2 scrubbers as a method of emissions control necessary to meet required emission limits, the permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor the Plant 2 scrubbers eductor liquid flow rates on a continuous basis, when in use.	Yes, Maintenance and flow logs for the Plant 2 Scrubber were provided and appeared complaint.
3. The permittee shall not operate EUHCLTANKS or any EUPROCESSUNITS equipment when using corrosive materials unless the corrosive vapors are routed to either the packed-bed scrubber system or to the Plant 2 scrubbers.	Yes, as per the described design of the facility.
4. The permittee shall install, calibrate, maintain, and operate in a satisfactory manner, a device to monitor and record the packed-bed scrubber system liquid inlet flow rate, in gallons per minute, on a continuous basis.	Yes, the rate during the inspection was 177.8 gallons per minute and maintenance and flow records were provided.
5. The permittee shall not operate EU-TK0613 unless the RTO is installed, maintained, and operated in a satisfactory manner. Satisfactory operation of the RTO includes maintaining a minimum combustion chamber temperature of 1500°F and a minimum retention time of 0.5 seconds. In lieu of a minimum temperature, the permittee may use an average temperature of 1500°F based upon a three-hour rolling average.	Yes, the RTO Combustion Chamber registered at 1625 degree F during the inspection and maintenance records were provided. All reductions in RTO temperature are annual shutdowns.
6. The permittee shall not operate EUPROCESSUNITS unless the RTO is installed, maintained, and operated in a satisfactory manner. Satisfactory operation of the RTO includes a minimum VOC and acetone destruction efficiency of 98 percent (by weight) or an outlet concentration less than or equal to 20 ppmv combined for VOC and acetone and maintaining a minimum combustion chamber temperature of 1500°F and a minimum retention time of 0.5 seconds. In lieu of a minimum temperature, the permittee may use an average temperature of 1500°F based upon a three-hour rolling average.	RTO maintenance is part of the annual plant maintenance and performed at least once per year. The last stack test for the RTO was in 2012 where it demonstrated a >98% destruction efficiency rate.

7. The permittee shall install, calibrate, maintain, and operate in a satisfactory manner a temperature monitoring device in the combustion chamber of the RTO to monitor and record the temperature on a continuous basis, during operation of EUPROCESSUNITS.	Yes, the RTO maintenance records were provided
---	--

V. Testing/sampling (not assessed as part of inspection)

VI. Monitoring/recordkeeping (Records provided included Plant 2 scrubber liquid flow rates log, conditions recorded for RTO, process A and B records, June 2022-May 2024 EUPROCESS unit emissions)

Permit requirement	Appear Compliant?
2. When using the Plant 2 scrubbers as a method of emissions control necessary to meet required emission limits, the permittee shall keep, in a satisfactory manner, daily records of the Plant 2 scrubbers liquid flow rates when any EUPROCESSUNITS equipment is venting to the Plant 2 scrubbers.	Yes, Plant 2 scrubber liquid flow rates records were provided
3. The permittee shall monitor and record, in a satisfactory manner, the temperature in the combustion chamber of the RTO, on a continuous basis, during operation of EUPROCESSUNITS. Temperature data recording shall consist of measurements made at equally spaced intervals, not to exceed 15 minutes per interval.	Yes, Conditions recorded for RTO were provided
4. The permittee shall keep, in a satisfactory manner, operating temperature records for the RTO as required by SC VI.3. If the measured operating temperature of the RTO falls below 1500°F during operation of EUPROCESSUNITS, the permittee may demonstrate compliance based upon a three-hour rolling average temperature, by calculating the average operating temperature for each rolling three hour period which includes one or more temperature readings below 1500°F.	Yes, RTO records show no issue being below the three-hour rolling average temperature, while operating.
5. The permittee shall keep, in a satisfactory manner, records of the following for EUPROCESSUNITS. a) Chemical steps performed to make each batch of product. b) Calculated emission rates in pounds per batch of each pollutant. c) Calculated emission rates in pounds per hour of each pollutant. d) Calculated emission rates in pounds per month for each pollutant with a monthly emission limit. e) Method of calculation.	Yes, this information was provided for the top two most produced products in May 2024 (process A and B) as a demonstration
6. The permittee shall keep, in a satisfactory manner, records for each calendar month of the average hourly VOC and individual TAC emission rates from EUPROCESSUNITS. The permittee may use the information required to be collected in SC VI.5 to create these records.	Yes, these records were provided
7. The permittee shall keep records of the throughput of each solvent/mixture for EU-TK0613 when controlled by the RTO for each calendar month and 12-month rolling time period, as determined at the end of each calendar month.	Yes, these records were provided

VII. Reporting (n/a)

VIII. Stack and vent restrictions

SVRTO stack does not appear to have been modified since the previous inspection August 4, 2020. The stacks and vents appear in compliance with PTI 141-07P.

IX. Other requirement(s) (n/a)

The Delta V monitoring system can be accessed from within the control room. This system tracks pH meters, flow meters, and differential pressure monitors for the packed bed scrubber and the temperature monitor for the RTO combustion chamber. All below permit-limit RTO temperatures are associated with annual shutdowns.

The facility uses Emissions Master for tracking and calculating emissions. Monthly records were submitted for each pollutant FGPROCESS emitted, although not every pollutant listed on the permit is emitted each year. Monthly VOC emissions ranged from 0.0400 lb/hr to 0.1456 lb/hr, well below the 7 lb/hr limit.

FGTANKFARM Conditions

Tanks located in the tank farm area, all equipped with conservation vents and in a leak containment area.

Emission Unit ID	Emission Unit Process Equipment Description	Associated stacks
EU-TK0605	5,700-gallon xylene solvent storage tank	SV-TK0605
EU-TK0607	5,700-gallon shutdown solvent storage tank	SV-TK0607
EU-TK0609	5,700-gallon idle solvent storage tank	SV-TK0609
EU-TK0611	3,500-gallon shutdown and relocated solvent storage tank, that used to store heptane	SV-TK0611
EU-TK0611-A	5,700-gallon heptane solvent storage tank (labelled 611)	SV-TK0611-A
EU-TK0617	10,000-gallon toluene solvent storage tank	SV-TK0617
EU-TK0619	4,500-gallon decommissioned solvent storage tank	SV-TK0619
EU-TK0607B	10,000-gallon ethyl acetate solvent storage tank	SV-TK0607B
EU-TK0621-B	10,000-gallon methanol storage tank	SV-TK0621B
EU-TK0621-C	10,000-gallon methanol storage tank	SV-TK0621C

Emission Unit ID	Emission Unit Process Equipment Description	Associated stacks
EU-TK0623	10,000-gallon acetone solvent storage tank	SV-TK0623
EU-TK3307	10,000-gallon saltwater Production LTC (Dynalene HC-40) storage tank	SV-TK3307
EU-TK4101A	11,900-gallon wastewater storage tank (V.P. > 1.5 psia)	SV-TK4101A
EU-TK4101B	11,900-gallon wastewater storage tank (V.P. > 1.5 psia)	SV-TK4101B
EU-TK4103A	10,000-gallon waste solvent storage tank	SV-TK4103A
EU-TK4103B	10,000-gallon waste solvent storage tank	SV-TK4103B
EU-TK4301A	4,500 gallon recovered toluene solvent storage tank not used in 2023	SV-TK4301A
EU-TK4301B	10,000 gallon recovered isopropanol solvent storage tank	SV-TK4301B
EU-TK4301C	10,000 gallon recovered isopropyl alcohol solvent storage tank	SV-TK4301C
EU-TK4301D	10,000-gallon dimethylacetamide solvent storage tank	SV-TK4301D
EU-TK4401	3,500-gallon emissions LTC decommissioned (methanol) storage tank	SV-TK4401
EU-TK0627	10,000-gallon isopropanol solvent storage tank with conservation vent	SV-TK0627
EU-TK0627B	10,000-gallon isopropanol solvent storage tank with conservation vent	SV-TK0627B
EU-TK0615-A	10,000-gallon ethanol solvent storage tank with conservation vent	SV-TK0615-A

I. Emission Limits (Records provided included June 2022- May 2024 FGTANKFARM emissions)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Appear Compliant?
1. VOC	2.5 tpy	12-month rolling time period as determined at the end of each calendar month	FGTANKFARM	Yes

- II. Material Limits (Records provided included tank throughput for each month, ethanol transfer history, heptane tank unloading history)

Permit requirement	Appear Compliant?
1. The permittee shall not store tetrahydrofuran (THF) in EU-TK4103A, EU-TK4103B, EU-TK4301A, EU-TK4301B, EU-TK4301C, EU-TK4301D, EU-TK0627B, or EU-TK0615-A.	Yes, tank throughputs provided
2. The permittee shall not transfer more than 6,700 gallons of ethanol to EU-TK0615-A during any hour, as determined by the total amount transferred divided by the time over which the transfer occurs, including the time for pressure relief from the tank truck.	Yes, ethanol transfer history provided
3. The permittee shall not transfer more than 4,155 gallons of heptane to EU-TK0611-A per calendar day.	Yes, heptane transfer history provided
4. The permittee shall only store methanol in EU-TK0621-B and EU-TK0621-C.	Yes, tank throughputs provided

- III. Process/operational restriction(s) (n/a)

- IV. Design/equipment parameter(s)

Permit requirement	Appear Compliant?
1. The permittee shall not operate any FGTANKFARM storage tank unless the corresponding conservation vent is installed, maintained, and operated in a satisfactory manner.	Yes, all conservation vents appeared well maintained and facility said they were checked annually

- V. Testing/sampling (n/a)

- VI. Monitoring/recordkeeping (Records provided included June 2022- May 2024 FGTANKFARM emissions, tank monthly and 12-month rolling throughput records, ethanol transfer history, heptane tank unloading history)

Permit requirement	Appear Compliant?
2. The permittee shall keep records of the throughput of each solvent/mixture for each FGTANKFARM storage tank for each calendar month and 12-month rolling time period, as determined at the end of each calendar month.	Yes, these records were provided

3. The permittee shall calculate the VOC emission rate from FGTANKFARM monthly, for the preceding 12-month rolling time period, using a method acceptable to the AQD District Supervisor.	Yes, these records were provided
4. The permittee shall keep a record of the following for each a) The quantity, in gallons, of ethanol transferred to EU-TK0615-A during the transfer operation. b) The date and time the transfer operation begins. If the amount transferred exceeds 6,700 gallons, the permittee shall also record the following: c) The duration of the transfer operation, including the time for pressure relief from the tank truck. d) The transfer rate, in gallons per hour, as determined by the total amount transferred divided by the time over which the transfer occurs, including the time for pressure relief from the tank truck. operation when ethanol is transferred to EU-TK0615-A.	Yes, ethanol transfer history provided
5. The permittee shall keep a record of the quantity, in gallons, of heptane transferred to EU-TK0611-A each calendar day.	Yes, heptane transfer history provided

VII. Reporting (n/a)

VIII. Stack and vent restrictions

FGTANKFARM stacks and vents do not appear to have been modified since the previous inspection August 4, 2020. The stacks and vents appear in compliance with PTI 141-07P.

IX. Other requirement(s) (n/a)

FGFACILITY conditions

The following conditions apply source-wide to all process equipment including equipment covered by other permits, grand-fathered equipment, and exempt equipment.

Pollution control equipment at the facility includes a dust collector, packed bed scrubber system, and RTO.

I. Emission Limits (2023 MiEnviro annual emissions report, monthly and 12-month rolling FGFACILITY emissions reports)

Pollutant	Limit	Time Period / Operating Scenario	Appear Compliant?
1. VOC	89 tpy	12-month rolling time period as determined at the end of each calendar month	Yes, reports received and 2023 MiEnviro report was 3.41 tons.
2. Each individual HAP	8.9 tpy	12-month rolling time period as determined at the end of each calendar month	Yes, reports received and 2023 MiEnviro report was

			at most 0.055 tons of Toluene
3. Total HAPs	22 tpy	12-month rolling time period as determined at the end of each calendar month	Yes, reports received and according to 2023 MiEnviro report
4. The total HAP emissions from FGFACILITY shall not exceed the limits in SCI.2 and SCI.3 on an uncontrolled basis for any process emitting any urban HAP as defined in Table 1 of 40 CFR Part 63, Subpart VVVVVV			
I. Material Limits (n/a)			
II. Process/operational restriction(s) (n/a)			
III. Design/equipment parameter(s) (n/a)			
IV. Testing/sampling (n/a)			
V. Monitoring/recordkeeping (Records provided included Monthly and 12-month rolling FGFACILITY Emissions Reports and Urban HAP Reports)			

Permit requirement	Appear Compliant?
2. The permittee shall calculate the total VOC, each individual HAP, and total HAPs emission rates from FGFACILITY monthly and for the preceding 12-month rolling time period.	Yes, these records were provided
3. The permittee shall calculate the individual and total HAP emissions for any process emitting any urban HAP found in Table 1 of 40 CFR Part 63, Subpart VVVVVV on an uncontrolled basis monthly and for the preceding 12-month rolling time period.	Yes, these records were provided

VII. Reporting (n/a)

VIII. Stack and vent restrictions (n/a)

IX. Other requirement(s) (Records provided included monthly and 12-month rolling FGFACILITY emissions reports and urban HAP reports and maintenance records)

Permit requirement	Appear Compliant?
1. The permittee shall comply with all provisions of the National Emission Standards for Hazardous Air Pollutants for Chemical Manufacturing Area Sources as specified in 40 CFR Part 63, Subparts A and VVVVVV, as they apply to FGFACILITY.	Copies of these records were provided

The facility included a spreadsheet detailing the requirements of the NESHAP and their compliance procedures. These requirements include maintenance practices such as inspection schedules, leak checks, and repair records. The facility submitted a sample leak check and repair form as well as a standard operating procedure (SOP) document that details adherence to the NESHAP requirements.

W.R. Grace updated Staff that there were no major modifications, removals, or installations since the last inspection, August 4, 2020.

W.R. Grace reported no abnormal conditions, start-ups, shutdowns, or malfunctions that resulted in the emissions of hazardous or toxic air pollutants.

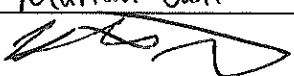
At the time of the inspection and based on a review of records obtained during or following the inspection, the facility appears in compliance with Permit PTI 141-07P. Staff left the facility at 1:30 pm.
-MWS



Image 1(Installed Label 1of2) : Photograph provided by the facility of the installed required label on the outside of their cold cleaner unit.



Image 2(Installed Label 2of2) : Photograph provided by the facility of the installed required label on the inside of their cold cleaner unit.

NAME Mariah Scott


DATE August 27, 2024 SUPERVISOR 