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

N814964593

FACILITY: National Carbon Technologies, LLC		**SRN / ID:** N8149
LOCATION: 513 4TH STREET, GWINN		**DISTRICT:** Marquette
CITY: GWINN		**COUNTY:** MARQUETTE
CONTACT: DAN HENDRICKSON , PLANT MANAGER		**ACTIVITY DATE:** 07/06/2022
STAFF: Joe Scanlan	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** SM OPT OUT
SUBJECT: Unannounced inspection to determine compliance with PTI 24-12A and applicable state and federal air pollution control rules.		
RESOLVED COMPLAINTS:		

REGULATORY AUTHORITY

Under the Authority of Section 5526 of Part 55 of NREPA, the Department of Environment, Great Lakes, and Energy may upon the presentation of their card, and stating the authority and purpose of the investigation, enter and inspect any property at reasonable times for the purpose of investigating either an actual or suspected source of air pollution or ascertaining compliance or noncompliance with NREPA, Rules promulgated thereunder, and the federal Clean Air Act.

PROCESS DESCRIPTION

The plant produces activated carbon pellets via pyrolysis of wood chips purchased from suppliers. The carbon pellets are used in a variety of industries, including water and air filtration and agricultural purposes.

Equipment onsite includes raw material containment bunkers, a hammer mill, a drum dryer, conveyors, a 275 kW natural gas fired generator, and process heaters. Raw material (wood chips) is processed in the hammer mill, dried in the drum dryer, then stored in surge bins prior to being processed in process heater #2 or #3. Process heater #1 has been removed from the facility.

Raw materials, or EU-RAW MATERIAL, are stockpiled in containment bunkers located in Buildings 666 and/or 667. From there stockpiled material is transported to the raw material pre-treatment screens for sizing. Larger-sized raw material is sent to a hammermill then screened again before further processing.

Raw material is then fed into the drum dryer, EU-DRYER. EU-DRYER is heated by a burner fired with softwood or hardwood chips (including tops, limbs, bark, and other forest residue), corn stover, switch grass, and/or sawdust (raw material) in the multi-stage combustion wood-fired burner. The burner is fired with natural gas during start-up and can also continue with natural gas and/or biogas during normal operation.

From EU-DRYER, material is sent to the process heaters. EU-PROCESS HEATERS is a pyrolysis process utilizing two process heaters operating in series that further process the dried biomass from EU-DRYER into a carbonized, sized, and packaged biomass product. This includes a natural gas fired process heater with a maximum heat input capacity of 20.5 MMBtu/hr to further process dried biomass and pre-heat nitrogen, and to recover biogas energy from VOCs and CO in the heater off-gas stream.

REGULATORY ANALYSIS

The source is a Synthetic Minor since the issuance of PTI 286-08, which has been voided; however, the opt-out conditions were rolled into PTI 24-12 and 24-12A. The facility is a synthetic minor for CO, NOx, PM10, PM, VOCs, and HAPs. PTI 24-12A is the only permit currently active for the facility.

Per Rule 301 and Op Memo 14, for certain particulate limit ranges opacity may be set at a lesser percentage than 20. EU-RAW MATERIAL and EU-DRIED MATERIAL have a visible emissions limit of 10% opacity.

EU-GENERATOR is subject to NSPS for Stationary Spark Ignition Internal Combustion Engines established under 40 CFR Part 60 Subpart JJJJ. EU-GENERATOR is a 275 kW natural gas fired, spark-ignition engine. The NSPS requires that the engine is operated according to the manufacturer's written instructions or operating procedures approved by the manufacturer. The NSPS also specifies specific hour requirements to be considered an emergency engine. The permit contains a limit for a total of 500 hours, 100 of which can be used for maintenance checks and readiness testing.

Standards for Hazardous Air Pollutants (HAPs) are regulated under 40 CFR Parts 61 and 63. The emergency engine is subject to the NESHAP for Stationary Reciprocating Internal Combustion Engines in 40 CFR Part 63 Subpart ZZZZ. The source has opt-out conditions for individual and aggregate HAPs and is therefore considered an area source.

EMISSIONS

EU-RAW MATERIAL: PM emissions generated from the process equipment in Building 666, the general in plant air and the ash bin will be controlled by Building 666 baghouse (CE-BH 666) and exhaust through stack SV-BH 666.

EU-DRYER: PM, VOC, NOx, and CO emissions from the dryer are controlled by a multiclone and thermal oxidation system (a primary burner followed in series by a secondary chamber). The emissions from the burner and dryer exhaust through stack SV-EXHAUST. EU-DRYER and EU-PROCESS HEATERS share stack SV-EXHAUST.

EU-PROCESS HEATERS: PM emissions from processed material involved in the bagging process enter a product recovery baghouse and then enters another baghouse that exhausts out stack SV-BH 667. VOC and CO emissions from the drying of material in EU-PROCESS HEATERS are utilized in the process heaters as biogas before exiting shared stack SV-EXHAUST.

EU-DRIED MATERIAL: PM emissions from process equipment are controlled by baghouse CE-BH 667 and CE-BH DRY and exhausts through stack SV-BH 667.

EU-ROADWAY: Fugitive dust emissions from paved and unpaved roads. Controlled with water or dust suppression agent. The facility has a Fugitive Emissions Control Plan in place.

EU-GENERATOR: 275 kW natural-gas fired emergency generator. The emissions are emitted from stack SV-GENERATOR.

EMISSONS REPORTING

2021 MAERS REPORTED & 12-MONTH ROLLING EMISSIONS thru AUGUST 2022*

POLLUTANT	PERMIT LIMIT	12-MONTH ROLLING	MAERS 2021
CO	89.9	27.0	25.6

NOx	89.9	19.9	18.9
PM	89.9	13.2	14.6
PM10	89.9	15.5	14.6
VOC	89.9	12.7	12.0
Aggregate HAPs	22.4	1.59	Not reported
Individual HAPs (Methanol)	8.9	0.78	Not reported
*Reported in Tons Per Year (tpy)			

COMPLIANCE

The facility has not had any compliance issues.

INSPECTION

On 7/06/2022 AQD staff (Joseph Scanlan) met with Dan Hendrickson, Plant Manager, upon arrival at the facility. Mr. Hendrickson escorted me on a tour of the facility, and we discussed process operations and equipment. Mr. Hendrickson provided records required by PTI 24-12A which are outlined below.

EU--RAW-MATERIAL

Emission Limits

SC I.1 PM limit 0.017 lb/1000lb

- In compliance. 2019 test results: 0.003

SC I.2 PM limit 4.22 lb/hr

- In compliance. 2019 test results: 0.44 lb/hr

SC I.3 PM10 limit 4.22 lb/hr

- In compliance. 2019 test results: 0.44 lb/hr

SC I.4 Visible Emissions (VE) limit 10% opacity

- In compliance. 2019 test results: 0% opacity
- At the time of inspection the hammermill was not operating. There were no visible emissions from EU-RAW-MATERIAL.

Design/Equipment Parameters

SC IV.1 Shall not operate unless the baghouse is installed, maintained, and operated in a satisfactory manner.

- In compliance. The baghouse is installed, maintained, and operated satisfactorily.

SC IV.2 Shall not operate the hammermill unless a gauge is installed, maintained, calibrated and operated in a satisfactory manner capable of measuring the pressure drop across each baghouse. The gauge shall be equipped with an audible alarm that will sound when the pressure drop is outside the operating range.

- In compliance. Normal operating range is 0.1 - 6.0" WC. The exterior differential pressure gauge was reading 3.20" WC. In the control room the reading was 2.98" WC. This is a normal fluctuation in pressure. An audible alarm sounds if the differential pressure is outside the normal operating range. The unit is factory calibrated.

Testing/Sampling

SC V.1 PM and PM10 emissions testing required every 5 years.

- In compliance. Most recent test was conducted 8/2019. Results were well below permitted limits:
  - PM limit 0.017 lb/1000lb
    - 2019 test result 0.0027 lb/1000lb
  - PM10 limit 4.22 lb/hr
    - 2019 test result 0.44 lb/hr

Monitoring/Recordkeeping

SC VI.1 The facility shall monitor and record the pressure drop across each baghouse at least once per day

- In compliance. Records provided for 01/01/2022 through 09/07/2022. Differential pressure readings are recorded every hour.

SC VI.2 The facility shall keep monthly records of raw material feed rate:

- In compliance. Hours of operation are recorded during daily operations. Records provided from 01/2021 through 08/2022. The hammermill operated between 232 to 679 hours per month during this timeframe with an average of 517 hours a month.

SC VI.3 Daily visible emission observations are conducted once daily during operation.

- In compliance. Records provided for June 2022. Daily opacity is recorded as <10% or "OK". No deviations reported.

EU-DRYER

Material Limits

SC II.2 The permittee may only burn natural gas, biogas, or burner fuel in EU-DRYER during normal operation:

- In compliance. The facility only burns natural gas and biogas. Natural gas is used during startup and switches to biogas during normal operation.

SC II.3 The permittee shall not feed greater than 4.04 tons of burner fuel per hour to the burner:

- The facility is not using burner fuel for system at this time so throughput is 0.

Process/Operational Restrictions

SC III.1 The permittee shall not process through EU-DRYER more than 25.0 oven dried tons (ODT) of product per hour as determined at the end of each calendar month:

- In compliance. The facility typically processes 2-4 ODT per hour. Records provided from 01/2021 through 08/2022 show an average of 2,664 ODT per hour.

SC III.2 The temperature at the inlet of EU-DRYER shall not exceed 800 degrees F:

- In compliance. Inlet temperature was 533.4 degrees F at the time of inspection. Temperature records show the dryer operates between 500 and 600 degrees F. Records provided from 01/2021 through 08/2022.

Design/Equipment Parameters

SC IV.1 The permittee shall not operate EU-DRYER unless the Thermal Oxidizer (TO) is installed, maintained and operated in a satisfactory manner. The TO must maintain a minimum combustion temperature of 1450 F for the primary chamber and 1000 degrees F for the secondary chamber.

- The primary chamber was 1581 degrees F and the secondary chamber was 1259 degrees F at the time of inspection. The temperature is monitored on a continuous basis and recorded hourly.

Testing/Sampling

SC V.1 & V.2 In compliance. The performance test is based on the conditions in FG-MATERIAL DRYING. The permittee uses results from the performance test conducted in 2019 to demonstrate compliance with the emission limits. See FG-MATERIAL DRYING performance test emission results below.

Monitoring/Recordkeeping

SC VI.1 Shall keep a monthly record of the amount of raw material used to manufacture the finished product:

- In compliance. Records are provided from 01/2021 through 08/2022. During this time frame the average monthly throughput of raw material was 4360 tons.

SC VI.2 Shall monitor and record the 24 hour average for raw material feed rate to the inlet:

- In compliance. Throughput averages 145.3 tons per day. Records are provided from 01/2021 through 08/2022

SC VI.5 Daily and Monthly Oven Dried Tons (ODT) of material from EU-DRYER:

- In compliance. Records provided from 01/2021 through 08/2022. The facility averaged 2664.7 ODT per month and 89 tons per day.

SC VI.6 Shall monitor and record pressure drop across the multicyclone:

- In compliance. Records provided for 01/01/2022 through 09/07/2022. Differential pressure readings are recorded every hour. Normal operating range is 0.1" - 6.0" WC. Hourly average on the day on inspection was 3.79" WC.

SC VI.7 Shall monitor primary and secondary combustion temperatures of the thermal oxidizer system on a continuous basis. Minimum operating temperature of 1450F for the the primary burner and 1000 for the secondary:

- In compliance. Records provided from 01/2022 through 08/2022. Aside from startup/shutdowns, the temperatures are within normal operating range. On the day of inspection, the average temperature of the primary burner was 1614F and 1179F for the secondary burner during the 24 hour timeframe.

SC VI.8 Number of hours of startup for EU-DRYER:

- In compliance. Records are provided from 01/2021 through 08/2022. EU-DRYER averaged 46.2 hours of startup conditions per month during this timeframe.

SC VI.9 Natural Gas usage:

- In compliance. Records are provided from 01/2021 through 08/2022. EU-DRYER used an average of 0.92 MMscf a month during this timeframe.

EU-DRIED-MATERIAL

Emission Limits

In compliance. Verified with testing every 5 years. Testing completed August 2019:

SC I.1 PM limit 0.016 lb/1000lb

- 2019 test results 0.0034 lb/1000lb

SC I.2 PM limit 4.52 lb/hr

- 2019 test result 0.44 lb/ht

SC I.3 PM10 limit 4.52 lb/hr

- Test results 0.44 lb/hr

SC I.4 Visible Emissions (VE) 10% Opacity

- Test results 0%. No visible emissions observed during inspection. No deviations recorded for June 2022 daily observations.

Design/Equipment Parameters

SC IV.1 Shall not operate EU-DRIED MATERIAL unless the baghouse is installed, maintained and operated in a satisfactory manner:

- In compliance. The baghouse is installed, maintained and operated satisfactorily.

SC IV.2 Shall not operate EU-DRIED MATERIAL unless a separate differential pressure gauge with an audible alarm is installed, maintained, calibrated and operated in a satisfactory manner capable of measuring the pressure drop across baghouses CE-BH 667 & CE-BH DRY:

- In compliance. Each baghouse has a differential pressure gauge. There is also a third differential pressure gauge that monitors the pressure drops across both baghouses. Gauges are monitored continuously and all are equipped with audible alarms. The units are factory calibrated.

Testing/Sampling

SC V.1 PM & VE testing shall be completed every 5 years:

- In compliance. The most recent testing was completed 08/2019. Results were well below emission limits. See above.

Monitoring/Recordkeeping

SC VI.1 Shall monitor and record the pressure drop across baghouses CE-BH 667 & CE-BH DRY at least once per day during normal operation:

- In compliance. Hourly records are provided from 01/2021 through 08/2022
- 24-hour average on the day of inspection was 1.79" WC

SC VI.2 Monthly records of dried material feed rate:

- In compliance. Records are provided from 01/2021 through 08/2022. The average for this timeframe is 527.3 tons.

SC VI.3 The facility shall conduct daily VE observations when EU-DRIED-MATERIAL is in operation:

- In compliance. Records are provided for June 2022. VE is recorded as <10%, "OK", or "Good". No deviations were recorded.

EU-GENERATOR:

Material Limits

SC II.1 Shall only burn natural gas in EU-GENERATOR:

- In compliance. The generator burns only natural gas.

Monitoring/Recordkeeping

SC VI.1 & VI.2 The facility shall record the hours of operation for EUGENERATOR:

- NSPS has a 12-month rolling 500-hour limit for total operating hours & 12-month rolling 100-hour limit for testing hours
    - In compliance. 12-month rolling records provided for 01/2021 through 08/2022. Non-testing operating hours were 0 and testing hours is 1 hour each month. EU-GENERATOR has operated 12 hours in the 12-month rolling total up to 08/2022.

EU-PROCESS HEATERS

Material Limits

SC II.1 Shall only burn natural gas in EU-PROCESS HEATERS as a supplemental fuel source:

- In compliance. EU-PROCESS HEATERS uses only natural gas as a supplemental fuel source.

Design/Equipment Parameters

SC IV.1 Shall not operate EU-PROCESS HEATERS sizing & packaging equipment unless the baghouse is installed, maintained and operated in a satisfactory manner:

- In compliance. The baghouse is installed, maintained and operated satisfactorily.

SC IV.2 Shall not operate EU-PROCESS HEATERS sizing and packaging equipment unless a differential pressure gauge with an audible alarm is installed, maintained and operated in a satisfactory manner on baghouse CE-BH 667:

- In compliance. CE-BH 667 has a differential pressure gauge installed with an audible alarm.

SC IV.3 Shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor and record the natural gas usage rate in cubic fet on a daily basis:

- In compliance. The gas-fired pre-heaters have fuel flow meters to read and record natural gas usage. Visual inspection of the meters occurs monthly. The units are factory calibrated.

Testing

The facility shall verify PM and PM10 emission rates from EU-PROCESS HEATERS with stack testing every five years:

- In compliance. The most recent test was completed 08/2019. See test results in FG-MATERIAL DRYING below.

Monitoring/Recordkeeping

SC VI.1 Shall monitor and record the pressure drop across baghouse CE-BH 667 at least once per day:

- In compliance. This is consistent with SC VI.1 of EU-DRIED MATERIAL as well.
- Records provided for 01/2021 through 08/2022.
- 24-hour average on the day of inspection was 1.79" WC

SC VI.2 Shall keep records of monthly natural gas consumption rate to EU-PROCESS HEATERS:

- In compliance. There is a natural gas flow meter on the pre-heaters.
- Records provided for 01/2021 through 08/2022
- Process heater #2 had a monthly average of 0.99 MMscf during this timeframe
- Process heater #3 had a monthly average of 0.30 MMscf during this timeframe

FG-MATERIAL DRYING

Emission limits

In compliance. Initial emissions testing was conducted 12/2014. Testing shall be conducted every 5 years. Most recent test was completed 08/2019:

SC I.1 PM limit 0.09 lb/1000lb

- 2019 test result 0.013 lb/1000lb

SC. I.2 PM limit 11.45 lb/hr

- 2019 test result 2.8 lb/hr

SC I.3 PM10 limit 20.5 lb/hr

- 2019 test result 3.4 lb/hr

SC I.4 NOx limit 46.2 lb/hr

- 2019 test result 4.8 lb/hr

SC I.5 CO limit 23.1 lb/hr

- 2019 test result 6.7 lb/hr

SC I.6 VOC limit 23.1 lb/hr

- 2019 test result 3.3 lb/hr

SC I.7 Hydrogen Chloride (HCl) limit 2.1 lb/hr

- 2019 test result 0.04 lb/hr

SC I.8 Visible Emissions (VE) limit 20% opacity

- 2019 test result 0% opacity

Testing/Sampling

In compliance. Permittee shall verify visible, PM, PM10, NOx, CO, VOC, HCl, and methanol emission rates from FG-MATERIAL DRYING's stack once every 5 years. Testing was last performed in 2019 the facility was in compliance with all the emission limits listed above. Methanol is not listed in Section I. Emission Limits; however, testing is required to maintain compliance as an opt-out area source for HAPs:

- Methanol limit 23.1 lb/hr
  - 2019 test result 0.2 lb/hr

Monitoring/Recordkeeping

In compliance. Visible emission observations are performed once daily during operation to verify opacity is below 20%. See attached records for 06/2022.

FG-FACILITY

SOURCE WIDE CONDITIONS

Emission Limits

- In compliance. See 2021 MAERS REPORTED & 12-MONTH ROLLING EMISSIONS thru AUGUST 2022 table above under EMISSIONS REPORTING for source-wide limits, reporting and test data.

Process/Operational

SC III.1 Shall not operate FG-FACILITY unless a Malfuntion Abatement Plan (MAP) is implemented and maintained:

- In compliance. An acceptable MAP was implemented in 2012. It is recommended the facility review the MAP on an annual basis and update as necessary.

SC III.2 Shall not operate FG-FACILITY unless an acceptable Compliance Sampling and Monitoring Plan has been implemented and maintained:

- In compliance. An acceptable Compliance Sampling and Monitoring plan was implemented in 2012. It is recommended the facility review the Plan on an annual basis and update as necessary.

SC III.3 Shall not operate FG-FACILITY unless a program for continuous fugitive emissions control for all plant roadways, the plant yard, all material storage piles, and all material handling operations is implemented and maintained:

- In compliance. An acceptable Fugitive Emissions Control Plan was implemented in 2012. It is recommended the facility review the Plan on an annual basis and update as necessary.

Monitoring/Recordkeeping

SC VI.1 Shall keep monthly and 12-month rolling records of PM and PM10 emissions from FG-FACILITY:

- In compliance. Facility provided records from 01/2021 through 08/2022 showing monthly and 12-month rolling PM and PM10 emissions

SC VI.2 Shall keep monthly and 12-month rolling records of NOx, CO and VOC emissions from FG-FACILITY:

- In compliance. Facility provided records from 01/2021 through 08/2022 showing monthly and 12-month rolling NOx, CO and VOC emissions.

SC VI.3 Shall keep monthly and 12-month rolling records of individual and aggregate HAPs emissions from FG-FACILITY:

- In compliance. Facility provided records from 01/2021 through 08/2022 showing monthly and 12-month rolling individual and aggregate HAPs emissions.

CONCLUSION

The facility is well below emission limits for all pollutants and all emission units are well-maintained and operated. The facility provides adequate monitoring of emission unit control devices and maintains records in a satisfactory manner. The MAP, Compliance Sampling and Monitoring Plan, and Fugitive Emissions Control Plan are being adequately implemented.

Emission and monitoring records are attached to this report. At the time of inspection and based on records provided, the facility is in compliance with PTI 24-12A and all other applicable state and federal air quality regulations.

NAME Joseph Scanlon DATE 9-23-22 SUPERVISOR Michael Sivlan