M4742

MAWIN

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

M474243412

FACILITY: SoulBrain Michigan, Incorporated		**SRN / ID:** M4742
LOCATION: 47050 Five Mile Rd, NORTHVILLE		**DISTRICT:** Detroit
CITY: NORTHVILLE		**COUNTY:** WAYNE
CONTACT: Guy Balok , Security and Safety Coordinator		**ACTIVITY DATE:** 02/22/2018
STAFF: Todd Zynda	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MINOR
SUBJECT: Scheduled Inspection		
RESOLVED COMPLAINTS:		

REASON FOR INSPECTION: Targeted Inspection
INSPECTED BY: Todd Zynda, AQD
PERSONNEL PRESENT: Guy Balok, Security and Safety Coordinator
FACILITY PHONE NUMBER: (248) 869-3003
FACILITY FAX NUMBER: (248) 869-3001
FACILITY WEBSITE: soulbrainmi.com

FACILITY BACKGROUND

Soulbrain MI (Soulbrain), formerly TSC Michigan, Inc., is located at 47050 Five Mile Road, Northville, Michigan. The 130,000 square foot (ft^2) facility is located on a 14 acre parcel. The boundaries of the facility are as follows. To the west is a former correctional facility (currently under redevelopment). To the south and east are industrial and commercial businesses. Residential areas are located approximately 0.4 miles to the north.

Hours of operation at the facility are 7 AM to 5 PM, Monday through Friday. Soulbrain currently has sixteen employees.

Facility emissions are regulated under Permit to Install (PTI) 167-10F. In addition, the facility is subject to Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (40 Code of Federal Regulations [CFR] Part 60, Subpart IIII).

PROCESS OVERVIEW

Soulbrain produces custom electrolyte solutions for the lithium battery manufacturing industry. The process includes 17 chemical storage tanks, 3 mixing vessels, 2 liquid waste tanks, 2 drum cleaning stations, 2 drum filling stations, 2 glove boxes, and other miscellaneous equipment. Chemicals used for the electrolyte solutions are stored in tanks and containers. The batches of electrolyte solution are prepared in mixing vessels. Chemicals are not exposed to ambient air as oxygen has the potential to degrade the quality of electrolyte that will be manufactured from the chemical. To avoid exposure to oxygen, chemical storage tanks and mixing vessels are blanketed with nitrogen. Following production of electrolyte batches in the mixing vessels, the electrolyte solution is then loaded into containers for off-site transportation.

Process air emissions from electrolyte manufacturing are treated through either the low-density or high-density carbon adsorption systems (activated carbon). The emissions treated at the low-density carbon system are generated from multiple hoods or stations located near equipment, and at connect/disconnect points located throughout the facility. Emissions treated at the high-density carbon system are generated from working losses associated with chemical transfers, the excess nitrogen from using nitrogen to conduct liquid chemical transfers, and the "drying" of cleaned drums using nitrogen. See the February 28, 2013 inspection report (MACES report M474220581) for a site layout map, information on the generalized process flow diagrams for the facility process, and for the high-density and low-density carbon adsorption systems.

In addition to the electrolyte manufacturing at the facility, Soulbrain also operates four boilers, one emergency generator, and one fire pump.

PTI 167-10F was issued on June 23, 2017 for the authorization to increase throughput of five permitted chemicals, and to add nine additional chemicals.

COMPLAINT/COMPLIANCE HISTORY

There have been no complaints for this facility.

During June 7, 2011, the facility was inspected and was determined to be in compliance with PTI 167-10. During the inspection it was recommended that the facility pursue a permit modification as there were carbon adsorption breakthrough testing problems as a result of the low production rates. The facility was issued a PTI modification (PTI 167-10A) on August 29, 2011, which contained additional conditions for carbon breakthrough monitoring.

During February 28, 2013, the facility was inspected and was determined to be in compliance with PTI 167-10A.

During May 27, 2015, the facility was inspected and was determined to be in compliance with PTI 167-10B.

OUTSTANDING CONSENT ORDERS

None

OUTSTANDING VNs

None

INSPECTION NARRATIVE

On February 22, 2018 the Michigan Department of Environmental Quality (MDEQ) Air Quality Division (AQD) inspector, Mr. Todd Zynda conducted an unannounced inspection of Soulbrain located at 47050 Five Mile Road, Northville, Michigan. During the inspection, Mr. Guy Balok, Security and Safety Coordinator provided information and a tour of facility operations relating to air quality permits. The inspection was conducted to determine the facility's compliance with the Natural Resources and Environmental Protection Act (NREPA), Act 451, Part 55, and PTI 167-10F.

At approximately 8:45 AM, AQD personnel (Todd Zynda) arrived onsite and performed outside observations. No visible emissions or odors were observed at the facility. At 8:55 AM Mr. Zynda entered the facility, stated the purpose for the inspection, and was greeted by Mr. Balok. During the opening meeting the facility operations were discussed. According to Mr. Balok, the facility is operating at approximately 25 percent (%) or less of the maximum production capacity. Mr. Zynda provided an inspection checklist for items contained within PTI 167-10F. Mr. Balok stated that Mr. Brian Hackney, Chemical Engineer, maintains the records and is out of the office until February 27, 2018. It was agreed that the records would be provided following Mr. Hackney's return. Following the discussion of operations and PTI 167-10F record keeping requirements, a tour of the facility was conducted.

The tour began at the returned drum exterior cleaning area. At this area, returned drums are wiped down and staged for continued use. Each stainless steel drum is equipped with a "quick connect" on the stationary lid for loading and unloading of electrolyte solution. The tour continued at the main production area. Within the production area, the dispensing and canister cleaning area, loading booths, storage tanks, and mixing vessels were observed. All equipment appeared to be in good operating condition. Duct work for both the low-density and high-density carbon adsorption systems appeared to be in good condition. The production facility as a whole was very clean and maintained in excellent condition.

In addition to the production area, and mixing vessel room, the onsite analytical laboratory was observed. The hoods located in the laboratory are vented to the low-density carbon adsorption system.

Following observation of the production area, both carbon adsorption systems and exhaust stacks were observed.

During the inspection the emergency generator and fire pump were observed. At the time of inspection, the hour meter on the emergency generator read 316 hours. According to Mr. Balok, the facility replaced the fire pump during October 2017. During the inspection, the hour meter on the fire pump read 5.4 hours.

Equipment	Manufacturer	Capacity	Fuel
Fire Pump	Clarke Fire Pump Engines	177 KW	Diesel

Emergency Generator	Caterpillar	625 KW	Diesel

The boilers at the facility were not observed. According to Mr. Balok, the boilers have not been modified since the previous inspection. The inspection conducted on February 28, 2013 identified the following boilers.

Equipment	Manufacturer	Capacity	Fuel
Boiler	AJAX	7 MMBtu/hr	Natural Gas
Boiler	AJAX	4.2 MMBtu/hr	Natural Gas
Boiler	Lochnivar	1.4 MMBtu/hr	Natural Gas
Boiler	Lochnivar	1.4 MMBtu/hr	Natural Gas

Following the inspection, Mr. Hackney provided the requested records on March 8, 2018. Correspondence is provided in the attachment to this report.

APPLICABLE RULES/PERMIT CONDITIONS

For brevity, permit conditions and the language of federal and state rules have been paraphrased.

PTI 167-10F - FGELFACILITY

SC I.1 and SC VI. 3. **COMPLIANCE**. 12-month rolling ethyl methyl carbonate (EMC) emissions shall not exceed 1.1 tons per year (tpy). Soulbrain maintains 12-month rolling EMC emissions which have been well below 1.1 tons per year. The highest reported 12-month rolling EMC emission from December 2015 through December 2017 occurred at the end of February 2016 at 0.10 tons. During a phone call with Mr. Hackney on March 20, 2018, it was confirmed that EMC was not received at the facility since January 2017. According to Mr. Hackney there was a slow down in production during 2017.

SC II. 1 and SC VI. 5. **COMPLIANCE**. Facility wide throughputs shall not exceed the following: a) 32,202 gallons per month of dimethyl carbonate; b) 10,937 gallons per month of propylene carbonate; c) 1,434 gallons per month of methyl propionate; d) 277 gallons per month of adiponitrile; e) 236 gallons per month of gamma-butyrolactone; f) 266 gallons per month 3,5-dimethylisoxazole; g) 336 gallons per month of acetonitrile; and h) 32 gallons per month of tris(trimethylsilyl)borate.

The facility provided monthly throughput records for 2017. All throughputs are significantly less than the specified material limits.

SC IV. 1 and 2. **COMPLIANCE**. Shall not operate material loading or unloading, transfers, or production portions of FGFACILITY unless the low-density and high-density activated carbon system is installed, maintained, and operated in a satisfactory manner. During the inspection, it appeared that material loading and unloading, transfers and production are properly controlled by the activated carbons systems.

SC IV. 3. **COMPLIANCE**. Shall not operate material loading or unloading, transfers, or production portions of FGFACILITY unless the associated hoods, stations, and emission collection points for both the Low Density and High Density activated carbon systems are installed, maintained and operated in a satisfactory manner. Satisfactory operation requires that the active hoods, stations, and emission collection points are operating at a pressure lower than all adjacent areas, so that air flows into the activated carbon systems. Material loading, unloading, and transfers appear to be conducted with the use of hoods, stations, and emission collection points. The operations at the facility appear to meet SC IV. 3.

SC V. 1 and 2. **COMPLIANCE**. Low-density and high-density activated carbon systems are tested at least once every two months for breakthrough. Testing of both the low-density and high-density carbon systems is conducted every two months.

SC V. 3. **COMPLIANCE**. Upon request for the AQD, the permittee shall verify the direction of air flow for collection points for both the Low Density and High Density carbon systems. At this time testing has not been requested.

SC VI. 1 and 2. **COMPLIANCE**. Shall keep all records of carbon breakthrough monitoring and carbon replacement for both the high-density and low-density carbon system. Records are maintained for carbon breakthrough monitoring. According to Mr. Hackney carbon replacement for the high-density carbon system occurred in April 2013. Carbon replacement has not occurred on the low-density system.

SC VI. 4. **COMPLIANCE**. Shall maintain a current list of materials used in FGELFACILITY that are determined to be exempt from the health-based screening level requirement of Rule 225. The facility provided a list of materials exempt from health-based screening level requirement of Rule 225. The list indicates that materials claimed exempt were documented in subsequent PTI applications.

SC VIII. 1. **COMPLIANCE**. SVLOWDENSITY shall have maximum exhaust diameter of 28 inches and a minimum height of 45 feet above ground. The stack for the low-density carbon system appears to meet permit conditions.

SC VIII. 2. **COMPLIANCE**. SVHIGHDENSITY shall have maximum exhaust diameter of 14 inches and a minimum height of 45 feet above ground. The stack for the high-density carbon system appears to meet permit conditions.

Federal Requirements

40 CFR Part 60, Subpart IIII "Standards of Performance for Stationary Compression Ignition Internal Combustion Engines – The fire pump is subject to this regulation as the engine was manufactured after April 1, 2006 (40 CFR 60.4200). The emergency generator is not subject to this regulation as it was installed in 1994.

Owner/operator must comply with emission standards specified in this subpart. **COMPLIANCE**. Emissions Performance Data was provided for the new fire pump installed in October 2017. Documentation provided indicates that the manufacturer certified emissions meet emissions in Table 2 of Subpart IIII.

Install a non-resettable hour meter (40 CFR 60.4209(a)). **COMPLIANCE**. The unit is installed with a non-resettable hour meter.

Limit maintenance checks and readiness testing to 100 hours per year (40 CFR 60.4211(e)). **COMPLIANCE**. At the time of inspection, the hour meter read 5.4 hours

40 CFR Part 60, Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units – The boilers at the facility are not subject to Subpart Dc as the heat input capacities for the boilers are less than 10 million British thermal units per hour (MMBtu/hr).

40 CFR Part 63, Subpart JJJJJJ, National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources – AQD is not delegated the regulatory authority for this area source maximum achievable control technology (MACT), therefore the regulation was not evaluated.

PTI EXEMPT EQUIPMENT

Boilers
The boilers present at the facility are exempt from PTI requirements under the following Rule.

R336.1282(2)(b)(i): "Permit to install does not apply to.. Sweet natural gas, liquefied petroleum gas, or a combination thereof and the equipment has a rated heat input capacity of not more than 50,000,000 Btu per hour."

Emergency Generator
The emergency generator operates at 625 KW/hr. Based on calculations, the 625 KW/hr power output rating is equivalent to 2.1 MMBTU rated input. At a 25% efficiency conversion, the maximum converted rating is approximately 8.4 MMBTU/hr. Based on the calculated rating, the emergency generator is exempt from PTI under the following Rule.

R336.1285(2)(g): "Permit to install does not apply to...Internal combustion engines that have less than 10,000,000 Btu/hour maximum heat input."

Fire Pump

The fire pump operates at 177 KW/hr. Based on calculations, the 177 KW/hr power output rating is equivalent to 0.603 MMBTU rated input. At a 25% efficiency conversion, the maximum converted rating is approximately 2.41 MMBTU/hr. Based on the calculated rating, the fire pump is exempt from PTI under the following Rule.

R336.1285(2)(g): "Permit to install does not apply to...Internal combustion engines that have less than 10,000,000 Btu/hour maximum heat input."

APPLICABLE FUGITIVE DUST CONTROL PLAN CONDITIONS:

Not applicable.

MAERS REPORT REVIEW:

The facility is not required to report to the Michigan Air Emission Reporting System (MAERS). The fire pump is subject to NSPS 40CFR Part 60, Subpart IIII, but at this time the MDEQ does not consider such equipment as MAERS or fee subject.

FINAL COMPLIANCE DETERMINATION:

At this time, this facility is in compliance with PTI 167-10F, and applicable Federal and State air quality regulations.

NAME _____ DATE 3/26/18 SUPERVISOR JK