

M4742  
MAWILL

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

M474229555

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: 05/27/2015
STAFF: Todd Zynda	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: FY 2015 Targeted Inspection		
RESOLVED COMPLAINTS:		

REASON FOR INSPECTION: Targeted Inspection

INSPECTED BY: Todd Zynda, AQD

PERSONNEL PRESENT: Brian Hackney, Chemical Engineer; 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<sup>2</sup>) facility is located on a 14 acre parcel. The boundaries of the facility are as follows. To the west is a former correctional facility. 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 8 AM to 5 PM, Monday through Friday. Soulbrain currently has fifteen employees.

Facility emissions are regulated under Permit to Install (PTI) 167-10B. 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 15 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 a fire pump.

PTI 167-10B was issued on December 6, 2013 for the authorization to handle six additional chemicals in the process and to reduce the testing frequency of carbon breakthrough of the high-density and low-density carbon

systems.

**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.

**OUTSTANDING CONSENT ORDERS**

None

**OUTSTANDING LOVs**

None

**INSPECTION NARRATIVE**

On May 27, 2015 the Michigan Department of Environmental Quality (MDEQ) Air Quality Division (AQD) inspector, Mr. Todd Zynda conducted a level 2 unannounced inspection of Soulbrain located at 47050 Five Mile Road, Northville, Michigan. During the inspection, Mr. Brian Hackney, Chemical Engineer, and 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 167-10B.

At 1:00 PM, AQD personnel (Todd Zynda) arrived onsite and performed outside observations. No visible emissions or odors were observed at the facility. At 1:10 PM Mr. Zynda entered the facility, stated the purpose for the inspection, and was greeted by Mr. Balok and Mr. Hackney. During the opening meeting the facility operations were discussed. According to Mr. Hackney, the facility is operating at approximately 33 percent (%) of the maximum production capacity. Mr. Zynda provided an inspection checklist for items contained within PTI 167-10B. Mr. Hackney stated that Conestoga-Rovers and Associates (CRA) maintains the records as they are the consultant hired to perform carbon system breakthrough monitoring and record keeping. It was agreed that the records would be provided within seven business days. Following the discussion of operations and PTI 167-10B 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. According to Mr. Balok and Mr. Hackney, High Density carbon system had the carbon replaced in April 2013, due to breakthrough monitoring indicating breakthrough. According to Mr. Hackney, during carbon change out the facility operations were shut down.

During the inspection ancillary equipment (emergency generator, fire pump and boilers) were not observed. According to Mr. Balok, those pieces of equipment have not been modified since the previous inspection. The inspection conducted on February 28, 2013 identified the following pieces of equipment.

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Equipment	Manufacturer	Capacity	Fuel
Fire Pump	Clarke Fire Pump Engines	177 KW	Diesel
Emergency Generator	Caterpillar	625 KW	Diesel
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. Balok provided the records requested on June 10, 2015. 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 167-10B

SC I.1 and SC VI. 3. **IN 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 occurred in March 2015 and May 2015 at 0.06 tons.

SC IV. 1 and 2. **IN 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. **IN 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. **IN COMPLIANCE.** Low-density and high-density activated carbon systems are tested at least once every eight weeks. CRA provides testing of both the low-density and high-density carbon systems every eight weeks.

SC VI. 1 and 2. **IN 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. Carbon replacement for the high-density carbon system occurred in April 2013. Carbon replacement has not occurred on the low-density system.

SC VIII. 1. **IN 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. **IN 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. **IN COMPLIANCE.** Emissions Performance Data was provided for the fire pump during the February 28, 2013 inspection. Documentation (see MACES report M474220581) 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)). **IN 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)). **IN COMPLIANCE.**

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(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(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 137 KW/hr. Based on calculations, the 137 KW/hr power output rating is equivalent to 0.467 MMBTU rated input. At a 25% efficiency conversion, the maximum converted rating is approximately 1.87 MMBTU/hr. Based on the calculated rating, the fire pump is exempt from PTI under the following Rule.

R336.1285(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 167-10B, and applicable Federal and State air quality regulations.

NAME *[Signature]*

DATE 6/11/15

SUPERVISOR JK