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

P094553362

FACILITY: Battery Solutions Recovery, LLC		**SRN / ID:** P0945
LOCATION: 4930 Holtz Drive, WIXOM		**DISTRICT:** Warren
CITY: WIXOM		**COUNTY:** OAKLAND
CONTACT: Adam Hancock , Manager, Recovery Operations		**ACTIVITY DATE:** 03/12/2020
STAFF: Iranna Konanahalli	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MINOR
SUBJECT: FY 2020 Scheduled Inspection of Battery Solutions, LLC, Wixom		
RESOLVED COMPLAINTS:		

Battery Solutions, LLC (P0945)
4930 Holtz Drive
Wixom, Michigan 48393-2094

Phone: (800) 852-8127

PTIs: AQD issued Permit-to-Install (PTI) Nos. 248-09 dated January 29, 2010, for alkaline & lithium batteries crushing (7266 Kensington Road, Brighton, Michigan) 248-09A dated October 26, 2015, to remove EULITHIUM and retain only EUALKALINE (7266 Kensington Road, Brighton, Michigan) as Battery Solutions decommissioned and removed the lithium-ion battery production line, and 248-09B dated September 28, 2018 (Battery Solutions Recovery, LLC, 4930 Holtz Drive, Wixom, Michigan. Relocated from Brighton [crushing] and Howell [sorting]).

On March 12, 2020, I conducted a level-2 **FY 2020 Scheduled Inspection** of Battery Solutions, LLC ("the company" or "Battery") located at 4930 Holtz Drive, Wixom, Michigan 48393-2094. The inspection was conducted to determine compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451; and Michigan Department of Environmental Quality, Air Quality Division (MDEQ-AQD) rules.

During the FY2020 inspection, Mr. Tom Edwards (Phone: 800-852-8127-ext. NA; Phone: 248-446-5633; Mobile: 517-294-6330; Fax: NA; E-mail: Tom@BatterySolutions.Com), Manager, Quality, Environmental Health & Safety, and Ms. Heather Soerries (Phone: 800-852-8127-ext. NA; Phone: 248-446-5642; Mobile: 517-304-9869; Fax: NA; E-mail: hSoerries@BatterySolutions.Com), Quality, Environmental Health & Safety Analyst assisted me.

Battery Solutions, LLC ("Battery") collects and recycles or upcycles batteries and repurposes the secondary commodities for reuse in steel manufacturing, agriculture, and new battery manufacturing, among other applications. Battery is constantly researching new uses in order to cut down on the mining of virgin elements and continue, "circling" materials found in batteries. The circular economy or a "take, make, reuse" model will help to sustain growing human population.

Battery's unique approach to collecting, sorting, and processing end-of-life batteries means every single battery is treated based on its optimal next destination. Battery sorts and grades

batteries, which has been, recently, about 50 million pounds per year, for reuse, repurposing or recycling seeking the best economical outcome

In battery recycling process, Battery uses the best methods for recovering the materials found inside alkaline and nickel metal hydride batteries. This results in steel and nickel as a secondary commodity that is excellent to use in manufacturing. Additionally, Battery can control purity of the zinc (Zn) and manganese (Mn) concentrate by using its sorting technology which allow Battery's strict controls on sorting batteries not only by chemistry but also by brand. In doing so, concentrate suitable for us as a micronutrient in fertilizer. Corn and soybeans use this combination (Zn & Mn) in fertilizer mix.

To Wixom location, Battery Solutions Recovery, LLC of Howell (Sorting) moved about January 2018 and Battery Solutions, LLC of Brighton (Crushing) moved about February 08, 2018. Battery Solutions, LLC owns Battery Solutions Recovery, LLC.

There are two operations in 90,000-square-foot Wixom building: Sorting and Crushing.

Sorting

Lead acid batteries are not handled as they may be associated with RCRA hazardous waste. Batteries are sorted as follows:

1. Ni-metal hydride
2. Li ion
3. Li Metal
4. Alkaline
5. Zn-carbon (alkaline)

Crushing

Only alkaline batteries are crushed for recovery of manganese (Mn) and Zinc (Zn). Crusher was installed about January 2019 and stack test was performed in March 2019. Battery crusher is known as alkaline processing line (EU-ALKALINE), which is equipped with a baghouse. The line consists of a hammer (16 hammers) mill and a separator that separates crushed materials into: steel, Mn & Zn, brass pins, ferrous materials and fluff (plastic, paper etc.). While steel is sent to arc furnace of a steel mill for re-melting, Zn & Mn mixture is sent to fertilizer companies to mix up to 2% into a fertilizer for corn and soy.

The baghouse (Jetline CH-V2 Model JCH 120) consists of 46 bags (79 inches Height & 19.5 inches Diameter).

PTI No. 248-09B dated September 28, 2018

Emission Unit ID	Emission Unit Description (Process Equipment & Control Devices)	Flexible Group ID
EUALKALINE	Production line that will grind dry cell alkaline batteries into a powder. Emissions will be controlled by a baghouse.	NA
Changes to the equipment described in this table are subject to the requirements of R 336.1201, except as allowed by R 336.1278 to R 336.1291.		

PTI No. 248-09B, EUALKALINE, I.1-3

Pollutant	Limit	Time Period / Operating Scenario	Equipment	March 21-22, 2019, test[β]	
1. PM	0.01 lbs per 1,000 lbs of gas*	Hourly	EUALKALINE	0.0011	
2. PM10	0.16 pph	Hourly	EUALKALINE	0.069	
3. PM2.5	0.16 pph	Hourly	EUALKALINE	0.069	
4. VE	10% opacity			Visible emissions (VE): 0% opacity	
* Calculated on a dry gas basis [β] Bureau Veritas Project No. 11019-000004.00. Report dated April 21, 2019. The stack test was not mandatory. BV sampled in March 21-22, 2019.					

After 1996, mercury (Hg) is not used in alkaline batteries and hence Battery does not handle Hg (PTI No. 248-09B, EUALKALINE, III.1).

Battery operates baghouse properly and logs, from the digital display, the baghouse pressure differential (ΔP) is logged once per day. ΔP display is checked each hour (PTI No. 248-09B, EUALKALINE, III.1 & VI.1).

Battery submitted Malfunction Abatement Plan (PTI No. 248-09B, EUALKALINE, III.2) via Fishbeck Project No. 190350 Report dated March 2019.

As stated above, stack test is not mandatory, however Bureau Veritas (Project No. 11019-000004.00) performed stack test in March 21-22, 2019, for PM, PM10, PM2,5 and Visible Emissions (VE or opacity) (PTI No. 248-09B, EUALKALINE, V.1). See above for the results.

Baghouse dust is recycled into the crusher for further recovery because it contains valuable Zn & Mn and hence it not a waste.

Battery crushing

1. CY 2018: 4 million pounds of battery crushed per year.

2. CY 2019: 3 million pounds of battery crushed per year.

Conclusion

Battery solutions is in compliance.

NAME J Ellenwood DATE September 30, 2020 SUPERVISOR Joyce