

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

B149357418

FACILITY: Michigan Sugar Company - Bay City		SRN / ID: B1493
LOCATION: 2600 S Euclid Ave, BAY CITY		DISTRICT: Bay City
CITY: BAY CITY		COUNTY: BAY
CONTACT: Eric Rupprecht , Environmental Engineer		ACTIVITY DATE: 01/26/2021
STAFF: Kathy Brewer	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: On site inspection and record review portion of FCE.		
RESOLVED COMPLAINTS:		

MSC B1493 Jan 28, 2021 site inspection and on site records review portion of FCE

MSC Bay City Contact: Eric Rupprecht

MI ROP B1493-2016 was issued on August 2, 2016 to the Michigan Sugar Company (MSC) and expires on August 2, 2021. The facility submitted a ROP renewal application on June 24, 2020 and received Working Draft on April 27, 2021. Updated Fugitive Dust control, CO Minimization, Start-up & Shutdown, and CAM plans were submitted with the ROP renewal application.

The facility utilizes boilers subject to 40 CFR Part 60 (NSPS) Subparts A and Db and Part 63 (MACT) Subparts A and Subpart JJJJJJ NESHAP requirements for Industrial, Commercial, and Institutional Boilers and Process Heater that are a Minor sources of Hazardous Air Pollutant (HAP) emissions. The facility is an Area Source under MACT JJJJJJ which exempts natural gas boilers from complying with requirements under the subpart.

EUPELLETPRDCTN is subject to the Compliance Assurance Monitoring rule (CAM) under 40 CFR, Part 64.

Consent Judgement 17-000727-CE was entered in court on December 28, 2018. The consent judgment, in part, requires MSC BC to undertake actions to reduce odors generated by their waste handling.

General:

The facility is primarily engaged in the production of sucrose in the form of table sugar from sugar beets. Byproducts include both beet pulp and concentrated molasses solids that are used as cattle feed and spent sugar beet lime that is sold/used as a soil enhancement/supplement. The facility utilizes a molasses desugarization process for additional sucrose recovery and generation of additional products. Flume water, used to transport the beets, is treated via the facility's waste water treatment plant (WWTP), which is composed of various settling/pretreatment ponds, and anaerobic digester (ANAMET) system with flare, clarifier, and several aeration ponds. Primary process steam is provided by two 180 million BTU/hr heat input natural gas-fired boilers and one 243 million BTU/hr heat input natural gas-fired boiler. The total heat input for all three referenced boilers is greater than 600 million BTU/hr. An exempt natural gas fired boiler (AKA the summer boiler) is on stand-by for additional process heat. Heat and/or air conditioning are provided by the boilers and numerous exempt gas heaters.

A more detailed description of the facility is contained in the October 14, 2016 inspection report (MACES compliance activity report # B149337778).

The AQD receives complaints that attribute unpleasant odors to MSC BC activities. The Consent Judgement does require MSC BC to add aeration equipment to its wastewater treatment ponds and hydrogen peroxide to another set of ponds to prevent them from becoming septic, maintain a cover over the outer pond (EQ Pond) to control the release of gases to the atmosphere, and operate three centrifuges to prevent organic material from entering the ponds.

There are recordkeeping and reporting requirements to help ensure all these measures are implemented, as well as stipulated penalties if MSC BC does not fulfill its obligations.

Emissions reported to the MAERs for 2019 were the following:

Pollutant	Tons
Ammonia	3
CO	49
NOX	86
PM10,PRIMARY	52
SO2	2
VOC	6

MI-ROP-B1493-2016 Records reviewed

Source Wide Conditions

MSC BC provided water truck application records for May to November 2020 and liquid calcium chloride records for June and September 2019 and August 2020. Example records of internal and external road sweeping for June and October 2020 were also provided. The October 10, 2020 record noted the large sweeper had conveyor malfunction and smaller sweeper was used until the large sweeper was repaired.

Total number and dates of dust complaints received in 2019 None known

Total number and dates of dust complaints received in 2020 was three - 9/2; 9/3; 10/22

EUBOILER8

Malfunction Abatement Plan : Most recent MAP for EUBOILER#8 is Nov. 11, 2015 .

Most recent Boiler #8 Tune-up date (required every 61 months) occurred in January 2020. The next tune-up is required by 2025.

requirement	Record of MAP activity	date	comment
SC III.1.a	Tune up Burner, flame pattern, air-to-fuel	Jan 22 & 23, 2020	No adjustments necessary
SC III. 1.d	Records of operating load show 156,000 to 168,000 lb/hr steamflow	Nov 5 2020	3 approx 10 min periods through out day
	Records of average Oxygen% show O2=3.59	Nov 5 2020	2-4% range

	Tune up O2 analyzer calibrated	Jan 22 & 23, 2020	No adjustments necessary
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March 2020 is most recent SSM plan for EUBOILER#8

March 2020 modified November 2015 is most recent CO minimization plan for EUBOILER#8

Record of CO minimization activity specified by plan	SC VI.8	period	comment
Tune up	<85 ppm CO, <10 ppm with FD fan on constant speed	Jan 22 & 23, 2020	10-96% firing range

While onsite the following instantaneous NOx & O2 values were observed:

Boiler CEMS	NOx ppm	O2 %	Time
#8	36	3.6	11:00 am

The following records were provided and reviewed

Emission Unit ID	Testing/Monitoring/Recordkeeping	Request	Dates/comment
EUBOILER8	SC VI.1 & 7 The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition.	SC I.3 NOx tpy for 3 months designated. Limit = 76.1	Nov 2019 =21.34 TPY NOx, Feb 2020=20.39 TPY NOx, Oct 2020=22.99
	monthly and 12-month rolling time period NO _x emission calculation records for EUBOILER8, as required by SC I.3	NOx tpy for one month with example showing inputs and results	Nov 2019 (Gas usage and CEMS) Monthly sum of lb/day daily values Jan 1, 2019 Mmbtu x MCF x x lb/MMBTu

Emission Unit ID	Testing/Monitoring/Recordkeeping	Request	Dates/comment
	SC VI.2 continuously monitor and record, the NOx emissions and oxygen or carbon dioxide (O ₂ or CO ₂) content of the exhaust gas	NOx CEMS	Nov 2019, Feb 2020, Oct 2020 All required records were maintained and available
	SC VI.3 30-day rolling average NOx emission rate records	SC I.3 NOx 30 day rolling emissions Limit =0.09 lb/MMBtu	Nov 2019=0.042, Feb 2020=0.044, Oct 2020=0.042
	SC IV.1; VI.3 Monitoring	Low NOx burner operating records – CEMS alarms	Nov 2019, Feb 2020, Oct 2020 No alarms all three months

EULIMEKILN

Emission Unit ID	Testing/Monitoring/Recordkeeping	Request	Dates/comment
EULIMEKILN	SC V.1. verify the vendor supplied sulfur content data	2020 campaign	2019-2020 campaign composite sample 5/14/2020 %ash=8.42, 7.78 % sulfur=0.76, 0.91 Vendor %ash= 10.1, 9.9 Vendor % sulfur=0.66, 0.66
	SC V.2. conduct daily visible emission	Daily VE records Have performed some Method 9 Provided 2020 time when vents open	Year 2020 records. Operated 239 days. 8.3 days vent open. Monday Jan 4 th discovered VE folder records missing. All of 2020 VE records

folder gone. They have looked through all potential areas where could be. Also have IT viewing monitoring cameras to see if any indication of where it may have gone. Have transitioned to electronic copy with back up

SC VI.1. monthly records of the amount of coke or anthracite coal used MSC BC records of coal & anthracite use in lime kiln
 Nov 2019 = 345 tons coal, 0 coke
 Feb 2020= 836 tons coal, 0 coke
 Oct 2020= 801 tons coal, 0 coke.
 Aug 347 tons coke, Sept 485 tons coke

SC VI.2. coke or anthracite coal analysis of all shipments of coke or anthracite coal as supplied by the vendor(s) Shipment records
 Nov 1, 2019
 Oct 2020
 Nov 1, 2019 Oct 2, 2020 Coke moisture, ash, sulfur %volatile and fixed carbon records attached for railcars received

Shipment records attached

MSC BC sulfur analysis 5/14/2020
 %ash=8.42, 7.78 % sulfur=0.76, 0.91

SC VI.3. information necessary to demonstrate compliance with the emission limits of this permit. Hours vented from East. West, and pressure relief
 Daily records attached showing minutes open each day. Operated 239 days. 8.3 days vent open.

Amount and type of fuel combusted in EULIMEKILN
 Nov 2019 = 345 tons coal, 0 coke
 Feb 2020= 836 tons coal, 0 coke
 Oct 2020= 801 tons coal, 0 coke.
 Aug 347 tons coke, Sept 485 tons coke

SO2 12 month rolling TPY example calculation
 Attached

EUPELLETPRDCTN

A revised CAM Plan for EUPELLETPRDCTN was submitted as part of the June 25, 2020 ROP Renewal Application by the company.

The wet scrubber is equipped with a differential pressure gauge and a scrubber liquid flow detector. Pressure drop of the wet scrubber is used as the primary performance indicator for demonstrating compliance with the PM mass emission limit. The differential pressure is proportional to the water flow and air flow through the scrubber. Pressure drop for the water scrubber is monitored continuously and recorded daily during operations. Low readings can represent worn surfaces or low loads. High readings may represent plugging. The operating range of 2 - 10 inches H₂O differential pressure indicates good operation of the water scrubber. The flow detector activates an alarm should the water flow stop. There is a horn and light alarm activated by low scrubber flow.

Emission Unit ID	Testing/Monitoring/Recordkeeping	Request	Dates/comment
EUPELLETPRDCTN	SC III.3	Differential pressure (11 PM reading, South cyclone/Center cyclone/North cyclone)	Nov 5 2019= 3.3/5.3/2.1 Feb 3, 2020= 1.4/4.2/1.8 Oct 1 2020= 11.1/4.8/2.2
		Wet scrubber flow rates (gpm)	Nov 5,2019=16 Feb 3, 2020=16 Oct 1, 2020=19
	SC IV.2	Wet scrubber differential pressure instrumentation calibration	2020 Campaign Have not documented . Have added to PM Due 3/31/2021

For water flow the audible alarm and light go off at end of campaign when scrubber shut down.

SC VI.8

Wet scrubber water flow alarm check

Shut down at end of operation for campaign year audible and light alarm are activated.

Have added to PM

Due 6/8/2021

During the inspection the following process operating parameters were observed.

EUPELLETPRDCTN	Differential pressure	5	Time
			11:10
	Wet scrubber flow rates	18	Time
			11:10

EUANAEROBIC DIGESTER

The anaerobic digester treats wastewater from flume ponds and process waste. The following records reviewed indicate compliance with the emission, operating, monitoring, operating and reporting requirements.

Emission Unit ID	Testing/Monitoring/Recordkeeping	Request	Dates/comment
EUANAEROBIC DIGESTER	SC I.2	SO2 12 month rolling TPY Limit=36.16 TPY	Nov 2019 =0.89 TPY SO2, Feb 2020=0.84 TPY SO2, Oct 2020=0.77 TPY SO2
	SC VI.1	Daily hydrogen sulfide gas flow to flare	Nov. 30 2019 =0.22 lb/hr SO2 @ 146,467 ft3/d, Feb 2020=0.34 lb/hr SO2 @ 229, 701 ft3/d, Oct 2020=0.18

lb/hr SO2 @
119,520 ft3/d

VI.2 & 3

Pressure relief device inspections Rebuilt & replaced in 2019. 11/6/2020 inspection passed.

The anaerobic digester has propane as a backup fuel source. Staff verify flame presence during rounds. PSI is recorded daily. The facility targets 150-300 gpm feed rate to the digester. At the time of the inspection the pressure relief device reading was 2.4 PSI.

EUCOOLINGTOWER

The cooling tower has no emission limits.

The material limits are 920 pph of ammonia.

To demonstrate compliance with the ammonia limits the facility is required to monitor and record the water pump discharge pressure and concentration of ammonia in for water entering the cooling tower from the factory. At the time of the inspection the water entering the cooling tower from the factory had a discharge pressure of 40 PSI. Review of the following records provided indicate compliance with monitoring and record keeping requirements.

Date	Cooling tower flow (gpm)	NH3 concentration	NH3 lb/hr
Nov. 27, 2019	9400	35.50	
Feb. 26, 2020	9900	37.40	167 (KB calc)
Oct. 28, 2020	10, 250	42.80	

EUSTEAMDRYER

The only ROP condition for EUSTEAMDRYER is that it have no visible emissions except from water vapor.

EUSTEAMDRYER is a fluidized bed steam pulp dryer that utilizes steam generated from natural gas boilers onsite. EUSTEAMDRYER is not vented and drying takes place in a closed and pressurized vessel. EUSTEAMDRYER had been considered a source of HAPs/VOCs when it previously vented to the atmosphere. The emissions from EUSTEAMDRYER are now directed to an enclosed evaporator/heat exchanger and condensate is discharged to the sites wastewater system.

The facility has requested that EUSTEAMDRYER be removed from the ROP. EUSTEAMDRYER installed in 2006 under permit to install (PTI) application 223-05A was for the installation of a new fluidized bed steam pulp dryer, the addition of volatile organic compound (VOC) and carbon monoxide (CO) emission limits, and the inclusion of a removal schedule for two of the facility’s three existing natural gas fired pulp dryers. The only requirement for EUSTEAMDRYER was that there shall be no visible emissions except uncombined water vapor. The emission unit is a pressurized vessel. Any leaks (emissions) from the vessels means it is no longer pressurized which would cause it to be non-functional and cause a shutdown. The original purpose of this component in the PTI was to regulate the decommissioning of the previous rotary kiln pulp dryers and to show the net emissions reduction

in the PTI. The proposed changes at the stationary source were determined to be subject to PSD review, though emissions from EUSTEAMDRYER were anticipated to be minor.

AQD agrees that EUSTEAMDRYER can be removed from the ROP.

FGBOILERS

Emission Unit ID	Testing/Monitoring/Recordkeeping	Request	Dates/comment
FGBOILERS	SC I.1 , VI.2	24 hour average NOx emissions for Boiler#6, Boiler#7 Limit = 0.155 lb/MMBtu	Last day of month or closest operating day Nov 2019 #6=0.097, #7=0.10 Feb 2020 #6=0.10, #7=0.11 Oct 2020 #6=0.08, #7=0.11
	SC I.1 , VI.3	Natural gas usage for Boiler#6, Boiler#7	Last day of month or closest operating day Nov 2019, Feb 2020, Oct 2020
	SC III.1, SC VI.3, SC VI.7 Appendix 7	Actual heat input Boiler#6, Boiler#7	Nov 2019 #6=0.45 #7=0.38, Feb 2020 #6=0.46 #7=0.37, Oct 2020 #6=0.5 #7=0.39
		Monthly calculated R value BOILER#6, BOILER#7	Nov 2019, Feb 2020, Oct 2020
	SC I.3	NOx tpy for 3 months designated. Limit=61.1	Nov 2019 #6=27.56 #7=40.18 Feb 2020 #6=25.18 #7=33.06 Oct 2020 #6=28.71 #7=32.93
	SC I.4	8 hour average CO emissions for Boiler#6, Boiler#7	Use most recent test value
	SC I.6		

CO tpy for 3 months designated for Boiler#6, Boiler#7. Limit=86.7 TPY
 Nov 2019 #6=21.96 #7=25.71
 Feb 2020 #6=21.47 #7=25.17
 Oct 2020 #6=24.44 #7=24.76

During the inspection the following process operating parameters were observed.

Boiler CEMS	NOx ppm	O2 %	Time
#7	72	3.3	11:00 am
#6	86	3.9	11:00 am

FGRULE290

EUMOLLASSEDESUG and OMI odor control system are exempt from permitting under Rule 290. In 2020 MSC BC switched from Ecosorb 606 to Hydrivail 2000. MSC BC provided Rule 290 demonstration documentation for OMI emissions for Ecosorb 606 and Hydrivail 2000. Uncontrolled emissions for all VOCs and particulate combined are calculated using the maximum capacity of the equipment. The values calculated are 480 lbs/month for Ecosorb in 2019 and 360 lbs/month for Hydrivail for 2020.

PTI Exempt EUs

PTI Exempt Emission Unit ID	Description of PTI Exempt Emission Unit	Rule 212(4) Citation	PTI Exemption Rule Citation
EUPOWDERED SUGAR	Powdered sugar is milled and packaged in this area.	Rule 214(4)(e)	R 282(dd)
EUSUGARCOOLING	In this area, the dried sugar is cooled and then transported to sugar packing or storage.	Rule 214(4)(e)	R 282(dd)
EUSUGARDRYING	Crystallized sugar is dried in sugar dryers. This group includes a "wet box room" where wet sugar is stored before drying, granulators, and dryers.	Rule 214(4)(e)	R 282(dd)
EUSUGARPACKING	This group consists of the vacuum system used to collect spilled sugar from the packing room, warehouse, and Silo#1.	Rule 214(4)(e)	R 285(dd)
EUSPACEHTRS	32 Natural gas fired space heaters. All heaters are 5 MMBTU/hr or less	Rule 214 (4)(c)	Rule 282(b)(i)

PTI Exempt Emission Unit ID	Description of PTI Exempt Emission Unit	Rule 212(4) Citation	PTI Exemption Rul Citation
EUSUMBLR	14 MMBTU/hr natural gas fired boiler installed prior to 1967. Has not operated for many years	Rule 214 (4)(c)	Rule 282(b)(i)

EUSUGARCOOLING operations were reviewed. The process runs 24/7 the entire time factory operates. It has some interim product storage capacity so that even when short term plant shutdown occurs it will usually continue to operate.

Documentation related to the applicability R285(2)(dd) to the sugar packing operations are attached.



NAME _____

DATE 05/23/2022



SUPERVISOR _____