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

B287557245

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| **FACILITY:** Michigan Sugar Company, Caro Factory | | **SRN / ID:** B2875 |
| **LOCATION:** 819 Peninsular St., CARO | | **DISTRICT:** Bay City |
| **CITY:** CARO | | **COUNTY:** TUSCOLA |
| **CONTACT:** Steven Smock , Environmental Manager | | **ACTIVITY DATE:** 03/10/2021 |
| **STAFF:** Adam Shaffer | **COMPLIANCE STATUS:** Non Compliance | **SOURCE CLASS:** MAJOR |
| **SUBJECT:** Scheduled announced inspection. | | |
| **RESOLVED COMPLAINTS:** | | |

An offsite inspection and records review was conducted by Air Quality Division (AQD) staff Adam Shaffer (AS) of Michigan Sugar Company, Caro Factory (MSC). Applicable records were requested on February 19, 2021, to verify compliance with Renewable Operating Permit (ROP) No. MI-ROP-2875-2019. A site inspection to verify onsite compliance was later completed on March 10, 2021. All necessary safety precautions were completed due to the Covid-19 pandemic.

## Facility Description

MSC is a sugar beet processing company and is one of several MSC sites located in Michigan. The facility is a major source of hazardous air pollutants (HAPs), nitric oxides (NOx), carbon monoxide (CO), particulate matter (PM) and volatile organic compounds (VOCs) and is in operation with Renewable Operating Permit (ROP) No. MI-ROP-B2875-2019.

## Offsite Compliance Review

- MSC is required to submit semi-annual and annual compliance reports per Part A General Conditions 19-23 of MI-ROP-B2875-2019. Semi-annual and annual compliance reports were reviewed since the previous inspection on October 3, 2018. In the most recent semi-annual and annual compliance reports received by the AQD on March 11, 2021, MSC reported three deviations for 2020. The first deviation was an exceedance in the hours of operation limit of 4,000 hours per year for EUPULPDRYER. Speaking with staff and reviewing records provided, MSC exceeded this operation limit for 2020 on November 24, 2020. MSC exceeded this 4,000-hour operation limit by 851 hours. This deviation had not been previously reported. This will be discussed further below. The second deviation was a missing 6-minute Method 9 recordings for Flexible Group (FG)2KILNS. The missing records were stated by MSC staff to have been lost or misplaced by a former employee that no longer is associated with MSC. The lost records were for August 10, 2020 through August 13, 2020. This deviation had not been previously reported. A Force Majeure Notice, dated February 23, 2021, was submitted to the AQD in response to this deviation. This will be discussed further below. The third deviation was a lack of a certified visible emission observer to conduct Method 9 readings. MSC staff stated that this was due to the ongoing coronavirus pandemic and the stay-at-home orders for 2020. The dates of occurrence were August 10, 2020 through August 13, 2020. This deviation had been previously reported. After further review, no further action is necessary at this time regarding this deviation.
- Based on the timing of the inspection, the 2020 Michigan Air Emissions Reporting System (MAERS) Report was submitted on February 26, 2021 and was reviewed.

Several minor errors were noted in the report. A follow up conversation with MSC staff and their respective consultant was completed on April 30, 2020, where several items were clarified in the 2020 MAERS Report. Additionally, emissions reported for EUPULPDRYER were corrected and the 2020 MAERS Report was resubmitted. After further review, the resubmitted 2020 MAERS Report appears acceptable at this time.

## Compliance Evaluation

A request was sent to Mr. Steven Smock, Environmental Manager, of MSC on February 19, 2021, for various records required by ROP No. MI-ROP-B2875-2019. The various records reviewed will be discussed further below in this report.

An onsite inspection of MSC was completed on March 10, 2021. AQD staff AS arrived in the area of the facility at 9:33am. Weather conditions at the time were cloudy skies, temperatures in the middle 50's degrees Fahrenheit and winds from the south at 10-15mph. While offsite, soil like odors with and odor intensity of a 1-2 out of 5 were noted in areas to the north. No recent odor complaints have been recently received regarding this site. AS checked in with the security guard to gain access to the site and met with Mr. Steven Smock, Environmental Manager, who provided a tour of the facility and answered site specific questions. During the inspection, several additional MSC staff helped answer site specific questions. Records prior to and following the onsite inspection were provided by several MSC staff. Proper PPE and social distancing during the inspection was maintained whenever possible.

MSC is a sugar processing plant with several different plants located throughout Michigan. The Caro, MI facility began operation in 1899. The main products produced at this facility are liquid sucrose and granulated sugar from sugar beets. Other products produced here include molasses and beet pulp which are used as animal feed and spent sugar beet lime which is used as a soil supplement.

Onsite sugar beet processing operations include various stages of cleaning, washing, slicing, diffusion, juice purification using milk of lime, evaporation, crystallization, pulp drying and liquefaction of granulated sugars into liquid sucrose. Various additives such as lime (CaO) are used to adjust the pH depending on what stage the product is at onsite to achieve the desired results.

Operations onsite are seasonal and referred to as "campaigns". Historically campaigns would typically run from mid-late September through February / March. Most recently, campaigns are longer (August through March) with larger harvests. Between campaigns, various maintenance and repairs to equipment are completed during what is called the "inter campaign".

Independent of the beet processing are granulated sugar and liquid sucrose production / packaging operations. MSC does not produce powdered or brown sugars onsite as well as any molasses de-sugarization.

### EUPACKAGEBOILER3

This emission unit is for a No. 6 fuel oil or natural gas-fired boiler, rated at 115 MMBTU/hr heat input, for 75,000 lbs of steam production per hour used in a sugar processing facility. Some steam generated is used to produce power. This boiler is subject to 40 CFR Part 63

Subpart DDDDD – National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters.

Records

This emission unit is subject to a $SO_2$ emission limit of 1.67 pounds per million BTUs of heat input over a 24-hour period. This emission limit would apply to EUPACKAGEBOILER3 if the boiler utilized fuel oil. Since at least the last inspection, EUPACKAGEBOILER3 has only used natural gas. Since EUPACKAGEBOILER3 only uses natural gas this emission limit is not applicable at this time. The various testing and monitoring / recordkeeping requirements only apply when EUPACKAGEBOILER3 used fuel oil and, therefore, do not apply at this time.

Onsite Observations

This emission unit was observed during the course of the site inspection. At the time of the inspection, the unit was operating at 50% capacity. MSC stated that during operation they appear to never go over 55% capacity for this boiler. A natural gas meter was observed on the boiler. One stack is listed in association with the emission unit and was observed during the inspection. Though the parameters were not measured, they appeared to be consistent with what is listed in MI-ROP-B2875-2019.

**EUBOILER4**

This emission unit is for a relocated natural gas-fired boiler, rated at 146.5 MMBTU/hr heat input, for 120,000 lbs of steam production per hour for the processing of sugar beets and for heat to the facility. The boiler is equipped with low $NO_X$ burners and was originally constructed in 1990. This emission unit is subject to 40 CFR Part 60, Subpart Db – Standards of Performance for Industrial – Commercial – Institutional Steam Generating Units, and 40 CFR Part 63 Subpart DDDDD.

Records

This emission unit is subject to a $NO_X$ emission limit of 0.15 lb/MMBTU over a 30-day average rolling time period. Records were requested and provided for select time periods. Based on the records reviewed, this emission limit appears to be being met.

This emission unit is subject to a second $NO_X$ emission limit of 96.3 tons per year per a 12-month rolling time period. Records were requested and provided for select time periods. For the month of December 2020, 4,521 lbs of $NO_X$ emissions were reported. As of December 2020, approximately 16.44 tons per year (tpy) of $NO_X$ emissions were reported, which is well within the permitted limit. Previous 12-month rolling time periods reviewed also appeared to be within the permitted limit.

This emission unit is subject to an hourly CO emission limit of 0.23 lbs/MMBTU. Testing for CO with regards to EUBOILER4 was last completed on December 11, 2014. Based on the test results, it appears that MSC is meeting this emission limit.

This emission unit is subject to a second CO emission limit of 147.6 tpy per a 12-month rolling time period. Records were requested and provided for select time periods. For the month of December 2020, 37.9 lbs were emitted and as of December 2020, 0.14 tpy of CO emissions were reported per a 12-month rolling time period which is well within the

permitted limit. Previous 12-month rolling time periods reviewed were also well within the permitted limit.

This emission unit is subject to a 75,138 tpy limit of GHGs as $CO_2e$ per a 12-month rolling time period. Records were requested and provided for select time periods. For the month of December 2020, 2,800 tons of emissions were reported emitted. As of December 2020, 20,053 tpy of emissions were reported per a 12-month rolling time period which is within the permitted limit. Previous 12-month rolling time periods also appear to be within the permitted limit.

Per SC VI.3, MSC shall keep monthly natural gas usage records for EUBOILER4. Records were requested and provided for select time periods. For the month of December 2020, 46,570 thousand cubic feet (MCF) of natural gas was used. As of December 2020, EUBOILER4 used 333.53 million cubic feet (MMCF) of natural gas per a 12-month rolling time period. Based on records reviewed, MSC is keeping track of monthly / 12-month rolling time periods of natural gas used.

Per SC VI.4, MSC shall keep the monthly / 12-month rolling time period capacity factor for EUBOILER4. Records were requested and provided for select time periods. For the month of December 2020, the boiler capacity factor was 45%. As of December 2020, the boiler capacity was 27% per a 12-month rolling time period. Based on the records reviewed, MSC appears to be keeping track of monthly / 12-month rolling time period boiler capacity factors.

Per SC VI.5-7, MSC shall keep monthly / 12-month rolling time period emission records for $NO_X$, CO and $CO_2e$. Based on the records provided, MSC appears to be keeping track of applicable records.

Per SC VI.8, MSC shall keep track of various items including compliance tests and any testing required under special conditions of this permit and monitoring data. Annual relative accuracy test audit (RATAs) of the $NO_x$ and $O_2$ continuous emission monitoring system (CEM) for EUBOILER4 have been completed and submitted by MSC. Most recently, on December 8, 2020, a RATA was completed, and the report reviewed by AQD Technical Programs Unit (TPU) staff. Based on the review completed it appears that the $NO_X$ and $O_2$ monitors passed applicable requirements. Quarterly Excess Emission Reports are submitted by MSC for EUBOILER4 with the last quarterly report for 2020 received on January 11, 2021. It appears that the submitted Quarterly Excess Emission Reports are acceptable. After further review, it appears that MSC is keeping track of applicable items per SC VI.8.

Onsite Observations

EUBOILER4 was observed during the course of the inspection. EUBOILER4 has only used natural gas since 2012. An updated MAP was submitted as part of the ROP renewal on July 31, 2018. Per SC IV.1, EUBOILER4 shall not exceed a maximum of 146.5 MMBTU per hour. At the time of the inspection, the boiler was running at 35% capacity. Speaking with MSC staff it appears that the boiler is only operated up to 50-60% capacity. Based on this it would appear that MSC is meeting this operational parameter. MSC stated that low NOx burners are installed and operating. A natural gas meter was observed on EUBOILER4.

The CEMs was observed during the inspection that is used to continuously monitor and record $NO_X$ emissions and $O_2$ content of the exhaust gas from EUBOILER4. Additionally,

the unit collects carbon monoxide data, though this is not required. At the time of the inspection when reviewed, the following information was observed.

$O_2$

- Last reading – 3.3 %
- One minute block – 3.6%
- One hour block – 4.0%

$NO_X$

- Last reading – 72.2 ppm
- One minute block – 73.0 ppm
- One hour block – 73.8 ppm

Based on the observations made at the time of the inspection, MSC appears to be adequately monitoring and recording $NO_X$ emission and $O_2$ contents.

One stack is listed in association with this emission unit and was observed during the inspection. Though the dimensions were not measured, they appeared to be consistent with what was identified in MI-ROP-B2875-2019.

**EUPULPDRYER**

This emission unit is for a natural gas or No. 6 fuel oil fired rotary drier used to dry beet pulp. Equipped with a multiclone without fly ash reinjecting and a flue gas recirculation system. This emission unit is subject to 40 CFR Part 64 (CAM).

Records

This emission unit is subject to an hourly PM emission limit of 0.10 lbs per 1,000 lbs of exhaust gases and a second hourly PM emission rate of 27.7 pounds per hour (pph). Stack testing was most recently completed on December 5, 2017 to verify PM emission rates. At the time of testing, MSC appeared to be in compliance with the PM emission rates. The next required testing of PM emission rates for EUPULPDRYER will be by 2023 or renewal of MSC's ROP.

This emission unit is subject to an $SO_2$ emission limit of 1.67 lbs per million BTUs heat input based on a 24-hour time period. This emission limit is based on the usage of fuel oil. It was verified that since the last inspection this emission unit has not used fuel oil. Therefore, this emission limit is not applicable at this time.

Per SC V.1, MSC shall determine the sulfur content of each delivery of fuel oil used. As mentioned above, MSC has not utilized fuel oil since at least the last inspection. MSC does have a fuel oil tank with fuel oil onsite and based on previous inspections, the sulfur content was acceptable at the time of delivery.

Per SC.VI.1, MSC shall continuously monitor, and record pressure drop readings for EUPULPDRYER. Records were requested and provided for select time periods. After further review, the records appear acceptable. Yearly calibrations of the pressure drop calibration shall be completed during the shut-down of the pulp dryer. Calibration records were requested and provided for the last two years. The EUPLULPDRYER was most

recently calibrated on August 9, 2020. After further review, the calibration records provided appear acceptable.

Based on the records requested and provided, MSC appears to be keeping track of hours of operation for EUPULPDRYER and monitoring data. Based on responses provided by MSC staff, spare parts are kept available to repair monitoring equipment.

Onsite Observations

This emission unit was observed in operation during the inspection. Per SC III.1, MSC shall not operate EUPULPDRYER unless the multiclone collector and flue gas recirculation system are installed, maintained, and operated in a satisfactory manner. Speaking with MSC staff it appears that this is being met.

Per SC III.2, EUPULPDRYER is limited to no more than 4,000 hours per year. As stated earlier in this report, MSC has exceeded this operational limit for 2020 by approximately 851 hours. This hours of operation limit exceedance is a violation of ROP No. MI-ROP-B2875-2019, EUPULPDRYER, SC III.2.

A MAP dated April 8, 2019, was most recently submitted to the AQD.

Per SC III.4, MSC shall not operate the primary and auxiliary flue gas recirculation fans simultaneously. During the inspection, MSC staff stated that the auxiliary fan had been replaced by a cyclone in the ductwork. This would appear to reduce wear on the primary recirculation fans. Since the auxiliary fans are removed, it is not possible for MSC not to be in compliance with this condition.

A pressure drop monitor was noted for the multiclone during the inspection and a pressure drop reading of 7.22”-7.33” of water column was observed which is within the acceptable range of operation for the multiclone of 2”-11” of water column.

One stack is listed in association with this emission unit. Though the dimensions were not measured they appeared to be consistent with what is identified in MI-ROP-B2875-2019.

**FG2KILNS**

This flexible group is for the two vertical kilns (EULIMEKILN2 & EULIMEKILN2) fired with coke or anthracite coal for the production of carbon dioxide ($CO_2$) and calcium oxide (lime) for purification of sugar juice. The lime is introduced into the sugar making process as milk of lime at the carbonation tanks. The $CO_2$ is used for pH adjustment in the carbonation tanks. In order to have the appropriate amount of $CO_2$ for the carbonation system, approximately 80% of the combustion gases from the lime kiln are directed to the carbonation tanks with approximately 20% directly discharged to the atmosphere. Each kiln is equipped with a booster fan on top.

Records

This flexible group is subject to an hourly PM emission limit of 0.20 lbs per 1,000 lbs of exhaust gases, on a dry basis. Stack testing was most recently done in 2012 to verify this PM emission rate. No issues were noted at the time of testing.

This flexible group is subject to a coke / anthracite coal material limit of 0.8 percent sulfur by weight, respectively. The sulfur contents for coke / anthracite coal were most recently tested

on May 14, 2020. Test results indicated a sulfur content of 0.71 and 0.61 percent by weight respectively which is within the permitted limit. Sample collection was described as being completed once per campaign at the end. Weekly samples are collected throughout the campaign and the samples are mixed together prior to analyzing the one sample. This appears to be acceptable.

This flexible group is also subject to a coke and anthracite coal (total) material limit of 5,000 tons per a 12-month rolling time period. For the month of December 2020, 205 tons of coke / anthracite were used. As of December 2020, 1,827 tpy of coke / anthracite coal were used per a 12-month rolling time period. Previous 12-month rolling totals reviewed also appeared to be within the permitted limit.

Per SC V.1, for each delivery of coke or anthracite coal, the representative sulfur content analysis shall be either on file with the permittee or supplied by the vendor at the time of delivery. Starting in 2020, MSC staff stated they would receive coke / coal shipments in a central location, which are then distributed to the individual factories as needed. For each rail car delivery of coal, a laboratory analysis is included of the sulfur content. Regarding coke, it appears that a “batch” of coke is produced by the supplier which provides enough coke to MSC for the entire year. A representative analysis provided would appear to be for the “batch” created. After further review, this appears acceptable.

Per SC VI.1-3, MSC shall record results of a non-certified visible emissions check on FG2KILNS at least once per operating day when FG2KILN is venting to the atmosphere, as well as the dates, times, and duration that FG2KILN was vented to the atmosphere. Records were requested and provided for select time periods. Based on the records provided, MSC is keeping track of the dates, times, and durations of the times that FG2KILN was venting to the atmosphere, however, records were not available of non-certified visible emission checks and if any visible emissions were observed, were Method 9 readings completed and / or any corrective actions taken. A Force Majeure Notice, dated February 23, 2021, was submitted to the AQD in response to the missing records. After further review it was determined that MSC is not adequately keeping track of the required records and this is a violation per ROP No. MI-ROP-B2875-2019, FG2KILNS, SC VI.2.

Per SC VI.4-5, MSC shall keep monthly records of the amount of coke / anthracite used in the lime kilns and the sulfur content by weight of the coke / anthracite used. Records were requested and provided for select time periods. The records provided appear acceptable at this time.

Onsite Observations

The two vertical kilns were observed in operation at the time of the inspection. It was verified that the lime kilns are not operated unless the carbonation system is operating and receiving combustion gases from the lime kilns.

One stack is listed in association with this flexible group. Though the dimensions were not measured during the inspection, they appear consistent with what is listed in MI-ROP-B2875-2019.

**FG635DEXGAS1BOILER**

The affected units are existing boilers and process heaters (EUPACKAGEBOILER3 and EUBOILER4) subject to 40 CFR Part 63, Subpart DDDDD. The emission units in this

flexible group are considered “units designed to burn Gas 1” subcategory. The subcategory includes any boiler or process heater that burns only natural gas, refinery gas, and/or other gas 1 fuels. Gaseous fuel boilers and process heaters that burn liquid fuel for periodic testing of liquid fuel, maintenance, or operator training, not to exceed a combined total of 48 hours during any calendar year, are included in this definition. Gaseous fuel boilers and process heaters that burn liquid fuel during periods of gas curtailment or gas supply interruptions of any duration are also included in this definition. These units must comply with this subpart no later than January 31, 2016, except as provided in 40 CFR 63.6(i).

Records EUPACKAGEBOILER3

Per SC II.1, EUPACKAGEBOILER3 shall only combust select materials during operation. As discussed earlier in this report, EUPACKAGEBOILER3 only utilizes natural gas.

EUPACKAGEBOILER3 is a “gas 1” fired boiler that is equipped with an $O_2$ trim; thus, tune-ups are required every five years per SC V.4. MSC staff stated that they do complete burner inspection, cleaning, and fine tuning more frequently for both boilers. Records of the last two boiler tune-ups completed were provided. After further review this appears acceptable.

Records EUBOILER4

Per SC II.1, EUBOILER4 shall only combust select materials during operation. As discussed earlier in this report, EUBOILER4 only utilizes natural gas.

Per SC III.2, there are several work practice standards in Table 3 of 40 CFR Part 63 Subpart DDDDD that apply to EUBOILER4 and are described further below.

- Based on the last inspection, the initial tune up was completed on September 16, 2014. A one-time energy audit was completed on December 26, 2015. Since EUBOILER4 is a “gas 1” fired boiler that is equipped with an $O_2$ trim, tune-ups are required every five years. MSC staff stated that they do complete burner inspection, cleaning, and fine tuning more frequently for both boilers. Records of the last two boiler tune-ups completed were provided. After further review this appears acceptable. Based on the responses provided by company staff it would appear that MSC is keeping track of startups / shutdowns of EUBOILER4.

Per SC VI.5, MSC shall keep records onsite or accessible from onsite for at least the initial two years. For the remaining three years, the records can then be kept offsite. This condition appeared to be being met during the last inspection of the facility on October 3, 2018. Though it was not verified by the company during this inspection, various records were requested and provided by the company.

Per SC VI.10, due to EUBOILER4 not being subject to emission limits or operating limits, the only requirement is a 5-year tune up and could only submit a 5-year compliance report instead of a semi-annual compliance report. After further review, it appears that MSC has chosen to submit semi-annual compliance reports. This appears acceptable.

Onsite Observations

Both EUBOILER4 and EUPACKAGEBOILER3 were observed during the course of the inspection. Based on the observations made at the time of the inspection and discussed above, both boilers appeared to be operating in a satisfactory manner.

**Additional Observations / Items Discussed**

- Prior to the inspection during a review of MSC records, it was concluded the facility still had one active permit (PTI No. 576-91A) that had been approved in 1991 and was for a lime dust collection system. When brought to the attention of MSC staff it was determined that the PTI had been incorporated into a previous ROP and the unit was later removed offsite. The PTI will be voided
- A 5 MMBTU/hr natural gas fired boiler was observed (ENSUMBOILER1) that is used during the summer to make liquid sugar and appears to be exempt per Rule 282(2)(b)(i).
- A 4,000-gallon hydrochloric acid storage tank (EUHCLTANK) was observed that is used for evaporator cleanups. A Safety Data Sheet was requested and provided verifying that the vapor pressure for the tank is less than 1.5 psia. After further review, the 4,000-gallon hydrochloric acid storage tank appears to be exempt per Rule 284(2)(i).
- A sugar cooler controlled by a dust collector was noted during the previous inspection and was stated by MSC staff to still be located onsite. A photograph of the unit was provided following the inspection of the unit.
- A No. 6 fuel oil tank (EUNO6FUELTANK) was observed during the inspection. This tank would appear to be exempt per Rule 284(2)(d).
- Vacuum drum filters for lime rinsing (EUVACCUMFILTERS) and vacuum pumps for lime (EUVACCUMPUMPS) were discussed and observed during the inspection.
- The storage silo and associated transfer conveyors (EUWEIBULLSILO) were discussed with MSC staff and observed.

**Conclusion**

Based on the facility walkthrough, observations made, and records received, MSC appears to not be in compliance with the MI-ROP-B2875-2019. A violation notice will be sent for the following violations identified.

- During the 2020 fiscal year, MSC exceeded the 4,000-hour operational limit for the EUPULPDRYER. The total hours operated in 2020 were 4,851. MSC exceeded the 4,000-hour operation limit on November 24, 2020. This hours of operation limit exceedance is a violation of ROP No. MI-ROP-B2875-2019, EUPULPDRYER, SC III.2.
- The dates, times, and durations when FG2KILN was venting to the atmosphere were provided for select time periods, however, records were not available of non-certified visible emission checks and if any visible emissions were observed, were Method 9 readings completed and / or any corrective actions taken. This is a violation per ROP No. MI-ROP-B2875-2019, FG2KILNS, SC VI.2.

NAME Adam Shaffer DATE 06/15/2021 SUPERVISOR Chris Hare