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

A624069221

FACILITY: CARGILL SALT - ST. CLAIR		**SRN / ID:** A6240
LOCATION: 916 S. RIVERSIDE AVE., SAINT CLAIR		**DISTRICT:** Warren
CITY: SAINT CLAIR		**COUNTY:** SAINT CLAIR
CONTACT: Neil Byers , EHS Management Supervisor		**ACTIVITY DATE:** 07/11/2023
STAFF: Noshin Khan	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MINOR
SUBJECT: scheduled, on-site inspection		
RESOLVED COMPLAINTS:		

On Tuesday, July 11, 2023, I, Noshin Khan, Michigan Department of Environment, Great Lakes, and Energy-Air Quality Division (EGLE-AQD) staff, performed a scheduled, on-site inspection of Cargill Salt, Inc. located at 916 South Riverside Avenue, St. Clair, Michigan 48079 (SRN: A6240). I was joined by Marie Reid (EGLE-AQD) and Owen Pierce (EGLE-AQD). The purpose of the inspection was to determine the facility's compliance status with the requirements of the federal Clean Air Act; Article II, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 Public Act 451, as amended (Act 451); the AQD administrative rules, and the conditions of Permit to Install (PTI) Numbers 167-14B and 125-22.

We arrived at the facility at 10:30AM and met with Cargill staff including Neil Byers, EHS Supervisor II, and Sebastien Cournoyer, Plant Manager; we also met with Trinity Consultants staff including Nathan Wallace. At this facility, Cargill produces Alberger salt. Staff explained that salt is absorbed in solution in the mines, and the concentrated brine is brought to the facility where it is evaporated. The resulting salt is collected, dried, and separated by crystal size, and additives are incorporated before the product is packed and stored for shipment. According to Cargill staff, mining activities occur 24 hours a day, 7 days a week, and the plant has 225 employees. After discussing the plants operation, staff guided Marie, Owen, and I on a walkthrough of the facility. I discuss observations and compliance with permit conditions by emission unit below.

PTI 167-14B:

EUBOILER15
This unit is a natural gas-fired boiler, rated at 248.5 MMBtu/hr and equipped with low NOx burners. This boiler was used for process steam until it prematurely failed. Currently, the facility operates two temporary boilers (permitted under PTI 125-22) in place of EUBOILER15. The facility is in the process of replacing this boiler and submitted APP-2023-0107 to the AQD Permit Section for a boiler rated at 250 MMBtu/hr. Cargill was granted a construction waiver for the replacement boiler, and Neil informed me that the company has begun sourcing demolition services for EUBOILER15 and is receiving quotes for the replacement boiler. According to Neil, the last date of operation of EUBOILER15 was September 18, 2022.

We observed EUBOILER15 during our walkthrough and I observed a heat input capacity of 248.5 MMBtu/hr, in compliance with Special Condition (S.C. IV.1). The boiler was not operating during the inspection. Cargill staff confirmed that the boiler is equipped with low-NOx burners as required by S.C. IV.2.

S.C. I.1 and I.2 (and underlying Federal regulation 40 CFR Part 60 Subpart Db) set NOx emission limits of 8.95 pounds per hour (pph) and 0.20 lb/MMBtu of heat input, both based on a 30-day rolling time period. The facility operates a Continuous Emissions Monitoring System (CEMS) to monitor and record the NOx emissions and oxygen content of the exhaust gas from EUBOILER15 on a continuous basis, in accordance with S.C. IV.4. Per recordkeeping requirement S.C. VI.2, Neil provided NOx emissions and O2 content records for August 2022 through the date of the boiler shutdown. The 30-day rolling NOx emissions in lb/MMBtu ranged from 0.029 to 0.030, which is well below the 0.20 limit. Neil provided a sample of the hourly data collected by the CEMS for August 1, 2022, which showed a NOx emissions range of 2.8 pph to 3.1 pph, which is also below the limit.

According to Consumers staff, only pipeline quality natural gas was burned in EUBOILER15, as required by S.C. II.1, and a device is operated to monitor and record the natural gas usage rate in accordance with S.C. IV.3. I did not observe this device during my inspection. Staff informed me that gas is sourced directly from SEMCOENERGY, which supplies pipeline quality natural gas. Neil also provided daily natural gas usage records for the boiler in accordance with S.C. VI.3.

S.C. III.1 requires that EUBOILER15 not be operated unless a malfunction abatement plan (MAP) is implemented and maintained. Neil provided a copy of this MAP, which includes sections for applicable emission units and control devices. The MAP also includes a section tracking changes made to the plan. For EUBOILER15, a section includes supervisory personnel responsible for maintenance of the boiler, identification of monitoring devices, an inspection schedule, and corrective procedures in the event of a malfunction. I did not evaluate if the facility has operated in accordance with the MAP.

The boiler was also subject to 40 CFR Part 63 Subpart JJJJJJ. The AQD has not accepted delegation to enforce this regulation, so compliance was not evaluated.

EUDURACUBE
This emission unit is a process to produce water softening pellets. Sodium chloride is transferred from surge bins through a compactor followed by rollers that break the product into chips. The final product goes through a packaging system that produces 40-50 lb bags. A wet scrubber serves as the pollution control equipment for this process.

We observed the packing process and the wet scrubber during our walkthrough. I observed the devices, required by S.C. VI.2. and VI.3, used to measure the pressure drop across the wet scrubber and the liquid flow rate through the scrubber. In the control room I observed a pressure drop reading of 3.5 inches H2O and a liquid flow rate of about 55.3 gallons per minute (GPM) for the wet scrubber. Per S.C. IV.1, proper operation of the scrubber is defined as a pressure drop range between 2.4 and 4.2 inches of water and a liquid flow rate of at least 37 gallons per minute, so the scrubber was operating in compliance during the inspection. I observed that staff maintain daily written logs of pressure drop and liquid flow rate on-site in accordance with S.C. VI.2 and VI.3.

According to AQD records and Cargill staff, testing in accordance with S.C. V.1 to verify compliance with the PM emission limit of 0.10 lb/1,000 lb of exhaust gases (S.C. I.1) was performed on March 17, 2020. The test showed a filterable particulate matter (FPM) emission rate of 0.05 lb/1,000 lb of exhaust gas.

As discussed, the facility maintains a MAP, which includes a section establishing supervisory personnel, monitoring conditions, an inspection schedule, and malfunction corrective procedures specific to EUDURACUBE, in compliance with S.C. III.1. I did not evaluate if the facility has implemented the MAP.

Per S.C. VI.1, the facility is required to perform non-certified 1-minute Method 22 visible emission observations for EUDURACUBE once every seven days, initiate corrective action for an observation exceeding 20% opacity, and maintain records of observations and corrective actions. Per S.C. VI.2 and VI.3, the facility is required to maintain daily records of the pressure drop across the wet scrubber and the scrubbing liquid flow rate. As discussed, I observed that the facility maintains daily written records on -site. I requested records for one week each month for September 2022 through June 2023 to be scanned and sent to me electronically. The daily flow rate and differential pressure readings in these records are within required limits (greater than 37 GPM for flowrate and between 2.4 and 4.2 inches H2O for pressure differential). The records include a section for the weekly opacity reading. The highest opacity observed was 15%. The records also include a section to note repairs and actions taken in the event any of the parameters are out of range. In the logs provided, no repairs or actions were noted since parameters were within range.

EUDRYER
This emission unit is a natural gas-fired fluidized bed salt dryer. Per the description in the permit, it is rated at an input of 30 tons of Alberger salt per hour and a heat input of 16.5 MMBtu/hr. We observed this unit during the inspection and I observed a rating of 16.5 MMBtu/hr on the nameplate. Cargill staff confirmed that only natural gas is burned in EUDRYER, in accordance with S.C. II.2. In the control room for this process, I observed a reading of 5.2 inches H2O for the pressure drop across the wet scrubber

associated with the dryer. I also read a reading of 200 GPM for the scrubber liquid flow rate. Satisfactory operation of the scrubber, per S.C. IV.2 and IV.3, is defined by operating at a pressure drop between 4.0 and 8.0 inches H2O and a scrubber liquid flow rate of at least 170 GPM. The readings I observed on site were in compliance with these limits. I observed a cyclone installed and operating as required by S.C. IV.1.

Staff explained that Method 9 certified employees conduct weekly visible emission readings as required by S.C. I.4, and I observed that written records are maintained on site in accordance with S.C. VI.3 and VI.4. These logs also include daily readings for pressure drop and liquid flow rate for the scrubber, as required by S.C. VI.5-VI.8.

According to AQD records and Cargill staff, testing in accordance with General Condition (G.C.) 13, has not been requested to verify compliance with PM emission limits in S.C. I.1-I.3.

EUDRYER has a material limit (S.C. II.1) of no more than 30 tons of Alberger salt processed per hour on a daily basis. Neil provided records of the daily operating hours of EUDRYER and Alberger salt throughput as required by S.C. VI.2 for August 2022 through June 2023. The hourly tons of salt processed is determined by taking the daily salt throughput and dividing by the number of operating hours, as specified in S.C. VI.2.b. According to these records the highest hourly tons of salt processed was 27.73 tons as calculated on December 15, 2022. However, I noticed that the calculation seemed to be incorrect—the log notes 166.99 tons of salt throughput for the day and 19.79 hours of operation for the dryer, so the hourly throughput should be 8.44 tons per hour for December 15. I contacted the facility regarding these calculations and they informed me that the data for these parameters (daily salt throughput, EUDRYER hours of operation, and hourly tons of salt through EUDRYER) are generated from plant data rather than calculating hourly throughput manually. According to Neil, it was found that the ‘hours per day’ and ‘daily throughput’ rates were not reading the same 24-hr time period. The facility corrected this and sent me updated records. The highest hourly tons of salt processed through EUDRYER was 24.9 on May 17, 2023. This is below the limit.

As discussed, the facility maintains written records on site for Method 9 visible emissions observations, scrubber pressure drop, and scrubber liquid flow rate. I requested records for one week each month for September 2022 through June 2023 to be scanned and sent to me electronically. The records indicate readings below a six-minute average of 20% opacity as required by S.C. I.4, and scrubber flow rate and pressure drop readings within the limits discussed above.

In accordance with S.C. III.1, the facility’s MAP includes a section dedicated to the wet scrubber and cyclone associated with EUDRYER. This includes supervisory personnel, monitoring parameters including pressure drop and liquid flow rate, an inspection schedule, and corrective procedures in the event of a malfunction.

EUSPACEHEAT
This section of the permit applies to natural gas-fired space heating equipment in the Moonshot Building. We observed that this building was still under construction during the inspection, and no units have been installed.

FGOOO
This conditions of this flexible group apply to emission units EUPRETZEL, EUSCREENING, and EUMOONSHOT. As discussed, the building for EUMOONSHOT is still under construction and no emission units have been installed.

During the walkthrough, we observed the wet scrubbers associated with EUSCREENING and EUPRETZEL. I observed the devices that measure the pressure drops across the scrubbers and the scrubber liquid flow rate in each scrubber in accordance with S.C. IV.1 and IV.2. As defined in S.C. III.1, proper operation of these scrubbers are defined by the following: for EUSCREENING, a pressure drop across the scrubber between 4.7 and 8.8 inches H2O and a scrubbing liquid flow rate of at least 36 GPM; for EUPRETZEL, a pressure drop between 4.2 and 7.2 inches H2O and a scrubbing liquid flow rate of at least 36 GPM. I observed as staff took a reading for the pressure drop for each scrubber using magnehelic gauges. The pressure drop and liquid flow rate for EUSCREENING were 6.5 inches H2O

and 89.6 GPM. For EUPRETZEL these values were 6.7 inches H2O and 90.7 GPM. These values are compliant with the limits specified.

We also observed the stacks for these processes on the roof. I observed an opacity of about 10-15% for EUSCREENING and an opacity of about 5% for EUPRETZEL. I did not observe fallout on the roof. I observed that written logs for weekly visible emissions readings and daily pressure differential and scrubber liquid flow rate readings are maintained on site, in accordance with S.C. VI.3 and VI.4.

Per S.C. I.12 and I.13, the facility is subject to a PM2.5 emission limit of 17.1 tpy and a PM10 emission limit of 17.1 tpy, both based on a 12-month rolling time period determined each month. These limits apply to the combined operation of EUSCREENER and EUMOONSHOT. As discussed, EUMOONSHOT has not yet been installed. Currently, the facility calculates PM emissions from EUSCREENER and EUPRETZEL combined. Neil provided calculations in accordance with S.C. VI.5 for the PM emissions from EUSCREENER and EUPRETZEL. These calculations indicate that the highest 12-month rolling PM emissions were 11.59 tons as calculated in August 2022. This is below the PM limits.

According to AQD Records and Cargill staff, testing in accordance with S.C. V.1 to verify PM emission rates from EUPRETZEL was last performed on July 7, 2017. The results from this test were 0.58 lb/hr and 0.012 g/dry standard cubic meter (dscm). These values are below the corresponding limits of 5.2 lb/hr and 0.05 g/dscm in S.C. I.4 and I.2.

Testing in accordance with S.C. V.1 for EUSCREENING was performed on March 17, 2020. The results from this test were 2.9 lb/hr and 0.043 g/dscm. These values are less than the corresponding limits of 3.9 lb/hr and 0.05 g/dscm in S.C. I.3 and I.1. 2014 results (September 4) was 1.69 lb/hr.

Testing has not been requested to evaluate opacity from the building enclosing EUSCREENING and/or EUPRETZEL per S.C. V.2. Testing has not been requested to evaluate opacity from equipment that is not enclosed within a building per S.C. V.3.

No emission units associated with EUMOONSHOT have been installed and testing requirements V.4-V.6 do not yet apply.

The facility has a material limit (S.C. II.1) of 245,000 tons of salt through each emission unit (EUSCREENING and EUPRETZEL) in a 12-month rolling period as determined each month. Neil provided records in accordance with S.C. VI.2 for the monthly and 12-month rolling amount of salt processed in each emission unit. From August 2022 through June 2023, the highest monthly salt throughput in EUSCREENING was 10997.4 tons in April 2023. The highest monthly throughput in EUPRETZEL was 796.95 tons in October 2022. When I was reviewing these records I noticed that the facility was calculating a 12-month average throughput rather than a 12-month rolling sum. I notified Neil and Cargill staff corrected these calculations. The highest 12-month rolling throughput for EUSCREENING was 121,934.28 tons as calculated in August 2022. The highest 12-month rolling throughput for EUPRETZEL was 58,713.0 tons as calculated in August 2022. Both of these values are less than the limit.

Cargill staff confirmed that standard procedure during a malfunction of a wet scrubber is to stop operation and investigate the problem. This complies with the requirement of S.C. III.2 to shut down the wet scrubber collection fan and vent emissions only inside the building in the event of a malfunction. In accordance with S.C. III.3, the MAP has sections dedicated to EUSCREENING and EUPRETZEL that includes supervisory personnel, monitoring parameters, a maintenance schedule, and corrective procedures in the event of a malfunction. Per the MAP, the scrubbers are designed to cease operation if liquid flowrate falls below 36 GPM.

As discussed, the facility maintains records on site for the pressure drop across the wet scrubbers, scrubber liquid flow rate, and Method 22 visible emission observations in accordance with S.C. VI.3 and VI.4. I requested records for one week each month for September 2022 through June 2023 to be scanned and sent to me electronically. The logs indicate that the scrubber liquid flow rate and pressure drop are maintained within the limits specified for each scrubber in S.C. III.1, and opacity readings have

been below 20%. The logs incorporate a section to note repairs or actions taken in the case of an exceedance.

Neil also provided records of malfunctions, maintenance, and calibrations performed on the pressure differential gauges and flow meter devices in accordance with S.C. VI.6 and VI.7.

PTI 125-22:

FGTEMPBOILERS
The conditions of this flexible group apply to two natural gas fired boilers that have been installed to temporarily replace EUBOILER15. I observed the two boilers, which are identical, during my inspection. I observed the nameplate for one and read a rating of 98400 CFH. Previous AQD inspection reports indicate that the fuel used at cargill has a heating value of 1020 Btu/scf, which would result in a heat input capacity of about 100 MMBtu/hr, which is above the limit of 98.4 MMBtu/hr specified in S.C. IV.1. I am following up with the company regarding the heat input to the boilers and a violation will be issued if the determination is consistent with the above.

Per S.C. I.1, the boilers are each subject to a NOx emission limit of 4.5 lb/hr. NOx emission testing was performed on November 22, 2022, and indicated a NOx emission rate of 2.74 lb/hr for EUTEMPBOILER1. The testing procedure in S.C. V.1 notes that NOx emission rates need only be verified from either EUTEMPBOILER1 or EUTEMPBOILER2.

Cargill staff confirmed that the units only burn natural gas and that low NOx burners are installed and operated in compliance with S.C. II.1. and III.1.

According to Cargill staff, the temporary boilers have not operated simultaneously with EUBOILER15 except for initial shakedown of the temporary boilers, in compliance with S.C. III.2.

In compliance with S.C. VI.2, the facility maintains monthly natural gas usage records for each boiler. The facility is currently calculating a 12-month average fuel use rather than a 12-month sum as required by the condition. I contacted them regarding this change and they will send me fixed calculations.

Conclusion
Based on my observations during the inspection and records review, the facility is in compliance with the evaluated rules and conditions.

NAME Nashin Khan DATE 10/02/2023 SUPERVISOR K. Kelly