

**DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Other**

B182469746

FACILITY: Morton Salt, Inc.		SRN / ID: B1824
LOCATION: 180 6th Street, MANISTEE		DISTRICT: Cadillac
CITY: MANISTEE		COUNTY: MANISTEE
CONTACT: Tim Lovely , HSE&S Manager		ACTIVITY DATE: 11/01/2023
STAFF: Rob Dickman	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Required records review of this major source.		
RESOLVED COMPLAINTS:		

Morton Salt, Inc. is located on the west shore of Manistee Lake in Manistee. The facility produces various grades of sodium chloride salt products, such as, granular salt, water softener pellets, and food grade salt. A process to produce salt blocks was recently decommissioned. Brine saturated with salt is extracted from wells and is processed through a series of temperature and pressure-controlled evaporators, wash tanks, and filters. The salt produced from this process is refined for packaging or is pressed into pellets or blocks.

The facility uses crushed coal to fuel a 180,000 pounds of steam (216 MMBtu) per hour Wickes spreader-stoker coal and natural gas co-fired boiler to extract the salt from the brine solution. and associated four module baghouse system. The boiler is used to generate electricity, steam, and heat for facility production of salt. A natural gas-fired boiler is also used at the facility as a back-up system for building heat. The process systems consist of mills, conveyors, bucket elevators, pellet presses, vibratory screens, and an enclosed crusher to recycle pellets.

The area around the facility is essentially residential immediately to the west and south. The north and east borders of the facility are Manistee Lake. On the north side of the facility is a large coal pile on the lake shore. Coal is brought in by freighter from Lake Michigan. Also on the north side of the facility is a small rail yard. The only industrial source in the immediate vicinity of the facility is a wastewater treatment plant to the south. There is other heavy industry on the lake including a paper company and a chemical company.

Twelve months of required records were requested by the AQD on October 9, 2023 and were received on October 27, 2023. The time period requested was from September 2022 through August of 2023; referred to in this report as the review period. Where records were exceeding voluminous, three random days, December 11, 2022, March 4, 2023, and July 27, 2023, were selected for this review. Following is an evaluation of these records as required by Renewable Operating Permit Number MI-ROP-B1824-2015a and Permit to Install 54-14A.

SOURCE-WIDE CONDITIONS

The facility is required to have an approved site-specific Malfunction Abatement Plan (MAP). The last amendment to the MAP was in June of 2019. A copy of the MAP was submitted with the facility ROP Renewal application. It indicated the last review of the MAP was performed in 2019 and no amendments have been made to it. This MAP was approved in July of 2021.

The facility is required to have an approved Fugitive Dust Plan. This plan was originally submitted in 2002 and has had several revisions. Last revision was March of 2023 and was approved in November of 2023.

Records from the facility indicate the significant HAP emitted from the facility is hydrogen chloride. Records reviewed indicate these emissions are tracked via coal analysis for chlorine content and coal usage. The most recent coal analysis was performed in December of 2022. Coal chlorine content was analyzed at 14 ppm or 0.0014% by weight (ug/g). The permitted limit for coal chlorine content is 1.9% by weight. Additionally, stack testing results from July 2021 indicated chlorine emissions were 1.4 tons per year, well below the major HAP threshold of 10 tons per year.

EUCOALCRUSHER

This unit includes coal crushing and handling equipment controlled by a venturi scrubber. Operation of this unit is intermittent and usually occurs on the afternoon shift.

The differential pressure (Delta P) across and liquid flow rate through the wet scrubber is to be recorded on a daily basis. Records submitted were for the three random days requested. However, operation of this unit is intermittent, and it did not

operate on the selected days. During the onsite portion of the inspection, a few of the most recent records for differential pressure readings were reviewed and noted to be in compliance with the ranges described in the MAP.

EU#6BOILER

This unit includes a Wickes spreader stoker coal and natural gas co-fired boiler capable of producing 180,000 pounds of steam per hour (216 MMBTU/hr heat input) which is used for generating process steam, electricity and heat for facility production. Control is by a four-module baghouse system and dry scrubber. A Lime Injection System is installed, but testing has demonstrated it does not need to be operated as hydrogen chloride emissions are below 10 tons per year.

Monitoring of the differential pressure across the baghouse shall be continuous. This value is being monitored continuously and recorded once per shift. A review of the random days selected demonstrated compliance with this condition.

Date	Delta P in. water**
12/11/22	1.9
3/4/23	2.1
7/27/23	2.6
Ranges*	0.1-9.5

*Acceptable ranges per the facility MAP

**Average across all baghouse modules

Monitoring and recording of visible emissions from EU#6BOILER must be continuous. A continuous opacity monitoring system (COMS) is installed on boiler stack. Reporting on excess emissions and excess monitoring system downtime is performed quarterly. This reporting has been previously received, reviewed, and documented.

Records of start-up and shutdown periods of EU#6BOILER are to be kept. For the review period, one planned shutdown occurred on 11/1-11/5/22. This record was included in the records submission.

The facility utilizes COMS as an indicator of the proper functioning of the baghouse. The appropriate range of opacity defining the proper functioning of the baghouse is 0-15% opacity. The COMS was operating at the time of the inspection. The facility uses the data from this system to comply with CAM. Any excursions from this range are recorded and reported semi-annually. This reporting has been previously received, reviewed, and documented.

Identification, type and the amounts (in tons of coal and cubic feet of natural gas) of all fuels combusted are to be recorded daily. Records were submitted for three days per the records request. The facility only burns natural gas during startup of the unit and did not burn any on the days selected. Coal is the main fuel. Records of coal usage for those days is listed below. Natural gas usage is tracked and recorded by the facility.

Date	Coal usage (lbs.)
12/11/22	229,357
3/4/2023	241,350
7/27/2023	220,348

Sulfur content and higher heating value (BTU/lb) of coal being combusted is to be recorded. This is tracked on a per shipment basis. Coal is limited to 1.5% sulfur content by weight. This is performed on a per ship load received basis. The most recent analysis for this was in December of 2022 and indicated a sulfur content of 0.47% by weight. Sulfur Dioxide emissions are limited to 2.5 lbs/MMBtu. Demonstration of compliance with this limit is through coal content analysis, coal usage records, and emissions calculations. Random dates selected for emissions calculation review are listed below.

Date	SO2 (#/MMBtu)

12/11/22	0.76
3/4/23	1.04
7/27/23	0.92
Limit	2.50

Coal is limited to 1.9% chlorine content by weight. This is performed on a per ship load received basis. The most recent analysis for this was in December of 2022. Coal chlorine content was analyzed at 14 ppm or 0.0014% by weight (ug/g).

Records of the time and duration of each EU#6BOILER baghouse maintenance period (operation of only three out of four baghouse modules) are to be kept. Records of this are being kept on a monthly basis. For the review period, a module was bypassed for 19 hours. Permitted limits are 360 hours based on a 12-month rolling average as determined at the end of each month.

The 30-day rolling average oxygen level is to be maintained at or above the lowest hourly average oxygen level measured during the most recent performance test. The last performance test was in May of 2023. The lowest oxygen level measured during the testing was 6.6%. The oxygen monitor system monitors continuously. The data acquisition system for it compiles the data required. A review of records indicates the lowest 30-day rolling average was in November of 2022 at 8.4% oxygen. For this value, the last performance test was in 2020 and indicated a low oxygen threshold of 8.0%.

The oxygen analyzer system must complete a minimum of one cycle of operation every 15 minutes. The oxygen monitor system monitors and records in a manner that exceeds this parameter.

An energy assessment report is to be kept on file and made the report available to the Department upon request. This assessment was performed November of 2009. A report is available.

EUMILLTRANSFER

Salt transfer system consisting of mills, conveyors, bucket elevators, screens, feed tanks, salt bagging equipment, and salt bulk loading equipment.

The differential pressure and liquid flow rate for each scrubber are to be measured daily whenever the unit is operating. Records submitted were for the three days selected in the records request:

Date	West Delta P	West Flow	East Delta P	East Flow
	in. water	gpm	in. water	gpm
12/11/22	2	24	2	11
3/4/23	2	19	2	14
7/27/23	2	20	2	11
Ranges*	1-8	>5	1-8	>5

*Acceptable ranges per the facility MAP

EUBINTRANSFER

Material handling system consisting of conveyors and bucket elevators used to transfer salt to other processes within the facility. Control of particulate is by the Ducon scrubber.

The differential pressure and liquid flow rate for each scrubber are to be measured daily whenever the unit is operating. Records submitted were for the three days selected in the records request:

Date	Delta P	Flow
	in. water	gpm
12/11/22	6	16.8
3/4/23	8	18.1

7/27/23	6.4	17.0
Ranges*	3-10	>5

*Acceptable ranges per the facility MAP

EUPELLETCOOLING

This unit includes a water softener pellet product cooling system Control of particulate is by the Ducon scrubber.

Documentation of the accuracy of the differential pressure gauge from the manufacturer must be kept. The accuracy of the unit is stamped on the side of it and indicates 0.1 inches of water, gauge.

Documentation of the accuracy of the scrubbing liquid flow rate indicator from the manufacturer is to be recorded. The accuracy of the unit is stamped on the side of it and indicates +/- 1%.

Annual calibration of these gauges was last performed in November of 2022. Documentation of this is included with the submitted records.

The differential pressure and liquid flow rate for each scrubber are to be measured daily whenever the unit is operating. Records submitted were for the three days selected in the records request:

Date	Ducon Delta P	Ducon Flow
	in. water	gpm
12/11/22	5.0	31
3/4/23	3.9	31
7/27/23	5.2	32
Ranges*	3-10	>5

*Acceptable ranges per the facility MAP

EUTM/BLOCK

This unit includes salt product process and packaging machinery for the production of salt and trace mineral blocks. Control of particulate emissions is through a baghouse. This equipment has not operated in the last 12 months and is currently being dismantled. The associated baghouse controls other non-permitted equipment.

FGPELLPRETZEL

This group includes a totally enclosed pretzel salt production system which includes a main crusher, a pellet press, an screw conveyor, a recycle crusher, a bucket elevator, a sizing screener; and a water softener pellet production system which includes pellet briquetting machines, a vibratory screen, belt conveyors, bucket elevators, and an enclosed crusher to recycle pellets. Emission units include EUPPELLPROD and EUPRETZELSALT. Control of particulate matter is through the MAC baghouse.

Differential pressure across the baghouse is to be monitored and recorded on a daily basis. Records submitted were for three random days. Records submitted were for the three days selected in the records request:

Date	MAC Delta P
	in. water
12/11/22	2
3/4/23	2
7/27/23	1
Ranges*	1-5

*Acceptable ranges per the facility MAP

Visible emission observations are to be taken quarterly via Method 22 for the building housing this process. A sample of these readings was submitted and indicated zero emissions.

Recordkeeping for this facility appears in compliance with the conditions of their Renewable Operating Permit.

NAME *Real Dickman*

DATE 11-15-23

SUPERVISOR *Shane Nixon*