

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

B182467420

<b>FACILITY:</b> Morton Salt, Inc.		<b>SRN / ID:</b> B1824
<b>LOCATION:</b> 180 6th Street, MANISTEE		<b>DISTRICT:</b> Cadillac
<b>CITY:</b> MANISTEE		<b>COUNTY:</b> MANISTEE
<b>CONTACT:</b> Tim Lovely , HSE&S Manager		<b>ACTIVITY DATE:</b> 05/09/2023
<b>STAFF:</b> Rob Dickman	<b>COMPLIANCE STATUS:</b> Compliance	<b>SOURCE CLASS:</b> MAJOR
<b>SUBJECT:</b> Scheduled on site inspection of this major source		
<b>RESOLVED COMPLAINTS:</b>		

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.

This facility was inspected per the conditions of Renewable Operating Permit Number MI-ROP-B1824-2015a and Permit to Install 54-14A. Records required by this permitting were requested, reviewed, and documented prior to this inspection. Additionally, all required reporting for this facility has been previously reviewed and documented and is not addressed in this report. Following are the findings of the inspection:

### **SOURCE-WIDE CONDITIONS**

#### Emission Limits

Hazardous Air Pollutant (HAP) emissions from the facility are limited to 9.9 tpy for each individual HAP and 24.9 tpy of all HAPs (aggregate) both based on a 12-month rolling time period at the end of each calendar month. Records from the facility indicate the only significant HAP emitted from the facility is hydrogen chloride (HCl). Records reviewed at the facility indicate these emissions are tracked via coal analysis and usage. Testing completed in July of 2021 indicated HCl emissions were 1.4 tons per year. Calculations performed indicate HCl emissions were 0.73 tons as of January 2023 based on a 12-month rolling time period.

#### Material Limits

There are no source wide material limits.

#### Process or Operational Restrictions

There are no source wide process or operational restrictions.

#### Design or Equipment Parameters

There are no source wide design or equipment parameters.

#### Testing and Sampling Requirements

There are no source wide testing or sampling requirements.

### Stack/Vent Restrictions

There are no source-wide stack or vent restrictions.

### Other Requirements

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 it is awaiting review and approval.

The facility is also required to have an approved Malfunction Abatement Plan (MAP). The most recent version of this approved plan is dated June of 2019. The last review of this plan was performed in January of 2019 and no changes were noted. This MAP was approved in July of 2021.

## **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 reason for this is the majority of the coal received by the facility is within size specification, this equipment only crushes material that is too large to feed the boiler. At the time of the inspection, this emission unit was not in operation.

### Emission Limits

Particulate matter (PM) emissions are limited to 0.10 lb/1000 lbs exhaust gas. Demonstration of compliance with this limit is through optimal control equipment operation. This is indicated by compliant differential pressure and flow rate readings taken and recorded. During the onsite inspection, this equipment was not in operation. Records regarding these readings were requested, however, the on the days selected for review, this equipment did not operate. During the onsite portion of the inspection, a few of the most recent records for pressure drop readings and liquid flow rate through the wet scrubber were reviewed and noted to be in compliance with the ranges described in the MAP.

### Material Limits

There are no material limits associated with this equipment.

### Process or Operational Restrictions

The compliant differential pressure range across the venturi scrubber shall be included in the AQD approved MAP. The compliant differential pressure range for this scrubber is 7-13 inches of water, gauge. The compliant liquid flow rate for the scrubber is greater than 25 gallons per minute. At the time of the inspection, this equipment was not in operation. During the onsite portion of the inspection, a few of the most recent records for pressure drop readings and liquid flow rate through the wet scrubber were reviewed and noted to be in compliance with the ranges described in the MAP. It was also noted that this equipment is fitted with an interlock system that requires the pressure drop across the scrubber to be within set specifications for the crushing equipment to operate.

### Design or Equipment Parameters

A differential pressure gauge and a liquid flow rate indicator are required to be installed on the venturi scrubber. This equipment is installed but was not in operation at the time of the inspection.

### Testing and Sampling Requirements

There are no testing or sampling requirements associated with this equipment.

### Stack/Vent Restrictions

There are no stack or vent restrictions associated with this equipment.

### Other Requirements

There are no other requirements associated with this equipment.

**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 for hydrogen chloride control is installed, but testing and fuel sampling has demonstrated it does not need to be operated.

Emission Limits

PM emissions are limited to 0.30 lb/1000 lbs exhaust gas. Demonstration of compliance with this limit is through periodic stack testing. This testing was last performed in June of 2018 and demonstrated a result of 0.0017 lb/1000 lbs exhaust gas. Testing the boiler for PM emissions is scheduled for May 31, 2023.

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. Coal used at the facility is limited to 1.5% sulfur content by weight. Analysis of coal 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. Random dates selected for emissions calculations review are listed below. Additionally, while not required, the facility performed stack testing for SO<sub>2</sub> in June of 2018. The results were 0.745 #/MMBtu. Testing the boiler for SO<sub>2</sub> emissions is scheduled for May 31, 2023.

Date	SO <sub>2</sub> (#/MMBtu)
3/31/22	0.33
8/11/22	0.49
1/5/23	0.50
Limit	2.50

Mercury emissions are limited to 2.2 E-05 lb/MMBTU. Demonstration of compliance with this limit is through periodic stack testing. This testing was last performed in June of 2018 and demonstrated a result of 2.3 E-07 lb/MMBTU. Testing the boiler for mercury emissions is scheduled for May 31, 2023.

Carbon Monoxide emissions are limited to 420 ppm dry @ 3% oxygen. Demonstration of compliance with this limit is through periodic stack testing. This testing was last performed in June of 2018 and demonstrated a result of 128 ppm dry @ 3% oxygen. Testing the boiler for CO emissions is scheduled for May 31, 2023.

Visible emissions are limited to 10% opacity. Demonstration of compliance with this limit is through an opacity monitoring system. At the time of the inspection, an instant opacity reading taken was 3.3% at the stack exit. This is typical for this source.

Pursuant to 40 CFR 63 Subpart JJJJJJ, the facility must demonstrate that it is not a major source of HAPs (ie. Less than 10 tons per year emissions of each individual HAP, 25 tons of emissions for aggregate HAPS). 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.

Material Limits

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.

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).

The design maximum heat input for firing natural gas, of the total heat input capacity for all fuels fired in EU#6BOILER, shall not exceed a maximum of 82 MMBTU per hour. This is the maximum nameplate capacity of the natural gas burners.

### Process or Operational Restrictions

The baghouse must be in proper operation when the boiler is operating. At the time of the inspection, the baghouse was in operation.

Periods of boiler startup and shutdown must be minimized. Compliance with this condition is through implementation of good engineering practices. Process issues associated with startup and shutdown are reported semi-annually as deviations. This reporting has been previously received, reviewed, and documented.

A device to monitor and record the natural gas usage from the boiler on a continuous basis is to be installed. The boiler is so equipped. Natural gas is typically only used for startup of the boiler. Natural gas usage is tracked and recorded by the facility.

A differential pressure gauge to determine pressure drop across the baghouse must be installed. The baghouse is so equipped. The compliant range for this pressure drop is 0.1 – 9.5 inches of water, gauge. At the time of the inspection, pressure drop across the baghouse was 2.2 inches of water, gauge.

A Continuous Opacity Monitor (COM) to monitor and record the visible emissions from the boiler on a continuous basis must be installed and operating. This equipment is installed. At the time of the inspection, opacity at the stack exit was 3.3%.

After the lime injection system is installed, devices to monitor and record the coal usage rate and hydrated lime injection rate to the boiler are to be installed. These devices are in place. However, it was determined through testing and fuel monitoring that the lime injection system is not necessary to maintain compliance with HAP emissions limits.

Upon installation of the lime injection system, an oxygen analyzer system must also be installed. This system is installed on the boiler. 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 July of 2020. The lowest oxygen level measured during the testing was 8.0%. The oxygen monitor system monitors continuously. The data acquisition system for it compiles the data required. At the time of the inspection, oxygen levels in the boiler combustion chamber were 10.3%.

A one-time energy assessment by the time the lime injection system is installed is to be completed. This assessment was performed in November of 2009.

### Design or Equipment Parameters

The COMS must be installed according to Performance Specification 1 of 40 CFR part 60, Appendix B. This system is installed per this criterion.

The design heat input rate for the boiler shall not exceed 216 MMBTU/hr. The nameplate heat input maximum to the boiler is 216 MMBTU/hr .

### Testing and Sampling Requirements

The facility has the option to burn different mixtures or grades of coal but must complete new testing for mercury if they choose to do so. The facility has made no changes to their current fuel mixture.

An analysis of the coal, to determine the sulfur content, chlorine content and higher heating value must be completed on a per shipment basis. The most recent analysis was completed December of 2022. It indicated a sulfur content of 0.47% dry, a chlorine content of 14 ppm dry, and a higher heating value of 12775 BTU per pound.

Testing for PM must be performed. This testing was last performed in June of 2018 and demonstrated a result of 0.0017 lb/1000 lbs exhaust gas. This testing report has been previously received, reviewed, and documented. Testing is scheduled for May 31, 2023.

Testing for hydrogen chloride (HCl), mercury (Hg) and carbon monoxide (CO) emission rates from the boiler when burning coal was last performed in In June of 2018. The results of this testing demonstrated compliance with applicable emissions limits. Testing is scheduled for May 31, 2023.

Within 180 days after installation of the lime injection system, the facility shall conduct a performance evaluation of the oxygen analyzer system in accordance with the site-specific monitoring plan. Calibration of the system is performed quarterly. The site-specific monitoring plan was originally issued in December of 2015 and revised in March of 2016.

An annual audit of the COMS must be performed according to the requirements in 40 CFR 63.8 and according to Performance Specification 1 of 40 CFR Part 60, Appendix B and using the procedures set forth in USEPA Publication No. 450/4-92-010, "Performance Audits Procedures for Opacity Monitors", or a procedure acceptable to the AQD. This audit was last performed in December of 2022 and demonstrated compliance. The USEPA publication cited here is no longer viable. Moving forward, as part of the facility renewal ROP, they will be required to perform audits per 40 CFR 60, Appendix F, Procedure 3.

#### Stack/Vent Restrictions

There is one stack associated with the boiler. This stack is limited to a maximum diameter of 78 inches and a minimum height of 160 feet. The stack appears in compliance with criteria listed in the ROP and does not appear to have been recently altered.

#### Other Requirements

Notification shall be made to the AQD for the need to modify the CAM Plan if the existing plan is found to be inadequate. The CAM plan has not been modified and appears adequate.

All applicable requirements of 40 CFR, Part 64 are to be followed. By complying with the CAM specific conditions of this section, the facility is in compliance with 40 CFR 64.

All applicable provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR Part 63, Subpart A and Subpart JJJJJ for Industrial, Commercial, and Institutional Boilers Area Sources are to be followed. By complying with the conditions in this section, the facility is in compliance with all applicable parts of 40 CFR Part 63, Subpart A and Subpart JJJJJ.

A site-specific monitoring plan for the oxygen analyzer system is to be developed. This monitoring system plan was submitted in December of 2015.

#### **EUMILLTRANSFER**

Equipment included a salt transfer system consisting of mills, conveyors, bucket elevators, screens, feed tanks, salt bagging equipment, and salt bulk loading equipment. Particulate control is through two wet scrubbers.

#### Emission Limits

PM emissions are limited to 0.10 lb/1000 lbs exhaust gas. Demonstration of compliance with this limit is through optimal control equipment operation. This is indicated by compliant scrubber differential pressure and flow rate readings taken and recorded. A review of these records demonstrated compliance with this limit.

#### Material Limits

There are no material limits associated with this equipment.

#### Process or Operational Restrictions

The compliant minimum liquid flow rate through the venturi scrubbers shall be included in the AQD approved MAP. The minimum required flow rate for each scrubber is are 5 gallons per minute. At the time of the inspection, east scrubber flow was 12 gpm and the west was 13 gpm.

Differential pressure gauges to determine pressure drop across each wet scrubber must be operated and maintained. The pressure drop range for the west and east scrubbers is 1-8 inches of water, gauge. At the time of the inspection, the east scrubber pressure drop was 1.6 and the west scrubber was 1.8 inches of water, gauge.

The wet scrubbers are to be in operation when the unit is operating. They were operating at the time of the inspection.

#### Design or Equipment Parameters

A differential pressure gauge and liquid flow rate indicator must be installed and operating on each wet scrubber. These instruments are installed and operational.

#### Testing and Sampling Requirements

There are no testing or sampling requirements associated with this equipment.

#### Stack/Vent Restrictions

There are no stack or vent restrictions associated with this equipment.

#### Other Requirements

There are no other requirements associated with this equipment.

### **EUPELLETCOOLING**

This unit includes a water softener pellet product cooling system controlled by a venturi scrubber.

#### Emission Limits

PM emissions are limited to 0.032 lb/1000 lbs exhaust gas. Demonstration of compliance with this limit is through periodic stack testing. This testing was last performed in June of 2018 and demonstrated particulate emissions of 0.012 lb/1000 lbs exhaust gas. Testing is scheduled for May 31, 2023.

Visible emissions are limited to 10% opacity. Demonstration of compliance with this limit is through visible emissions testing every five years. This testing was last performed in June of 2018 and demonstrated compliance. Testing is scheduled for May 31, 2023.

#### Material Limits

There are no material limits associated with this equipment.

#### Process or Operational Restrictions

The wet scrubber is to be operating properly when the process is operating. At the time of the inspection, the scrubber was in operation. Proper operation includes compliant pressure drop and liquid flow values. The compliant pressure drop range for the scrubber is 2.7 – 6.0 inches of water, gauge and the compliant minimum scrubber liquid flow rate is 20 gallons per minute. At the time of inspection the pressure drop was 4 inches of water, gauge and the scrubber liquid flow rate was 28 gallons per minute.

#### Design or Equipment Parameters

The liquid flow rate indicator and differential pressure gauge are to be installed when the process is operating. This equipment was installed and operating at the time of the inspection.

#### Testing and Sampling Requirements

Testing for particulate matter (PM) is to be completed at least once every five years. This testing was last performed in June of 2018. Testing is scheduled for May 31, 2023.

Liquid flow rate and differential pressure levels are to be established during performance testing. This testing was last performed in June of 2018. The compliant pressure drop range for the scrubber is 2.7 – 6.0 inches of water, gauge and the compliant minimum scrubber liquid flow rate is 20 gallons per minute.

Visible emissions from the building housing are determined by testing once every five years. This testing was last performed in June of 2018. Testing is scheduled for May 31, 2023.

#### Stack/Vent Restrictions

There is one stack associated with this EU. The maximum stack diameter is 21 inches and the minimum stack height is 90 feet. The stack appears in compliance with criteria listed in the ROP and does not appear to have been recently altered.

#### Other Requirements

There are no other requirements associated with this equipment.

#### **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.

#### **EUBINTRANSFER**

Equipment in this group includes material handling system consisting of conveyors and bucket elevators used to transfer salt to other processes within the facility. Control of particulate matter is through a wet impingement scrubber.

#### Emission Limits

PM emissions are limited to 0.027 lbs/1,000 lbs of exhaust gases. Demonstration of compliance with this limit is through optimal control equipment operation. This is indicated by differential pressure and liquid flow rate readings taken and recorded. Compliant ranges for the scrubber are 3 -10 inches of water, gauge for the pressure drop and a minimum of 5 gallons per minute of liquid flow. Readings taken at the time of the inspection were 3.9 inches of water, gauge and 17 gallons per minute.

#### Material Limits

There are no material limits associated with this equipment.

#### Process or Operational Restrictions

The wet impingement scrubber is to be installed and operating properly when the process is operating. The scrubber was operating at the time of the inspection.

The scrubber must have a differential pressure gauge and liquid flow rate gauge operating when the process is operating. These were in operation at the time of the inspection.

#### Design or Equipment Parameters

The scrubbers are to be equipped with a differential pressure gauge to determine pressure drop and a liquid flow rate gauge to determine the amount of liquid flow through the wet scrubber. The scrubber is so equipped.

#### Testing and Sampling Requirements

There are no testing or sampling requirements associated with this equipment.

#### Stack/Vent Restrictions

There are no stack or vent restrictions associated with this equipment.

#### Other Requirements

There are no other requirements associated with this 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 EUPELLPROD and EUPRETZELSALT. Control of particulate matter is through a baghouse.

#### Emission Limits

PM emissions are limited to 0.014 gr/dscf. Demonstration of compliance with this limit is through periodic stack testing. This testing was last performed in June of 2018 and demonstrated emissions of 0.00077 gr/dscf. Testing is scheduled for May 31, 2023.

PM-10 and PM 2.5 emissions are limited to 3.96 lbs/hr. Demonstration of compliance with this limit is through periodic stack testing. This testing was last performed in June of 2018 and demonstrated emissions of 0.14 lbs/hr. Testing is scheduled for May 31, 2023.

Visible emissions are limited to 7% opacity on buildings housing this group. Demonstration of compliance with this limit is through visible emissions testing via Method 22. This testing was last performed in January of 2021 and demonstrated compliance.

#### Material Limits

There are no material limits associated with this equipment.

#### Process or Operational Restrictions

The baghouse must be in operation when the process is in operation. At the time of the inspection, the baghouse was in operation.

Salt that is collected in and recovered from the baghouse shall be handled in a manner that minimizes the introduction of air contaminants to the outer air. Salt collected is re-entrained into the process.

The baghouse must be equipped with a differential pressure gauge. The baghouse is so equipped.

The compliant differential pressure range across the baghouse shall be included in the AQD approved MAP. This range, included in the MAP, is 1 – 5 inches of water, gauge. At the time of the inspection, pressure drop across this baghouse was 2.0 inches of water, gauge.

#### Design or Equipment Parameters

There are no design or equipment parameters associated with this equipment.

#### Testing and Sampling Requirements

Compliance with PM, PM 10 and PM 2.5 emission rates from this process are demonstrated through periodic stack testing. This testing was last performed in June of 2018 and demonstrated compliance. Testing is scheduled for May 31, 2023.

Compliance with visible emissions from the building housing is demonstrated through testing. This testing was last performed in January of 2021 and demonstrated compliance.

#### Stack/Vent Restrictions

There is one stack associated with this equipment. The maximum dimensions for this stack is 32 X 32 inches and the minimum height is 51 feet. The stack appears in compliance with criteria listed in the ROP and does not appear to have been recently altered.

#### Other Requirements

The facility is required to comply with all applicable requirements of 40 CFR Part 60, Subpart OOO. By complying with the condition of this section, the facility is demonstrating compliance with the Subpart.

#### **FGRULE 287(c)**



This group currently consists of one small coating booth with dry fabric filter control. This booth has been permanently dismantled.

**FGOLDCLEANERS**

This group consists of two cold cleaners. Each is serviced by the facility with disposal of spent solvents to an approved waste hauler. Each was properly signed, appeared in good condition, and was closed when not in use.

At the time of the inspection, this facility was in compliance with their air permitting.

NAME DATE 11-15-23SUPERVISOR 