

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

B182458714

FACILITY: Morton Salt, Inc.	SRN / ID: B1824
LOCATION: 180 6th Street, MANISTEE	DISTRICT: Cadillac
CITY: MANISTEE	COUNTY: MANISTEE
CONTACT: Jacob Bialik , Plant Manager	ACTIVITY DATE: 06/22/2021
STAFF: Rob Dickman	COMPLIANCE STATUS: Compliance
SUBJECT: On site inspection of this major source.	SOURCE CLASS: MAJOR
RESOLVED COMPLAINTS:	

Morton Salt, Inc. is located on the west shore of Manistee Lake in Manistee. The facility uses a coal crusher with a wet venturi scrubber for an 180,000 pounds (216 MMBtu) steam per hour Wickes spreader stoker coal and natural gas co-fired boiler 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 facility produces various grades of sodium chloride salt products, such as, granular salt, water softener pellets, pretzel salt, and salt blocks. 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.

This facility was inspected per the conditions of Renewable Operating Permit Number MI-ROP-B1824-2015a. Records required by this permit are kept electronically by the facility and were reviewed on site. 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 HAP emitted from the facility is hydrogen chloride (HCl). Records reviewed at the facility indicate these emissions are tracked via coal analysis and usage. As of December 1, 2020, HCl emissions from the facility were 1.6 tons per year 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.

Monitoring and/or Recordkeeping Requirements

Individual and aggregate HAPs emission records are to be kept monthly by the facility. Records from the facility indicate the only HAP emitted from the facility is hydrogen chloride. Records reviewed at the facility indicate these emissions are tracked via coal analysis for chlorine content and coal usage. As of December 2020, HCl emissions from the facility were 1.6 tons per year based on a 12-month rolling time period.

Reporting

All semi-annual and annual deviation reporting has been completed in a timely manner. This reporting has been received and reviewed by Air Quality Division (AQD) staff.

The facility was required to notify the agency of when the lime injection system for HCl control was installed and when it began operation. The facility installed a lime injection system in September of 2015. The facility tested for HCl in October of 2015. The results of this testing indicated that the facility was able to demonstrate they are a minor HAP source without the use of lime injection.

Stack/Vent Restrictions

There are no source-wide stack or vent restrictions.

Other Requirements

The facility is required to have an approved Fugitive Emissions Plan (FEP). The latest version of this plan found is from October of 2017. However, no approval for this or previous versions could be located.

The facility is also required to have an approved Malfunction Abatement Plan (MAP). The most recent version of this approved plan is dated February of 2018. The last review of this plan was performed in January of 2019 and no changes were noted. No approval for this or previous versions could be located.

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. 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. Records regarding these readings were previously reviewed and documented by AQD staff. During the onsite inspection, this equipment was not in operation.

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. At the time of the inspection, this equipment was not in operation. A review of the most recent records on 6/20/21 indicated the pressure drop across the scrubber was 8 inches of water, gauge.

The compliant minimum liquid flow rate through the venturi scrubber shall be included in the AQD approved MAP. 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. A review of the most recent records on 6/20/21 indicated flow through the scrubber was 35 gallons per minute.

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.

Monitoring and/or Recordkeeping Requirements

Applicable required monitoring and recordkeeping for this section have been reviewed and documented separately.

Reporting

All semi-annual and annual deviation reporting has been completed in a timely manner. This reporting has been received and reviewed by Air Quality Division (AQD) staff.

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 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.

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 was performed in November of 2020 and indicated a sulfur content of 0.43%. A random date of June 11, 2019 was selected and the calculated emissions for SO₂ were 0.75 #/MMBtu. Additionally, while not required, the facility performed stack testing for SO₂ in June of 2018. The results were 0.745 #/MMBtu.

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.

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.

Visible emissions are limited to 10% opacity. Demonstration of compliance with this limit is through an opacity monitoring system. The facility is required to report excess emissions and excess monitoring system downtime for this system on a quarterly basis. These records have been previously received, reviewed, and documented. At the time of the inspection, an instant opacity reading taken was 2.9% 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 only HAP emitted from the facility is hydrogen chloride (HCl). Records reviewed at the facility indicate these emissions are tracked via coal analysis and usage. As of December 1, 2020, HCl emissions from the facility were 1.6 tons per year based on a 12-month rolling time period. In June of 2018, the facility also performed a stack test for HCl. The results of this demonstrated a potential to emit of HCl of 1.6 tons per year, uncontrolled.

Material Limits

Coal is limited to 1.5% sulfur content by weight. This analysis is performed on a per ship load received basis. The most recent analysis performed was in November of 2020 and indicated a sulfur content of 0.44%.

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 November of 2020 and indicated 6 ppm or 0.006% chlorine content by weight.

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. Opacity at the stack was 2.9%.

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. Records for 2020 indicated a total gas usage of 2,285,000 cubic feet of gas. Gas usage for 2021 has been 262,000 cubic feet year to date.

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 2.3 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 2.9%.

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 that the lime injection system is not necessary to maintain compliance with HCl emissions limits.

Upon installation of the lime injection system, an oxygen analyzer system must also be installed. This system is installed on the boiler. This system must operate at or above the minimum oxygen level that is established as the operating limit when firing the fuel utilized during the most recent CO performance test. Testing in June of 2018 established a minimum oxygen level of 8.2%. Any deviations below this are reported and reviewed by AQD staff. At the time of the inspection, oxygen levels in the boiler combustion chamber were approximately 9%.

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 a new mixture of fuel but must complete new testing for mercury. The facility has made no changes recently to their 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 November of 2020. It indicated a sulfur content of 0.44% dry, a chlorine content of 6 ppm dry, and a higher heating value of 12913 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 for hydrogen chloride (HCl), mercury (Hg) and carbon monoxide (CO) emission rates from the boiler when burning coal was last performed in June of 2018. The results of this testing demonstrated compliance with applicable emissions limits. This testing report has been previously reviewed, documented, and found to be in compliance.

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 May of 2020 and demonstrated compliance.

Monitoring and/or Recordkeeping Requirements

Applicable required monitoring and recordkeeping for this section have been reviewed and documented separately.

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 flow rates are five gallons per minute each for the west and east scrubbers. At the time of the inspection, east scrubber flow was 7.7 gpm. The facility operates the control equipment within ranges established in the MAP. If the equipment goes out of range, the facility reports it as part of their deviation reporting.

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 1.8 inches of water, gauge. The facility operates the control equipment within ranges established in the MAP. If the equipment goes out of range, the facility reports it as part of their deviation reporting.

The wet scrubbers are to be in operation when the unit is operating. They are installed and 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.

Monitoring and/or Recordkeeping Requirements

Applicable required monitoring and recordkeeping for this section have been reviewed and documented separately.

Reporting

All semi-annual and annual deviation reporting has been completed in a timely manner. This reporting has been received and reviewed by Air Quality Division (AQD) staff.

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.

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.

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. A random date of 6/14/19 was selected and on that date, the pressure drop reading taken was 5.9 inches of water, gauge and the scrubber liquid flow rate was 45 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.

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.

Monitoring and/or Recordkeeping Requirements

Applicable required monitoring and recordkeeping for this section have been reviewed and documented separately.

Reporting

All semi-annual and annual deviation reporting has been completed in a timely manner. This reporting has been previously reviewed and documented by AQD staff.

On a semi-annual basis, all occurrences when the measurements of the scrubber pressure loss (or gain) and liquid flow rate differ by more than $\pm 30\%$ from the average determined during the most recent performance test shall be reported. This reporting has been previously reviewed and documented by AQD staff.

Stack testing procedures and reporting were handled through the testing protocol process and were performed correctly. This reporting has been previously reviewed and documented by AQD staff.

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.

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 differential pressure readings across the baghouse taken and recorded. Compliant range for this pressure drop is 0.5 to 10.0 inches of water, gauge. At the time of the inspection, pressure drop across the baghouse was 1.5 inches of water, gauge.

Material Limits

There are no material limits associated with this equipment.

Process or Operational Restrictions

The compliant differential pressure range across the baghouse shall be included in the AQD approved MAP. The facility operates the control equipment within ranges established in the MAP. If the equipment goes out of range, the facility reports it as part of their deviation reporting. This reporting has been previously reviewed and documented by AQD staff.

The baghouse is to be installed and operating properly when the process is operating. At the time of the inspection, the baghouse was in operation.

Design or Equipment Parameters

A differential pressure gauge must be installed on the baghouse. The baghouse is so equipped.

Testing and Sampling Requirements

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

Monitoring and/or Recordkeeping Requirements

Applicable required monitoring and recordkeeping for this section have been reviewed and documented separately.

Reporting

All semi-annual and annual deviation reporting has been completed in a timely manner. This reporting was previously reviewed and documented by AQD staff.

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 EUPPELLPROD 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.

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.

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 2.04 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.

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

Monitoring and/or Recordkeeping Requirements

Applicable required monitoring and recordkeeping for this section have been reviewed and documented separately.

Reporting

All semi-annual and annual deviation reporting has been completed in a timely manner. This reporting was previously reviewed and documented by AQD staff.

Stack testing procedures and reporting were handled through the testing protocol process and were performed correctly.

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.

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 7.2 inches of water, gauge and 15 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.

Monitoring and/or Recordkeeping Requirements

Applicable required monitoring and recordkeeping for this section have been reviewed and documented separately.

Reporting

All semi-annual and annual deviation reporting has been completed in a timely manner. This reporting has been previously reviewed and documented by AQD staff.

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.

FGRULE 287(c)

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

FGCOLDCLEANERS

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. The Fugitive Emissions Plan and Malfunction Abatement Plan will be reviewed and approved prior to the next inspection of this facility.

NAME _____

DATE _____

SUPERVISOR _____