DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
**ACTIVITY REPORT: Scheduled Inspection**

B163325012

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|---|---|---|
| **FACILITY:** Sensient Flavors, Inc. | | **SRN / ID:** B1633 |
| **LOCATION:** 79 STATE, HARBOR BEACH | | **DISTRICT:** Saginaw Bay |
| **CITY:** HARBOR BEACH | | **COUNTY:** HURON |
| **CONTACT:** Dan Confer , Plant Manager | | **ACTIVITY DATE:** 04/22/2014 |
| **STAFF:** Gina McCann | **COMPLIANCE STATUS:** Compliance | **SOURCE CLASS:** MINOR |
| **SUBJECT:** Scheduled inspection to determine compliance with recently modified PTI 85-96D and the MAP requirements associated with the Dryer scrubber, Neutralization scrubber and Reactor scrubber. | | |
| **RESOLVED COMPLAINTS:** | | |

I (glm) conducted a scheduled inspection at Sensient Flavors, Inc. (facility) in Harbor Beach from April 22-24, 2014. Sensient holds five active permits with AQD. The purpose of my visit was to observe the stack testing requested by EPA Region 5 dated 2/26/2014 and determine compliance with recently modified PTI 85-96D and the Malfunction Abatement Plan (MAP) requirements associated with the Dryer scrubber, Neutralization scrubber and Reactor scrubber (*see Stack Test Observation Report dated 4/22/2014*).

Stack testers on site were Cole Stevens, Dustin Glossic, Marcus Allen, and Mary Dunlap (performing Method 9 Opacity readings). Sensient representatives were Dan Confer (Plant Manager), Mark Halverson (Sr. EHS Engineer), Joe Gierman (Plant Engineer), and Jeff Woycehoski (Maintenance Supervisor).

## Facility Description

Sensient produces hydrolyzed vegetable protein (HVP) from raw corn, soy, or wheat gluten. Raw feeds are processed through an acid hydrolysis reactor (PTI 85-96D) to break vegetable proteins into their separate amino acid constituents. Depending on the customers' needs, the HVP is further treated through a neutralization process (PTI 85-96D), filter presses to remove unwanted solids (PTI 595-95A), and finally to either a sauce plant to be sold as a liquid or through their spray dryer (PTI 924-79A) and lastly bagged to be sold in bulk. Energy for the process is generated by two, natural gas/oil fired, Clayton boilers (PTI 925-79). Records review showed that oil has never been used in the boilers.

The process has a definite and identifiable odor. When there is an upset in the process the facility is known to have offensive odors, which has resulted in R901 violations in the past. The last complaint received by AQD was on March 6, 2014. According to the facilities MAP records for the Dryer scrubber, preventative maintenance had been performed on March 4, 2014 (see attached records). Mr. Gierman thoroughly washed the scrubber and replaced all of the water with fresh water. During the maintenance inspection the facility found that the demister pads had a partial blockage, they were replaced with new pads. The spray bar nozzles were removed and inspected and found in proper working order. A small blockage was found on the cooling ring nozzle. The debris was removed and reinstalled. The facility is utilizing the MAP as intended by AQD.

## Regulatory Discussion

Prior to the test observation Mr. Halverson and I had some regulator discussions. We discussed if the MACT RICE (40 CFR Part 63 Subpart ZZZZ), Boiler MACT (40 CFR Part 63 Subpart DDDDD), or NSPS DD (40 CFR Part 60 Subpart DD-grain elevator) was applicable to the facility. The facility does not operate any RICE. The boilers are gas fired. Based on the combustion units now installed on the boilers they cannot accept anything other than natural gas, as a result the facility has determined that the Boiler MACT is not applicable. The facility

does have permanent grain storage on site, but it is well below the 2.5 million bushel that triggers the NSPS Subpart DD.

**Compliance Determination**

- **PTI 85-96D/Reactor Scrubber/Neutralization Scrubber MAP**
  This permit is for EUHVPREACTORS and EUHCLNEULAHTANKS. Special Condition III.1 of this PTI requires a Malfunction Abatement Plan (MAP) be in place in order to operate this equipment. A revised MAP was approved on August 12, 2014. Jeff Woycehoski, Maintenance Supervisor, discussed the requirements in the MAP and Mr. Woycehoski was able to provide the last three months (January 2014-March 2014) of preventative maintenance records, (*see attached records*). The facility is utilizing the MAP as intended in the PTI. During our conversations the facility some minor changes they are making to the MAP that they will be submitting shortly.

  Parameters such as pH, differential pressure, temperature, and scrubber liquid flow rates are required as part of this permit and are recorded every two hours.

  A previous inspection (May 22, 2013) resulted in a NOV for pH exceedances. With the information provided at the time of the previous inspection, I concluded that since ammonia hydroxide was the material permitted an exceedance of pH would result in additional ammonia emissions. Instead the NOV was more of an administrative violation; since sodium hydroxide is the material actually being used an increase in pH would not result in excess ammonia emissions. This discovery was the basis for modifying PTI 85-96D.

| EUHVPREACTORS | | | |
|---|---|---|---|
| | **PTI 85-96D Limit** | **4/23/2014** | **4/24/2014** |
| **Differential Pressure** | Max of 4.0 ("W.C.) | 0.5 | 0.9 |
| **pH** | ≥ 8.0 | 11.07 | 9.73 |
| **Scrubber Liquid Flow Rate** | ≥ 30 (gpm) | 110 | 145 |

| EUNEUTANKS | | | |
|---|---|---|---|
| | **PTI 85-96D Limit** | **4/23/2014** | **4/23/2014** |
| **Differential Pressure** | Max of 4.0 ("W.C.) | 0.7 | 0.7 |
| **pH** | ≥ 8.0 | 8.5 | 8.71 |
| **Scrubber Liquid Flow Rate** | ≥ 8 (gpm) | 12 | 12 |

At the time of my inspection the facility was in compliance with the conditions of PTI 85-96D.

- **PTI 595-95A**
  This permit has a visible emissions limit for the diatomaceous earth mixing tank and two filter presses. At the time of my inspection I did not observe any visible emissions.

- **PTI 925-79**
  This permit is for the two steam generators. The permit was written with the expectations that these boilers would use oil and instead they have always used natural gas. The facility does not have a fuel oil tank on site; therefore they are not actually capable of operating the boilers with diesel fuel no. 2.

- **PTI 924-79 and PTI 924-79A**
  These permits are for the cyclone (PTI 924-79A), modified HVP dryer (PTI 924-79A), and wet scrubber (PTI 924-79A). Once the test results from the stack test is available compliance with the particulate matter (PM) emission limit of 0.065 lbs/1,000 lbs. of exhaust gases, calculated on a dry gas basis, will be determined.

  A formal request was sent to the facility siting R911, and requesting that a MAP is implemented for the wet scrubber (June 6th, 2013). The MAP was approved on August 12, 2013.

- **Dryer Scrubber MAP Compliance**
  The facility installed a density transmitter in 2013 to monitor for solids in the scrubber water. Once the density reaches the set point (8.30 lb/g) the 400 gallon tank begins to drain to replenish the scrubber water. The facility records installation of the solids meter is a step in the right direction but the permit does not address operating parameters such as liquid flow and pressure drop that can indicate a malfunction may occur.

| Spray Dryer Scrubber | | | | |
|---|---|---|---|---|
| | **Manufacturer's Recommendation stated in MAP** | **4/22/2014 (1st Shift)** | **4/22/2014 (2nd Shift)** | **4/22/2014 (My Reading)** |
| **Differential Pressure** | 0.00 " W.C. to 0.5 " W.C. | 0.21 | 0.00 | 0.00 |
| **Scrubber Liquid Flow Rate** | ≥ 85 gpm | 108 | 109 | 110.3 |
| **Density Transmitter** | Drain Activation Set @ 9.0 lb/gal | 8.69 lb/gal | 8.30 | 8.31 lb/gal |

The vertical glass column can be observed from the Spray Dryer scrubber control room. During the three days I was onsite I was able to observe free flowing water the entire time.

During our conversations, Mr. Woycehoski stated that the scrubber manufacturer (Niro) performs annual inspections and repairs as needed. Documentation was available of Niro's inspections.

At the time of my inspection the facility was found to be in compliance with their active PTIs.

NAME Gina L. McCann DATE 5/7/2014 SUPERVISOR C. Hare

4/24/2014
YM

March 4, 2014

Complaint received on 3/6/2014

# Spray Dryer PM

## Equipment Inspected:

**Spray Bar Nozzles:** Main Scrubber spray nozzle was removed inspected and found in proper working order. Small blockage was found on cooling ring nozzle. Debris were removed and reinstalled

**Blower:** Blower was greased, inspected and found to be in good working order.

**Diff. Pressure Gage:** Visually inspected and seemed to be working. Will need follow up at a later time

**Density Transmitter:** Density transmitter was inspected/calibrated and found to be in working order at time of PM

**De-Mister Pads:** Demister pads were inspected and had partial blockage. Pads were removed and replaced with clean pads.

**Odor Control Nozzle:** New nozzle was in the installation phase. The Old unit was thoroughly washed, new filters were installed, and refilled with odor control liquid.

**NOTES:**

- Entire scrubber was thoroughly washed all water was dumped and refilled with fresh.
- Demister spray nozzle was missing. New nozzle was installed with temporary fix. New spray bar and nozzles will be ordered in future.

Joe Gierman
Plant Engineer

4/24/2014

Sensient Flavors

Preventive Maintenance for Reactor and Neutralization Scrubbers
Air Use Permit No.

Date: 3-31-2014

Roger Kern

| Equipment | PM Task | Check Complete |
|---|---|---|
| 1. PH probe | Ensure ph probe is operating properly, calibrate per manufacture recommendation, as necessary | ✓ |
| 2. Temp. probe | Ensure Temp probe is working, calibrate per manufacture recommendation as necessary | ✓ |
| 3. Fog Nozzle | Visual inspection through port ( should be 90 degree spray Pattern.) | ✓ |
| 4. Packing | Visual inspection to insure packing is thoroughly wetted | ✓ |
| 5. Mist Eliminator | Inspection for excessive pressure drop | ✓ |
| 6. Stack Emission | Visual check for unusual emissions | ✓ |
| 7. Diff. pressure | Ensure gauge is operating properly, replace as necessary | ✓ |
| 8. Liquid flow meter | Ensure meter is operating properly, calibrate as necessary | ✓ |

Note any problems or unusual conditions encountered:

PHT9358 – New Probe on 3-3-2014. No change on readings.

Changed out Magnehelic for visual indication on reactor scrubber stack.

Electrical :

| | |
|---|---|
| TT- 9353 after Hx | PT-9322 top of big tank |
| TT- 9357 before Hx | TT-3722 W. Neut. Temp |
| TT-9362 Vent temp on tank by wall | TT-3822 E. Neut. Temp |
| PT9620- Tall tank | PHT-3820 Neut. Scrub |
| PT-9510 | PT-3830 Neut. Scrub Tank Press |
| TT- 9354 Line off wall tank by wall | |
| PH-9358 Fume scrub ph | |

Form located: Global drive/word file/ ERM Preventive Maint. Reactor Scrubber.

4/24/2014 GM

gw

Sensient Flavors

Preventive Maintenance for Reactor and Neutralization Scrubbers
Air Use Permit No.

Date: 2-28-2014

Roger Klein

| Equipment | PM Task | Check Complete |
|---|---|---|
| 1. PH probe | Ensure ph probe is operating properly, calibrate per manufacture recommendation, as necessary | ✓ |
| 2. Temp. probe | Ensure Temp probe is working, calibrate per manufacture recommendation as necessary | ✓ |
| 3. Fog Nozzle | Visual inspection through port ( should be 90 degree spray Pattern.) | ✓ |
| 4. Packing | Visual inspection to insure packing is thoroughly wetted | ✓ |
| 5. Mist Eliminator | Inspection for excessive pressure drop | ✓ |
| 6. Stack Emission | Visual check for unusual emissions | ✓ |
| 7. Diff. pressure | Ensure gauge is operating properly, replace as necessary | ✓ |
| 8. Liquid flow meter | Ensure meter is operating properly, calibrate as necessary | ✓ |

Note any problems or unusual conditions encountered:

Electrical :

| | |
|---|---|
| TT- 9353 after Hx | PT-9322 top of big tank |
| TT- 9357 before Hx | TT-3722 W. Neut. Temp |
| TT-9362 Vent temp on tank by wall | TT-3822 E. Neut. Temp |
| PT9620- Tall tank | PHT-3820 Neut. Scrub |
| PT-9510 | PT-3830 Neut. Scrub Tank Press |
| TT- 9354 Line off wall tank by wall | |
| PH-9358 Fume scrub ph | |

Form located: Global drive/word file/ ERM Preventive Maint. Reactor Scrubber.

79 State Street Harbor Beach Mi. 48441-Tel. 989-479-3211- fax 989-479-3320

4/24/2014

Sensient Flavors

Preventive Maintenance for Reactor and Neutralization Scrubbers
Air Use Permit No.

Date: 1-31-2014

| Equipment | PM Task | Check Complete |
|---|---|---|
| 1. PH probe | Ensure ph probe is operating properly, calibrate per manufacture recommendation, as necessary | ✓ |
| 2, Temp. probe | Ensure Temp probe is working, calibrate per manufacture recommendation as necessary | ✓ |
| 3. Fog Nozzle | Visual inspection through port ( should be 90 degree spray Pattern.) | ✓ |
| 4. Packing | Visual inspection to insure packing is thoroughly wetted | ✓ |
| 5. Mist Eliminator | Inspection for excessive pressure drop | ✓ |
| 6. Stack Emission | Visual check for unusual emissions | ✓ |
| 7. Diff. pressure | Ensure gauge is operating properly, replace as necessary | ✓ |
| 8. Liquid flow meter | Ensure meter is operating properly, calibrate as necessary | ✓ |

Note any problems or unusual conditions encountered:

Electrical :

| | |
|---|---|
| TT- 9353 after Hx | PT-9322 top of big tank |
| TT- 9357 before Hx | TT-3722 W. Neut. Temp |
| TT-9362 Vent temp on tank by wall | TT-3822 E. Neut. Temp |
| PT9620- Tall tank | PHT-3820 Neut. Scrub |
| PT-9510 | PT-3830 Neut. Scrub Tank Press |
| TT- 9354 Line off wall tank by wall | PT-9312 Non-Contact PH ✓ |
| PH-9358 Fume scrub ph | |

Form located: Global drive/word file/ ERM Preventive Maint. Reactor Scrubber.

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