M4732
MANILA

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

M473233250

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|---|---|---|
| **FACILITY:** AmCane Sugar LLC | | **SRN / ID:** M4732 |
| **LOCATION:** 21010 TROLLEY INDUSTRIAL DRIVE, TAYLOR | | **DISTRICT:** Detroit |
| **CITY:** TAYLOR | | **COUNTY:** WAYNE |
| **CONTACT:** John Lang , VP Operations | | **ACTIVITY DATE:** 02/01/2016 |
| **STAFF:** Terseer Hemben | **COMPLIANCE STATUS:** Non Compliance | **SOURCE CLASS:** Minor |
| **SUBJECT:** Boilers at Sugar production process | | |
| **RESOLVED COMPLAINTS:** | | |

**INSPECTED BY : Terseer Hemben, MDEQ**
**PERSONNEL PRESENT : Dr. John Lang, AmeriCane (VP)**
**FACILITY PHONE NUMBER : (313)-299-0234**
**FACILITY FAX : (313) -299-1302**
**DATES OF INSPECTION : February 1, 2016**
**SRN: M4732 AmeriCane Sugar, LLC**

**FACILITY BACKGROUND:**
**The AmeriCane Sugar Refining Company (ASRC) purchased the assets of the Heartland By-Products located in Taylor, Michigan. Heartland By-Products had been operating at the 21010 Trolley Industrial Drive, Taylor address since 1997. The AmeriCane Sugar Company purchased and took over ownership in 2003. The Company officially changed its name in 2004. The new contact person for the company was assigned to Dr. John Lang. The facility produces liquid sugar for use in food products such as ice creams, and soda beverages. The facility operates 2 boilers rated at 31.4 MMBTU/hr. each. The boilers are a 2-pass tube system type operating at 750 HP with steam output of 40,000 lb. /hr. at low pressure range. The boilers are subject to NSPS Subpart Dc using gas fired heat input capacity ranging 10 -100 MMBTU/hr. each. Boilers No, 1 and 2 were modified in January 15, 1996 and November 28, 2009, respectively. The new management commenced production in 2005, and the name change was officiated in 2008.**

**INSPECTION NARRATIVE**
**I arrived at AmCane Sugar LLC plant on February 1, 2016. The purpose of my visit was to conduct a scheduled annual compliance inspection. Temperature at the hour was 42 F with wind speed 11.5 mph coming from the W. Humidity was 82%. I was received by the manager, Dustin, on the behalf of Dr. John Lang. Dr. Lang, joined us, and we went through the pre-inspection conference items before taking a tour of the plant to inspect the heaters, boilers and ducts. We had a post-inspection conference. During the post-inspection, Mr. Lang informed the burners in the boilers were replaced with new ones of same capacity as rated above. I left the area at 1434 hours.**

**COMPLAINT/COMPLIANCE HISTORY:**
**There has not been any complaint against the facility since the last inspection.**

**OUTSTANDING CONSENT ORDERS:**
**None**

**OUTSTANDING LOV'S:**
**None**

**OPERATING SCHEDULE/PRODUCTION RATE:**
**The ASRC plant normally operates 24 hours per day, and 6 days a week or alternative schedule 12 hours per day, and 5 days per week in a year. The boilers are designed to operate 24 hours per day, and 7 days per week, except when shut down for maintenance. The boilers operate at a set sequence. One boiler operates at full load capacity, while the other boiler operates at 30% capacity. The sequence is rotated by shifting the duty as desired.**

**EQUIPMENT AND PROCESS CONTROL:**

The ASRC operates the process using an evaporator that consumes most energy in comparison with other units. The evaporator alone utilizes steam generated in the amount 2.2 MMBTU/hr. The no. 1 and 2 boilers have equal efficiency rating. Operationally, the Boiler no. 1 is utilized as a primary steam generator, while no. 2 is used as a backup (secondary) steam generator. The target production rate for new process is 350 tons per day or 100,000 tons per year. In a typical shift operation, the facility utilizes manpower of over 20 crew members. The process involves melting of raw sugar on the hot plate located in a 20,000 gallon tank and charging the melt with water. The resultant solution is pumped into separate vessels for crystallization. Filtered supernatant is passed through a heat recovery unit located outside the building. The crystallized products and molasses are dried under air-tight conditions and shipped as desired. Special products are bleached for color removal using activated carbon. All spent activated carbon are hauled out and disposed under contractual agreement, and the products are stored under 100 F in sealed tanks with UV sterilizers. Energy consumption is optimized using the ratio of 100 cu.ft../100 lb. of Sugar processed. The process utilizes a single cyclone dust collector for add-on particulate matter pollution controls associated with operations.

Applicable Rules Wayne County Department of Environmental Quality Permit Conditions:

Based on Rules: R 336.1901; R 336.1201; R 336.1301; Boilers (2)-NSPS requirements; Act 451, WC permits: C-11547 –C-11548.

1. Non-compliance - ASRC admitted there had been significant change or modification of process at the facility since the ownership change. The facility modified stack heights to Boiler # 1 and Boiler # 2 without applying for a permit to install approval from the DEQ-AQD consistent with Rule 201(1) [Response #1 was inaccurate, pg. 2].

2. In compliance - ASRC demonstrated the maximum heat input into Boiler No 1 or Boiler No. 2 did not exceed 31.4 MMBTU/hr., and the maximum combined heat input into Boilers 1 and 2 did not exceed 62.8 MMBTU/hr. as permitted in Wayne County Air Pollution regulations [SC. 17]. Response from ASRC stated there was no exceedance in maximum heat input as stated in Response # 2, Page 2. Records of gas input sent by Suppliers covering the last 24 months stated a consumption of less than 2 million cu. ft. (17.53 MMBTU/hr.) compared to the 550.4 million cu, ft. (62.8 MMBTU/hr.) of gas per month per combined boilers usage [pg. 4-6].

3. In compliance –ASRC demonstrated the permittee burned only natural gas as fuel [SC. 18]. The ASRC personnel and manufacturer's specifications stated the only fuel used for heating the boilers was natural gas. Records covering the last 12 months indicated only the natural gas fuel was supplied to the facility [response#, Pg. 4-6].

4. In compliance- ASRC demonstrated the pollutant emissions from each boiler and total pollutant emission rates from boilers 1 and 2 when firing natural gas did not exceed the limits as listed in Table 1. [SC. 19]. ASRC stated the calculated emissions of respective pollutants recorded for MAERS report indicated compliance. Calculations of emissions for MAERS covering the last 12 months were presented for the combined boiler emissions. Single boiler emissions were not provided. Evaluation of data for the combined boilers 1 and 2 is listed in Table 1 as presented in parentheses. The criteria pollutants emission indicated compliance as follows:

PM-10 (combined boilers) emitted 0.15 lbs. /hr. and compared less than limit 0.2 lbs. /hr.; and emission calculations indicated 0.65 tpy. against the limit 0.8 tpy, while the emissions in lbs. /MMBTU calculations reported 0.002 lbs. /MMBTU less than limit 0.003 lbs. /MMBTU. The current emissions is approaching the limits. Inspector will keep note of this emission trend and initiate dialog with the facility after 2015 MAERS is reviewed.

NOx (combined boilers) emitted 2.0 lbs. /hr. and compared less than limit 8.8 lbs. /hr.; and emission calculations in tpy. indicated 8.60 tpy. against the limit 33 tpy., while the emissions in lbs. /MMBTU calculations reported 0.003 lbs. /MMBTU less than limit 0.14 lbs. /MMBTU.

SOX (combined boilers) emitted 0.01 lbs. /hr. and compared less than limit 0.04 lbs. /hr.; and emission calculations in tpy. indicated 0.05 tpy. against the limit 0.15 tpy., while the emissions in lbs. /MMBTU calculations reported 0.0002 lbs. /MMBTU less than limit 0.0006 lbs. /MMBTU.

CO (combined boilers) emitted 1.67 lbs. /hr. and compared less than limit 2.2 lbs. /hr.; and emission calculations in tpy. indicated 7.22 tpy. against the limit 9.64 tpy., while the emissions in lbs. /MMBTU calculations reported 0.027 lbs. /MMBTU less than limit 0.035 lbs. /MMBTU.

Table 1. Allowable Limits for Pollutants Listed in Permits.

| Boiler | Pollutant | Pounds/Hour | Tons/year | Lbs./MMBTU |
|---|---|---|---|---|
| 31.4 MMBTU: No. 1 or No. 2 | PM-10 | 0.1 | 0.4 | 0.003 |
| | NOx | 4.4 | 16.5 | 0.14 |
| | SOx | 0.02 | 0.08 | 0.0006 |
| | CO | 1.1 | 4.13 | 0.036 |
| 62.8 MMBTU | | | | |
| Combined Boiler 1 and 2 | PM-10 | 0.2 (0.15) | 0.8 (0.65) | 0.003 (0.002) |
| | NOx | 8.8 (2.0) | 33 (8.60) | 0.14 (0.03) |
| | SOx | 0.04 (0.01) | 0.15 (0.05) | 0.0006 (.0002) |
| | CO | 2.2 (1.67) | 9.64 (7.22) | 0.035 (0.027) |

5. In compliance -ASRC stated that visible emissions from the boilers when firing natural gas did not exceed a 6-minute average of 5% opacity [SC. 20]. A statement signed and submitted by the manager, Mr. Dustin Lee confirmed the assessment [Pg. 2 & Pg. 42]. The AQD admitted the signed statement as a demonstration for compliance because at the time of this inspection there was no opacity from the boilers.

6. Non-compliance – ASRC partially demonstrated the permittee did not fire each boiler with natural gas for more than 7500 hours per year. [SC. 21]. permittee did not have actual data for the requested monitoring period of nine months for AQD to examine. The manager informed the fuel supply meter malfunction that occurred at the facility rendered data collection impossible [Pg. 3, Response# 6]. A violation of the special condition was identified.

7. In compliance-ASRC demonstrated the total natural gas usage did not exceed 232.5 million cu. ft. per year. [SC. 22]. Records of natural gas supplied to the overall facility indicated the total maximum natural gas used was 173.1 million cu ft. per year [Pg. 4-6].

8. Non-compliance- ASRC failed to demonstrate the exhausts from boilers were discharged unobstructed vertically upwards to the ambient air from stacks with maximum diameter of 24 inches for Boiler No. 1 with exit point of 48 feet above ground; and 26 inches for Boiler No. 2 at an exit point 48 feet above ground level. [SC. 23]. The review of the ASRC electronic file on September 21, 2016 with Dr. Lang and Dustin indicated the stacks design had been modified to the following dimensions: Boiler#1 had ID of 28 inches and stack height 35 feet above ground with a rain cap. Boiler# 2 had the stack ID of 28 inches and height 35 feet above the ground with a rain cap. We visually inspected the two stacks and confirmed each stack had a rain cap constructed over the discharge point to prevent rain from falling into the stacks. However, the stack#2 had a slight lesser ID than Stack #1. The ASRC stated the company never had access to the permit conditions from the time the business was acquired, and would like to have a copy to initiate compliance. I returned to the ASRC on September 22, 2016 and delivered a copy of permit with conditions to Dustin to forward to Dr. Lang. A violation of the condition and Rule 201(1) was identified [Pg. 3, Response# 7].

9. Non-compliance- ASRC did not demonstrate the permittee monitored and recorded the amounts and types of fuel combusted in each boiler in a manner and with instrumentation acceptable to the Division over the requested period. All such records including the 12-month rolling time period of PM-10, SO2, CO, and NOx emission calculations and zero opacity had been kept on file for the most recent two year period and to be made available to the Division upon request consistent with NSPS Subpart Dc recordkeeping consistent with 40 CFR 60.48c(g)(2) requirements. [SC. 24]. Records of emissions covering the last 12 months were submitted for evaluation [Pg. 6, Response# 6]. However, records presenting accurate amount of fuel combusted were not completely available. A violation of the special

condition was identified.

10. In compliance – ASRC did not need to demonstrate that verification of PM-10, SO2, NOx, and CO emission rates from the Boilers by testing at owner's expense, in accordance with Division requirements requested by the Department was conducted with approval from the department [SC. 25]. AQD did not request for testing [Pg. 3, Response# 9].

Discussion of Applicable Rules

R 336.1201: The natural gas fired boilers, and associated heating equipment such as the hot plate, dryer/evaporator/crystallizer installed at the facility were covered by the WC permits; C-11547-C-11548, and supported by exempt rules such as Rule 285 and Rule 290. The facility does not have AQD issued permits.

Rule 336.1301:

Boilers (2): NSPS requirements applied. The boilers were modified as follows: Boiler no. 1 was modified in July 15, 1996. Boiler no. 2 was modified in November 28, 2009. The modifications involved change of nozzle dimensions from 10 inches (diameter) to 12 inches (diameter).-MAERS report was submitted. The two boilers have the capacity to deliver 31.4 MBTU/hr. each, simultaneously. Recently, the heating burner in Boiler# 1 was replaced with a new one with equivalent heat input rating. The modification was not significant and merited exempt rule 285(b)(viii) application. A limit specified as a permit condition in permit to operate limiting visible emissions from the boilers to not exceed a six minute average of 5% opacity was included for compliance with the rule 301.

The Boilers were in operation at the time of inspection. Boiler# 2 (800 HP) was idling on 35 % capacity, while the Boiler# 1 (750 HP) was in delivery at the required capacity. There were no standing open containers with liquids in the boiler area.

The NSPS Subpart Dc rule applies to the ASRC facility. The facility boilers have heat input capacity of 31.4 MMBTU when fired with natural gas, and were installed after 1989. These boilers were modified in 1996 and 2009. The boilers do not fall into the category of steam generating units that meet the applicability requirements in paragraph (a) of this section that renders them subject to sulfur dioxide ($SO_2$) or particulate matter (PM) emission limits, performance testing requirements, or monitoring requirements under this subpart (§§60.42c, 60.43c, 60.44c, 60.45c, 60.46c, or 60.47c). The modifications in 1996 and 2009 adopted sole use of natural gas for heating. The Subpart Dc requirements are met because fuel records were kept in accordance with 40 CFR 60.48c(g)(2).

Rotary Dryer-The Dyer was in operation. The Dryer uses natural gas as fuel. Emissions from fuel combustion were discharged through the stacks. The drying process yielded water vapor and sugar product that were completely recovered at the cooling tower and condenser. The gas consumption recorded for the Dryer covering the last 12 months is listed in the MAERS calculations presented in attachments. Gaseous emissions from the dryer were cleaned with a control device using a single cyclone dust collector/mist eliminator and discharged through the stacks.

Rule 901 enacted to limit (a) injurious effects to human health or safety, animal life, plant life of significant economic value, or property was addressed in the design of stacks with 48 feet above the gradient and supported with calculations rating emissions to be small (0.2 lb. PM/hr. and 8.8 lb. PM/hour) was environmentally acceptable. However, the modification of original design stack heights dimensions to 35 feet above ground violated the permitted height 48 feet above the gradient.

APPLICABLE FUGITIVE DUST CONTROL PLAN CONDITIONS

This facility did not have nor is in need of fugitive dust plan.

MAERS REPORT REVIEW:

The ASRC timely submitted the 2014 MAERS. The MAERS was reviewed and found to meet compliance requirements stipulated in associated permits.

**FINAL COMPLIANCE DETERMINATION**

**This inspection determines the ASRC facility did not operate in compliance with Rule 201 and record keeping requirements. The boilers were satisfactorily operated and maintenance records were kept and made available, except for the fuel usage records. The cooling tower was free of unusual odors at the time of inspection. A violation notice addressing non-compliance with recordkeeping requirements is issued.**

NAME fly DATE 10/12/16 SUPERVISOR JK