

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

K537538408

FACILITY: UNIVERSITY MI DEARBORN		SRN / ID: K5375
LOCATION: 4901 EVERGREEN RD, DEARBORN		DISTRICT: Detroit
CITY: DEARBORN		COUNTY: WAYNE
CONTACT: Tom Perez , Director EH&S		ACTIVITY DATE: 01/24/2017
STAFF: Katherine Koster	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: FY2017 Targeted Inspection		
RESOLVED COMPLAINTS:		

REASON FOR INSPECTION: Targeted Inspection

INSPECTED BY: Katie Koster, AQD

PERSONNEL PRESENT: Tom Perez, EH&S

FACILITY FAX NUMBER: 313-436-9161

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**FACILITY BACKGROUND**

University of Michigan Dearborn is a four year college that opened in 1959. It is situated on a 196 acre site and is bound by Evergreen Road, Michigan Ave, the Rouge River, and Ford Road. The main emissions sources are three low pressure boilers located in the Engineering Lab Building ("ELB") and controlled by the Campus Safety and Security Department. Boilers provide heat and cool air to various buildings on campus. The powerhouse is manned 24 hours a day, 7 days a week, by a staff of five operators.

**COMPLAINT/COMPLIANCE HISTORY**

No complaints have been received about this facility.

**OUTSTANDING CONSENT ORDERS**

None

**OUTSTANDING LOVs**

None

**INSPECTION NARRATIVE**

On January 24, 2017, AQD inspector Katie Koster arrived at UM Dearborn. I entered the campus safety and security office and met with Mr. Tom Perez, Environmental Health and Safety Specialist.

Mr. Perez and I discussed the record keeping requirements associated with the permit. He presented a spreadsheet with the monthly and emissions calculations for NOx, CO, and SO2 for 2016. He also presented fuel oil and natural gas monthly and 12-month rolling usage records. I inquired about the presence of new equipment and he stated that 2 emergency generators had been started up in April 2016. There are 8 total generators on site. We reviewed the list of natural gas and oil fired equipment that is included in the yearly MAERS report and noticed that the IAVS generator was missing from the inventory. Mr. Perez will inform the MAERS consultant to add it to the MAERS report. Mr. Perez explained that the generators were run weekly for about ½ hour to ensure they are working properly. All generators are natural gas fired.

Next, we went to the Powerhouse located in the Engineering Lab Building and met with one of the boiler operators. While there are numerous small boilers and process heaters throughout the campus, the main emissions sources are three low pressure Johnston boilers. Boilers #1 and #2 were installed in 1959 and rated at 16.3MMBtu/hr heat input each. Boiler #3 was installed in 1980 and is rated at 37.7 MMBtu/hr heat input. Each boiler operates at 10 lbs of pressure. The boilers are capable of firing #2 fuel oil and natural gas. However, according to Jim, the boiler operator, boilers are only tested twice a year to determine that they can run on fuel

oil. This testing takes about 6-10 hours per year total for all three boilers. Also, Jim stated that the facility has not received a shipment of fuel oil since he started working there 20+ years ago. I obtained a sample of fuel oil for sulfur testing several years ago. As no additional oil has been received, I did not obtain another sample. The facility periodically filters and scrubs the oil to keep it clean. There is a 10,000 gallon underground fuel oil tank and there is an automated system to track the amount of fuel in the tank; the current level is about 7,000 gallons according to the operator. All three boilers vent to a single square brick stack. I did not observe any visible emissions while we were outside of the powerhouse building. Of note, in about 12-18 months, the boilerhouse will be reconstructed and the plan is to replace the boilers with three 700 hp natural gas fired units. I noted to Mr. Perez that an air quality permit may need to be obtained for this project.

Next, we drove around campus and viewed the emergency generators. For some of the generators, I was unable to get the hours reading as the generator needed to be started up to get this information. Mr. Perez stated that he would have the operators record it during their next weekly generator start up.

Campus Safety and Security: 130 kW, 245.1 hrs on the non-resettable hour meter, installed 2006  
CASL: 205 kW, installed 2002  
FC: 150 kW, installed 2009  
UC: 20 kW, installed 2005  
SLRC: 60kW, installed 2008  
IAVS: 125 kW, installed 2008  
NSB/CW: 2 identical generators; 250 kW each, installed 2016

## APPLICABLE RULES/PERMIT CONDITIONS

This is an opt-out source for some criteria pollutants. There are facility wide limits on NO<sub>x</sub>, SO<sub>2</sub>, and CO which are all below 100 tons. While the actual emissions are low, due to the ability of the boilers to fire No. 2 fuel oil and the heat input of the boilers, the PTE was above 100 tons for SO<sub>2</sub> at the time of permitting. All equipment is primarily fueled by natural gas. Fuel oil is available for use in the three ELB boilers for backup purposes. However, there is a facility wide fuel oil limit in the permit of 4,197,183 gallons per year in PTI 22-04. In AP-42, Table 1.3-9, formaldehyde has the highest emission factor for distillate oil of .033 lb/1000 gallons. Emissions from the combustion of all of the fuel oil would be:  $0.033 \text{ lb/1000} * 4,197,183 \text{ gallons per year} = 138.5 \text{ lbs}$ . Attached is the HAP's PTE demonstration submitted with the permit application which includes laboratory emissions and the boilers and the total is 1.4 tons. The facility is a true minor source of HAPs.

Boiler MACT for area sources (NESHAP 6J) – Boilers meet the definition of *Gas-fired boiler* includes any boiler that burns gaseous fuels not combined with any solid fuels and burns liquid fuel only during periods of gas curtailment, gas supply interruption, startups, or for periodic testing, maintenance, or operator training on liquid fuel. Periodic testing, maintenance, or operator training on liquid fuel shall not exceed a combined total of 48 hours during any calendar year.

Per 63.11195(e), gas fired boilers are not subject to this subpart. Fuel usage records and discussion with the boiler operator, the 48 hour limit has not been exceeded. The boilers in the ELB are fired up once or twice a year with No 2 fuel oil for approximately 6-10 hours total for all three.

RICE MACT (NESHAP ZZZZ) – All generators are natural gas fired  
\*Campus Safety and Security: 130 kW, 245.1 hrs on the non-resettable hour meter, installed 2006  
\*CASL: 205 kW, installed 2002  
\*FC: 150 kW, installed 2009  
\*UC: 20 kW, installed 2005  
SLRC: 60kW, installed 2008  
IAVS: 125 kW, installed 2008  
NSB/CW: 2 identical generators; 250 kW each, installed 2016

FC, SLRC, IAVS, and NSB/CW generators are considered "new" per the RICE MACT. 63.6590(a)(2)(iii) states: "A stationary RICE located at an area source of HAP emission is new if you commenced construction of the stationary RICE on or after June 12, 2006." However, per 63.6590(c), an affected source that meets any of the criteria in paragraphs (c)(1) through (7) must meet the requirement of this part by meeting the requirements of ... 40 CFR part 60 subpart JJJJ for spark ignition engines. No further requirements apply for such engines under this part. (c)(1) is "a new or reconstructed stationary RICE located at an area source."

As such, there are no further RICE requirements for these emergency generators.

For asterisked generators (CSS, CASL, and UC), they are considered "existing" in the RICE MACT. 63.6590(a)(1)(iii) states "stationary RICE at an area source of HAPs if it commenced construction before June 12, 2006." Also, the existing generators do not meet any of the criteria in 63.6590(c)(1) through (7). As such, per 63.6625(f), 63.6640(f), the following is required (conditions are paraphrased). For emergency engines at an area source of HAPs, less than 500 hP, institutional, installed in 2006 and prior the following is required: 1.) A non-resettable hour meter 2.) Log of operating hours and reason for operating. 3.) Engines cannot operate for more than 100 hours per year for combined non-emergency periods and maintenance and readiness testing. 4.) The engine cannot be operated for more than 50 hours per year for non-emergency periods and non-maintenance and readiness testing periods. **IN COMPLIANCE. See attached log. Each engine operated less than 50 hours for 2016. At this time, engines have only been run for maintenance and readiness testing.**

NSPS JJJJ – A unit is subject to this regulation under 60.4230(a)(4)(iv) if construction commenced on or after Jan 1, 2009 for emergency engines with HP greater than 25. Therefore, based on the installation dates, only the two GENERAC generators (NSB/CW) are subject to this regulation.

FC: 150 kW, installed 2009 but construction commenced before Jan 1, 2009 according to facility (see attached statement). JJJJ not applicable.

SLRC: 60kW, installed 2008 – JJJJ not applicable due to install date

IAVS: 125 kW, installed 2008 – JJJJ not applicable due to install date

CSS: 130 kW, installed 2006 - JJJJ not applicable due to install date

CASL: 205 kW, installed 2002 - JJJJ not applicable due to install date

UC: 20 kW, installed 2005 - JJJJ not applicable due to install date

NSB/CW: 2 identical generators; 250 kW each, installed 2016. These units meet the criteria in 60.4230(a)(4)(iv).

The paraphrased requirements include:

Documentation of the purchase of a "certified engine"(60.4243(b)(1), 60.4245(a)(3)). **IN COMPLIANCE. Attached documentation shows GENERAC engines EPA certified to NOx and CO limits which are below the NSPS limit.**

Non resettable hour meter (60.4237(6)). **IN COMPLIANCE. Meters are in place.**

Log of hours of operation and reason for operation (60.4243(d)) **IN COMPLIANCE. Attached.**

Maintenance records (60.4243(a)(1), 60.4245(a)(2)). **IN COMPLIANCE. Attached.**

NSPS Dc – Engineering Lab Building (ELB) Boilers #1,2, and 3 have a maximum design heat input capacity between 10 and 100 MMBTU/hr but were installed before June 9, 1989 which is the applicable date for the NSPS. The burners were replaced from gravity burners to power burners. However, this is not considered a modification according to the definition as the emissions did not increase:

"A modification is any physical or operational change to an existing facility which results in an increase in the facility's emission rate (40 CFR 60.14). Changes to an existing facility that do not result in an increase in the emission rate, either because the nature of the change has no effect on emission or because additional control technology is employed to offset an increase in the emission rate, are not considered modifications."

Exempt equipment includes the following:

- Eight natural gas reciprocating engine (SI) generators ranging in size from 20 to 250 kW exempt per R285 (2)(g). Installed from 1987 – 2016. See attached. Note: 10MMBTU/hr correlates to 970 kW
- Two cold cleaners exempt per R281(2)(h)
- Numerous laboratory hoods exempt per R283(2)(b)
- Numerous small boilers (2.1 MMBtu/hr and below) on campus exempt per R282(2)(b)(i). See attached list.
- Two 16.3 MMBTU/hr boilers (ELB Boilers #1 and #2) exempt per R282(2)(b)(ii)

#### Permit 22-04 – EUBOILER3 and FGFACILITY

(This is an opt out permit. Permit conditions have been paraphrased for brevity)

**S.C. 1.1 IN COMPLIANCE.** Shall only burn natural gas or #2 fuel oil in EUBOILER3. EUBOILER3 can only burn natural gas or #2 fuel oil.

**S.C. 1.2 IN COMPLIANCE.** Sulfur content of all fuel oil used in EUBOILER3 shall not exceed 0.3% by weight. Sample taken during last inspection in 2009. Results indicated a sulfur content of 0.25%. According to facility

personnel, UMD has not received another shipment of fuel oil.

**S.C. 1.3 IN COMPLIANCE.** Shall maintain a complete copy of the sulfur content analysis as supplied by vendor for each shipment of fuel. Records shall be kept on file for period of at least five years. Analysis was submitted during the last inspection and is in the facility file. No new shipments have been received.

**S.C.1.4 IN COMPLIANCE.** Stack dimensions should be 48X48 inches and 34 feet above ground level. Upon visual observation, stack dimensions appeared to meet this requirement.

**S.C 2.1a IN COMPLIANCE.** NOx emissions from FGFACILITY shall be less than 89.4 tons per year. See Appendix. Highest NOx 12 month rolling emissions from January 2015 - December 2016 were 7.2 tons. See Appendix.

**S.C. 2.1b IN COMPLIANCE.** SO2 emissions from FGFACILITY shall be less than 89.4 tons per year. Highest SO2 12 month rolling emissions from January 2015 - December 2016 were 0.03 tons. See Appendix.

**S.C. 2.1c IN COMPLIANCE.** CO emissions from FGFACILITY shall be less than 89.4 tons per year. Highest CO 12 month rolling emissions from January 2015 - December 2016 were 5.99 tons. See Appendix.

**S.C. 2.2 IN COMPLIANCE.** Fuel oil usage for FGFACILITY shall not exceed 4,197,183 gallons per 12 month rolling time period. Fuel oil has not been used at the facility since permit issuance; except for minimal amount for testing purposes to ensure boiler will still fire with #2 oil. Highest fuel oil usage was 28 gallons in 2016 and 0 gallons in 2015. See Appendix.

**S.C. 2.3 IN COMPLIANCE.** Shall keep monthly and previous 12 month NOx emissions records for FGFACILITY. See Appendix.

**S.C. 2.4 IN COMPLIANCE.** Shall keep monthly and previous 12 month SO2 emissions records for FGFACILITY. See Appendix.

**S.C. 2.5 IN COMPLIANCE.** Shall keep monthly and previous 12 month CO emissions record for FGFACILITY. See Appendix.

**S.C. 2.6 IN COMPLIANCE.** Shall keep monthly and previous 12 month natural gas and fuel oil usage records indicating a total amount of natural gas used in cubic feet and fuel oil used in gallons on a 12 month rolling time period basis. See Appendix.

## APPLICABLE FUGITIVE DUST CONTROL PLAN CONDITIONS

N/A. All lots are paved.

## MAERS REPORT REVIEW

2015 MAERS was submitted on time and reviewed by AQD staff. No substantive changes were made.

## FINAL COMPLIANCE DETERMINATION

Facility appears to be operating in compliance with Permit To Install 22-04 and state and federal air quality regulations at the time of the inspection.

NAME Katya

DATE 2/28/17

SUPERVISOR W.M.