

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

K537562719

FACILITY: UNIVERSITY MI DEARBORN		SRN / ID: K5375
LOCATION: 4901 EVERGREEN RD, DEARBORN		DISTRICT: Detroit
CITY: DEARBORN		COUNTY: WAYNE
CONTACT:		ACTIVITY DATE: 04/20/2022
STAFF: Katherine Koster	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: FY2022 Targeted Inspection		
RESOLVED COMPLAINTS:		

REASON FOR INSPECTION: Targeted Inspection

INSPECTED BY: Katie Koster, AQD

PERSONNEL PRESENT: David Fogle, EH&S; Kade Randol , EH&S

FACILITY FAX NUMBER: 313-436-9161

FACILITY BACKGROUND

University of Michigan Dearborn (K5375) 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.

COMPLAINT/COMPLIANCE HISTORY

No complaints have been received about this facility.

Facility was cited for a Rule 201 violation for commencing construction of three new boilers and a temporary boiler without obtaining a PTI. PTI 2-19 was issued on July 3, 2019 resolving the violation. PTI 2-19 rev 1 was issued on March 20, 2020.

OUTSTANDING CONSENT ORDERS

None

OUTSTANDING LOVs

None

INSPECTION NARRATIVE

On Wednesday, April 20, 2022, AQD inspector Katie Koster arrived at UM Dearborn. I entered the campus safety and security office and met with Mr. Dave Fogle, Director of Environmental Health and Safety and Mr. Kade Randol, Senior Environmental Health and Safety Specialist.

We discussed the air quality division inspection process and the permit to install. I also explained during the inspection that the numerous emergency generators around campus were still subject to federal air quality regulations even though they were not in the air permit.

Next, we took a walk around campus. First, 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 boilers. These boilers were installed in 2019 to replace three existing boilers that were installed in 1959 and 1980. Each boiler is rated at 15 lbs of pressure. The boilers are capable of firing #2 fuel oil and natural gas although natural gas is main fuel source; this is the same as the prior boilers. However, according to the boiler operator, Homer Stone, 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. This is the only time fuel oil has been in use. Also, Homer Stone stated that while the bulk of the oil has been the “same” oil for the last 20 years, the facility does get some smaller shipments of fuel oil. 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. Tank interstitial monitoring has been upgraded. All three boilers vent to a single stack which is also new. I did not observe any visible emissions while we were outside of the powerhouse building.

I checked the nameplate on all three boilers. They are each rated at 23.9 MMBTU/hr for natural gas and 19.8 MMBTU/hr for fuel oil which aligns with the information submitted in the permit application. Every five days they rotate which boiler is in operation. Generally, they operate only one boiler at a time. The ELB boilers service about three fourths of the campus. Boilers are named C1, B2, and A3; C1 is the southern most boiler. Boilers were last inspected by LARA in November 2021.

Next, we walked to the engineering building and viewed the engine test cell. According to Mr. Fogle, the test cell has not been operated since installation.

We viewed a couple of Generac generators at the NSB and the non-resettable hour meters were 303.8 (unit nearer to the parking lot) and the other was 305.9.

I sent the attached records request on May 2, 2022. Upon receipt of records and review of information, I noted that the facility had not sent a fuel sample to their onsite lab for analysis as discussed during the inspection. As such, I returned on June 8 to collect a sample of fuel oil to ensure that the sulfur content was within the regulations.

Below is a table received from the facility,

Building	Manufacturer	Model No.	Serial No.	Rated KW	Fuel Type	Year Installed	Hour Meter
CSS	Generac	5138800100	2082510	130	Natural Gas	2006	366.7
CASL	Kohler	200RZD	656519	205	Natural Gas	2002	501.5
UC	Onan (Cummins)	20ES	J910431210	1PH 3PH	Natural Gas	2005	503
				13 20			
FC (Data Center Only)	Cummins	GGLB-7529069	L080225573	1PH 3PH 100.5 150	Natural Gas	2009	544.2
SLRC	Kohler	60RZG	2041075	60	Natural Gas	2008	520.8
NSB	Generac	MG0250KG201	9220750	250	Natural Gas	2016	304.9
		Z9N18GPYYE					
NSB	Generac	MG0250KG201	9220751	250	Natural Gas	2016	306.9
		Z9N18GPYYE					
ELB	Generac (new, not in use until building is complete). Not used all of 2020, except for testing unit	SG500	3003929516	500	Natural Gas	2019	53.8
		SG0500KG30258N18 HPSYE					
FH/WC	CAT	XQ350		350	Diesel	2021/Portable	1354

APPLICABLE RULES/PERMIT CONDITIONS

This is an opt-out source for some criteria pollutants. There are facility wide limits on NOx, SO2, 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 as back up and the heat input of the boilers, the PTE was above 100 tons for SO2 at

the time of permitting. All equipment is primarily fueled by natural gas. PTI 22-04 is still in effect even though the boilers have been replaced and are permitted under 2-19A. 22-04 has facility wide opt out limits that need to remain in place.

Below are conditions from 22-04 that appear to still be applicable:

The following conditions apply to: FGFACILITY

2.1a NOx FGFACILITY Less than 89.4 tons per year 12-month rolling time period

2.1b SO2 FGFACILITY Less than 89.4 tons per year 12-month rolling time period

2.1c CO FGFACILITY Less than 89.4 tons per year 12-month rolling time period

The permittee shall calculate NOx, SO2, and CO emissions from FGFACILITY based on fuel usage data per special condition 2.6, and the worst-case emission factor from testing per GC 13, if required by the Department, and the emission factors below:

Natural Gas Emission Factor for Boilers

NOx = 0.100 lb/MMBtu

SO2 = 0.0006 lb/MMBtu

CO = 0.080 lb/MMBtu

Fuel Oil Emission Factor for Boilers

NOx = 0.020 lb/gallon fuel oil

SO2 = (1S * 0.142) lb/gallon fuel oil

CO = 0.005 lb/gallon fuel oil

S = weight percent sulfur for the fuel oil, as supplied by the fuel oil vendor

Recordkeeping / Reporting / Notification

2.3 The permittee shall keep, in a satisfactory manner, monthly and previous 12-month NOx emission records, as required by SC 2.1a, for FGFACILITY. All records shall be kept on file for a period of at least five years and made available to the Department upon request.

2.4 The permittee shall keep, in a satisfactory manner, monthly and previous 12-month SO2 emission records, as required by SC 2.1b, for FGFACILITY. All records shall be kept on file for a period of at least five years and made available to the Department upon request.

2.5 The permittee shall keep, in a satisfactory manner, monthly and previous 12-month CO emission records, as required by SC 2.1c, for FGFACILITY. All records shall be kept on file for a period of at least five years and made available to the Department upon request.

IN COMPLIANCE for all of the above. See attached records.

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Permit 2-19 Rev 1

(Permit conditions have been paraphrased for brevity)

EUTESTCELL – Engine dynamometer test cell capable of accommodating an unleaded gasoline fired internal combustion engine with a maximum horsepower of 250 horsepower.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

The Test Cell is equipped with a three-way catalyst.

I. EMISSION LIMIT(S) NA

II. MATERIAL LIMIT(S)

1. The permittee shall burn only unleaded gasoline in EUTESTCELL. **NOT APPLICABLE. NOT IN USE.**
2. The permittee combusts no more than 100 gallons per 12-month rolling time period, (as determined at the end of each calendar month) of unleaded gasoline in EUTESTCELL. **NOT APPLICABLE. NOT IN USE.**

III. PROCESS/OPERATIONAL RESTRICTION(S) NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. No later than 60 days after issuance of this permit, the permittee shall submit to the AQD District Supervisor, for review and approval, a preventative maintenance / malfunction abatement plan (PM / MAP) for EUENGINE. After approval of the PM / MAP by the AQD District Supervisor, the permittee shall not operate EUENGINE unless the PM / MAP, or an alternate plan approved by the AQD District Supervisor, is implemented and maintained. The plan shall incorporate procedures recommended by the equipment manufacturer as well as incorporating standard industry practices. At a minimum the plan shall include:

- a. Identification of the equipment and, if applicable, air-cleaning device and the supervisory personnel responsible for overseeing the inspection, maintenance, and repair.
- b. Description of the items or conditions to be inspected and frequency of the inspections or repairs.
- c. Identification of the equipment and, if applicable, air-cleaning device, operating parameters that shall be monitored to detect a malfunction or failure, the normal operating range of these parameters and a description of the method of monitoring or surveillance procedures.
- d. Identification of the major replacement parts that shall be maintained in inventory for quick replacement.

A description of the corrective procedures or operational changes that shall be taken in the event of a malfunction or failure to achieve compliance with the applicable emission limits. If the plan fails to address or inadequately addresses an event that meets the characteristics of a malfunction at the time the plan is initially developed, the owner or operator shall revise the plan within 45 days after such an event occurs and submit the revised plan for approval to the AQD District Supervisor. Should the AQD determine the PM / MAP to be inadequate, the AQD District Supervisor may request modification of the plan to address those inadequacies.

IN COMPLIANCE. According to facility, cell has not been operated. A MAP was not submitted timely as required in the condition below. Enforcement discretion was applied since the unit has not been operated. Facility submitted a MAP on May 13, 2022 per my request. MAP is attached. I informed Mr. Randol on June 8 that the emission unit is only permitted to burn unleaded gasoline and any other types of fuel would need a permit.

V. TESTING/SAMPLING NA

VI. MONITORING/RECORDKEEPING

1. The permittee shall keep, in a satisfactory manner, records on a monthly basis and a 12-month rolling time period basis (as determined at the end of each calendar month), of the amount of

unleaded gasoline used in EUTESTCELL. **NOT APPLICABLE. NOT IN USE.**

VII. REPORTING NA

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stack listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)
1. SVTESTCELL	16	44

DID NOT EVALUATE. NOT IN USE.

IX. OTHER REQUIREMENT(S) NA

FGBOILERS Three natural gas-fired boilers with distillate oil backup fuel. Each boiler has a maximum heat release capacity of 23.9 million BTU’s per hour and are capable of burning distillate oil as a backup fuel.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

Each boiler is equipped with low NOx burners and flue gas recirculation.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method
1. NOx	0.84 lb/hour (each boiler)	Hourly	FGBOILERS	SC V.1
2. CO	0.90 lb/hour (each boiler)	Hourly	FGBOILERS	SC V.1

UNKNOWN. AQD has not requested testing at this time.

II. MATERIAL LIMIT(S)

Material	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method

Material	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method
1. Distillate Oil	20,661 gallons per year	12 month rolling time period as determined at the end of each calendar month	FGBOILERS	SC VI.1
2. Natural Gas	608 MM standard cubic feet per year	12 month rolling time period as determined at the end of each calendar month	EUELBOILERS	SC VI.1

IN COMPLIANCE. See attached records. For December 2021, 12 month usage was 65.2 MMCF. According to MAERS, distillate usage for 2021 was 0 gallons.

3. The permittee shall burn only natural gas or distillate fuel oil as back-up fuel in FGBOILERS. **IN COMPLIANCE.**

4. The permittee shall only combust distillate oil which has a sulfur content less than 0.30% by weight in FGBOILERS.

IN COMPLIANCE. Sample results were non detect with a reporting limit of 0.13%. See attached.

III. PROCESS/OPERATIONAL RESTRICTION(S) NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The maximum design heat input capacity for each boiler of FGBOILERS shall not exceed 23.9 MMBTU per hour on a fuel heat input basis.

IN COMPLIANCE. AQD verified this value on the manufacturer nameplate for each boiler.

V. TESTING/SAMPLING

1. Within 90 days after written notification from the AQD, the permittee shall verify CO and NOx emission rates from FGBOILERS by testing at the owner's expense, in accordance with Department requirements. Testing shall be performed using an approved EPA Method listed in 40 CFR Part 60 Appendix A. An alternate method, or a modification to the approved EPA Method, may be specified in an AQD approved Test Protocol. No less than 45 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing, including any modifications to the method in the test protocol that are proposed after initial submittal. The permittee must submit a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test.

NOT APPLICABLE. AQD has not requested this test. Note, need to review permit file to confirm test is only required when burning natural gas.

VI. MONITORING/RECORDKEEPING

1. The permittee shall keep, in a satisfactory manner, records of monthly, and 12-month rolling natural gas and distillate fuel oil usage records for FGBOILERS. The records must indicate the total amount of natural gas used in cubic feet and the amount of distillate oil used in gallons. The permittee shall keep all records on file at the facility and make them available to the Department upon

request. **IN COMPLIANCE. See attached.**

2. The permittee shall maintain records of the sulfur content of the distillate oil, as provided by the fuel supplier.

IN COMPLIANCE. Sulfur content was provided by supplier and given to AQD. Note, AQD also collected a sample for analysis.

VII. REPORTING

1. The permittee shall provide written notification of construction and operation to comply with the federal Standards of Performance for New Stationary Sources, 40 CFR 60.7. The permittee shall submit the notification(s) to the AQD District Supervisor within the time frames specified in 40 CFR 60.7.

2. The permittee shall provide written notification of the actual date of initial startup to comply with the federal Standards of Performance for New Stationary Sources, 40 CFR 60.49b(a). The notification shall include:

a) The design heat input capacity of each boiler of FGBOILERS and identification of the fuels to be combusted in FGBOILERS.

b) The annual capacity factor at which the owner or operator anticipates operating the facility based on all fuels fired and based on each individual fuel fired.

The permittee shall submit this notification to the AQD District Supervisor within 15 days after initial startup occurs.

IN COMPLIANCE. Notifications required above were received.

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)
1. SVELBBOILERS	64	59

DID NOT EVALUATE. Appears to be in compliance based on visual observation. Exhaust is discharged unobstructed vertically.

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all provisions of the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subparts A and Dc, as they apply to FGBOILERS.

IN COMPLIANCE. From the evalform: 40 CFR Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units : The facility is subject to 40 CFR Subpart Dc. The only requirement under this regulation is to provide notification of the boiler installation, heat capacity, the heat capacity of the boilers, fuels to be combusted, and the annual capacity factor.

40 CFR Part 63, Subpart JJJJJJ National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers at Area Sources.

From the evalform: Under this regulation, there are no specific requirements for natural-gas fired boilers. In order to be considered a natural gas fired boiler however, the distillate oil (which is a backup fuel) has to be limited to 48 hours of usage for testing and maintenance. The permit contains limits on the amount of distillate oil which may be used in order to keep the designation of natural gas fired boiler. In circumstances of natural gas curtailment, distillate may be used without limits.

RICE MACT (NESHAP ZZZZ)

FC, SLRC, IAVS, and NSB/CW, and ELB 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.**

NSPS JJJJJ

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) and ELB Generac 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

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.

ELB: 2 identical 500 kw

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. Documentation submitted previously 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)). Did not request at this time.

NSPS IIIII - This applies to new compression ignition (diesel) engines. According to facility, the FH/WC generator is portable. As long as it does not remain in the same place for more than 12 months, it does not meet the defintiion of "stationary" engine and would not be subject to this regulation. Need more information from the facility.

Exempt equipment includes the following:

- 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 natural gas boilers

APPLICABLE FUGITIVE DUST CONTROL PLAN CONDITIONS

N/A. All lots are paved.

MAERS REPORT REVIEW

Reviewed the 2021 MAERS report and did not make any changes.

FINAL COMPLIANCE DETERMINATION

Facility appears to be operating in compliance with conditions evaluated in this report.

****Follow up items for next inspection:**

- Need to evaluate new Diesel, FH/WC 350 kW, diesel, installed 2021. Generator is apparently from UM Ann Arbor and already had a hours on it when it arrived in Dearborn.
- Need to confirm whether this generator is still on site: IAVS: 125 kW, installed 2008 – JJJJ not applicable due to install date.

NAME KATHERINE KOSTER

DATE 11/4/2022

SUPERVISOR APRIL WENDLING 11/07/2022