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

P097848617

FACILITY: Detroit Cristo Rey High School		SRN / ID: P0978
LOCATION: 5679 Vernor, DETROIT		DISTRICT: Detroit
CITY: DETROIT		COUNTY: WAYNE
CONTACT: Reuben Metreger, Facilities Management and Transportation Director		ACTIVITY DATE: 04/02/2019
STAFF: C. Nazaret Sandoval	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Scheduled Inspection FY 2019		
RESOLVED COMPLAINTS:		

SRN: P0978
Source: Detroit Cristo Rey HS
Location: 5679 Vernor Highway, Detroit, MI 48209
Date of Inspection: April 2, 2019
Contact Person: Reuben Metreger, Facilities Management and Transportation Director at Cristo Rey High School
Office Phone Number: (313) 843-2747 Ext. 326
Facility Fax Number: (313) 843 -2750

BACKGROUND

In November of 2018 Ms. Catherine Asselin from the Air Quality Division (AQD), Permit Section was contacted by Mr. Reuben Metreger, Detroit Cristo Rey HS (the HS). Mr. Reuben requested information about permit requirements for the installation of two boilers at the HS.

Ms. Asselin provided general assistance and indicated that based on the size of the boilers they appeared to qualify for permit exemption. However, AQD Permit Section does not make determinations about permit exempt equipment and she referred the case to the AQD Detroit District Office in an email dated November 1, 2018.

In a follow up message to Mr. Metreger, the Detroit District Assistance Supervisor, Mr. Jeff Korniski, indicated that the evaluation to whether a source qualifies for permit exemptions comes from an AQD inspector who only officially does the evaluation after the units are installed. The source was assigned to me and on November 9, 2018. I contacted Mr. Metreger to gather more information about his concerns. He said that the plan was to install two boilers sometime in January 2019, to heat the building HS and the Cultural Center, which were served by the Holy Redeemer Church's boilers.

To address Mr. Metreger's concerns I explained to him that when we are dealing with exemptions our role is limited to helping the facilities to interpret the regulations.

I discussed the regulatory framework pertaining to boilers. I provided technical guidance and factsheets to help him to evaluate and determine if the installation was subject to the State or Federal Regulations, and/or if the boilers installation was exempt from the requirements to obtain a permit to install (PTI) under the State Rules. I walked him through the process of the PTI exemptions. For details about our discussions and the technical information provided, please refer to the attached emails.

On March 26, 2019 I received a notification from Mr. Metreger indicating that the boilers were installed and operating. I scheduled a visit to the HS to inspect the equipment and officially determine if the boilers qualified for PTI exemption.

COMPLIANCE EVALUATION / DISCUSSION

This section summarizes the email correspondence I had with Mr. Metreger, and the

evaluation conducted after November 9, 2018 before the installation of the boilers. It captures our preliminary discussions, the follow up questions/answers and my comments on the applicability of State and Federal Regulations to fuel-burning equipment, specifically boilers.

At a minimum, in order to sort out the applicable regulations, we needed to know:

- the boilers installation date
- the boiler maximum design heat input capacity in Btu per hour
- type of fuel (natural gas only and/or if it has back up fuel oil)
- information about additional equipment in the HS building that could potentially be emitting air pollutants to the ambient air.

State Regulations Applicable to Boilers

The Michigan Air Pollution Control Rules have provisions under Rules R336.1280 to R336.1291 that allows certain equipment and processes to be exempt from the requirements of the AQD Rule R336.1201 (1) to obtain a permit to install (PTI).

The State Rule R336.1282 (2)(b) (i) is applicable to fuel-burning equipment used for space heating. Here is an excerpt of that rule:

*“R 336.1282 - Permit to install exemptions; furnaces, ovens, and heaters.
Rule 282(2) The requirement of R 336.1201(1) to obtain a permit to install does not apply to any of the following:
... (b) Fuel-burning equipment which is used for space heating, service water heating, electric power generation, oil and gas production or processing, or indirect heating and which burns only the following fuels:
(i) Sweet natural gas, synthetic gas, liquefied petroleum gas, or a combination thereof and the equipment has a rated heat input capacity of not more than 50,000,000 Btu per hour.”*

I emailed Mr. Metreger a copy of the PTI Exemption Handbook (published on January 2017) and commented on the specific rule exemption (Rule 282) that the facility could potentially use to claim PTI exemption for the boilers' installation.

The listed PTI exemptions are available to the owners or responsible parties of the sources of Air Pollution for them to determine the applicability of a particular exemption based on their analysis of their equipment and processes.

Here is the interpretation of Rule 282:

If the heat input capacity of the boiler is less than 50 Million Btu per hour, and if the boiler only burns natural gas, the equipment could be exempt of the requirements of the State AQD Rule R336.1201 (1) to obtain a permit to install (PTI) pursuant to Rule 282 (2)(b)(i).

The maximum design heat input capacity rating for the boiler can be obtained by contacting the boiler's manufacturer and request the technical specs.

Federal Regulation Applicable to Boilers

A boiler could be subject to the “New Source Performance Standards (NSPS) for Boilers Burning Natural Gas Only.

NSPS – Subpart Dc Applicability (40 CFR Part 60 –Subpart Dc)

Subpart Dc of NSPS applies to steam generating units (boilers) from small commercial, industrial, and municipal buildings (e.g., schools, hospitals, churches, retail buildings, etc.) that meet all the following:

- Combust any of several fuel types, including coal, oil, natural gas, and wood.

- Maximum design heat input capacity is greater than or equal to 10 million BTU per hour and equal to or less than 100 million Btu per hour.
- Construction, modification, or reconstruction started after June 9, 1989.

In addition, if a boiler burns or is equipped to burn other fuels, such as oil for back up purposes, there are relevant parts of the standard that apply to the fuel usage.

The boilers at Detroit Cristo Rey HS are equipped to burn natural gas only. They comply with two of the above conditions, i.e. were installed after June 9, 1989 and combust natural gas; however, the heat input capacity is below 10 Million BTU per hour. Therefore, they are not subject to NSPS Subpart Dc

Area Sources Industrial, Commercial, and Institutional Boilers

40 CFR Part 63 – NESHAP Subpart JJJJJJ (see attached EPA summary)

According to the attached information that explains the applicability of the regulation, it appears as if the boilers at the HS are not affected by the regulation because they are gas-fired boilers. AQD has not accepted delegation of this area source NESHAP; however, I recommend maintaining records to demonstrate exemption applicability, including records documenting the boiler's fuel design and fuel usage.

INSPECTION AND EVALUATION

On April 2, 2019 I arrived at the HS at 1 PM and met Mr. Metreger. He indicated that the boilers have been operating smoothly for about a week and they suddenly stopped working a couple of hours before I arrived. He had contacted the technician that serves the boilers and he was waiting for his arrival from Dearborn.

While we waited for the technician, I inspected the boilers in the basement of the building and took pictures of the boilers' plates to verify the heat input capacities. The information on the boiler's plate identified them as Cleaver Brooks Watertube boilers Model No. M5M-2000 – Series 700, with a maximum heat output capacity of 1,600, 000 Btu / Hour. I also verified that the boilers are fueled using natural gas only, with no back up fuel-oil. The natural gas input rates stamped on the plates was confusing. The minimum and maximum values were written in reverse order and the units in which the values were expressed were odd (i.e. Btu per hour instead of cubic feet per hour). The minimum value was 5,000,000 Btu/hour and the maximum 2,000,000 Btu /hour. I discuss this discrepancy later in this report.

The boiler technician arrived at about 1:30 PM and did a troubleshooting activity. After his investigation he discovered that the water meters (glass-side) showed high-water levels inside the boiler. He said that the boilers were flooded and needed to be drained. He stopped the flow of water to the boilers and drained one of the boilers first and then the second one. Then he turned the water back in as well as the boilers. Both boilers started normal operations and showed the pressure range that was set by the controls. The technician indicated that the boilers alternate operations, but they could also operate at the same time to satisfy the steam demands.

After his investigation the technician concluded that the "water level cutoff probe" (which is a metal that acts as a level sensor) was dirty and did not record the water level causing the water flow to continue to the boilers even when the maximum level have been reached. The technician said that the sensor stick was covered with dark coating material probably used for pipe installation and it could have been carried out and deposited in there. He recommended

to run the boilers in a “wash cycle” to drain any material that could still be in the system.

The boiler room houses the boilers’ ancillary equipment such as: a water treatment unit that treats the water feeding the water tubes in the boiler. A pre-heater or economizer, which heats the water before feeding the boiler. A natural gas pipe (DTE provides the gas) comes into the building and feeds the burners. The gas meter is outside the building.

Mr. Metreger showed me the boiler manuals and a boiler log where he will be recording the daily operation variables for the boiler. In our conversation I indicated that he had completed all the paper requirements to demonstrate the applicability of exemption R 336.1282(2)(b)(i) – “Permit to install exemptions; furnaces, ovens, and heaters”; including the exclusion from exemptions demonstration cited under Rule 278a. I recommended to compile all the documentation he had sent me and maintain it in a file under “AQD PTI Exemption Demonstration” together with the boiler’s maintenance log and the natural gas usage records. I left the facility at about 3 PM.

During the writing of this report I brought up to the attention of Mr. Metreger the boiler’s rating discrepancy cited earlier. In the original PTE calculations submitted to AQD, Mr. Metreger considered the installation of boilers with maximum input capacities of 6,000,000 Btu / hour. In an email dated 4/23/2019 I asked Mr. Metreger to verify with the manufacturer the actual heat input rate for the boilers that were installed at the HS. I also asked him to provide information to corroborate the boiler model (i.e. boiler type, size, specific model, dimensions, etc.). Mr. Metreger’s response on 5/1/2019 indicated that the information stamped on the boilers’ plates was wrong and the manufacturer will correct the error. He sent a “Dimension Diagram” specific for the boilers that were installed at the HS. The drawing includes the overall dimension as well as an itemized list of the boiler’s major components, boiler data, gas train details and connections. According to the diagram the boilers are natural gas-fired boilers, model M5M, size 2000, with pre-mix low NOx burners, rated at 2,000,000 Btu / hour (maximum input rate). Mr. Metreger revised the PTE calculations using the actual maximum heat input and submitted them in an email received by AQD on 5/29/2019. The manufacturer replaced the boilers’ plates with the correct boiler’s ratings. Pictures showing the new plates were provided via email dated 5/29/2019. Both, the revised PTE calculations and the pictures are attached.

The following information, which complements the demonstration of the applicability of rule exemption R 336.1282(2)(b)(i) is attached:

1. CleaverBrooks M5M Watetube Boiler Dimensions and Rating. Page 8 of the Manufacturer specifications shows the Steam Boiler Rating.
2. PTE Calculations for Natural Gas Fired Small Boilers – AQD Template Calculation Worksheet (original prepared by Mr. Metreger and received by AQD on 1/30/2019). – Revised PTE calculations received on 5/29/2019.
3. Dimension diagram specific for the boilers installed at the facility.
4. Electronic communications exchange between AQD and Mr. Metreger (various dates).

CONCLUSION

The inspection conducted on April 2, 2019 at the Cristo Rey HS revealed that the only source of air pollution installed at the HS building are the two boilers located in the basement. Based on the maximum heat input capacities, the boilers are exempt from the requirements of the AQD Rule R336.1201 (1) to obtain a permit to install (PTI) pursuant to Rule 282 (2)(b)(i). Each boiler can operate to the maximum of 2 Million Btu per hour, which is less than 50

Million Btu per hour.

The boilers could potentially have been subject to a federal regulation under NSPS 40 CFR Part 60 –Subpart Dc because they combust natural gas and have been installed after June 9, 1989. However, the boilers fail to meet one of the three applicability criteria because the heat input capacity falls below 10 Million Btu per hour. Consequently, the boilers are not subject to NSPS Subpart Dc.

The boilers appear not to be subject to the Area Source NESHAP– Subpart 6J; however, AQD has not accepted delegation of this regulation.

The source has demonstrated substantial compliance with the Air Quality Regulations.

NAME Offandoval

DATE 6/6/2019

SUPERVISOR JK