

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Self Initiated Inspection

M4232
FY2016 Insp

M423236774

FACILITY: Huron Valley - Sinai Hospital		SRN / ID: M4232
LOCATION: 1 William Carls Drive, COMMERCE TWP		DISTRICT: Southeast Michigan
CITY: COMMERCE TWP		COUNTY: OAKLAND
CONTACT:		ACTIVITY DATE: 09/20/2016
STAFF: Iranna Konanahalli	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: FY 2016 inspection of Huron Valley-Sinai Hospital (M4232), Detroit Medical Center (DMC), Vanguard Health Systems, Tenet Health System		
RESOLVED COMPLAINTS:		

M4232 - SAR - 2016 09 20

Huron Valley-Sinai Hospital (M4232)
Detroit Medical Center (DMC), Vanguard Health Systems, Tenet Health System
Wayne State University
1 William Carls Drive
(fka 1601 E. Commerce Road)
Commerce Township, Michigan 48382-2201
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Ownership: About December 2010, Vanguard Health Systems purchased Detroit Medical Center (DMC). About 2014 Tenet Health System purchased Vanguard Health Systems

VN: AQD issued June 29, 2005, Violation Notice (VN) for failure to comply with NSPS Dc standards for the boilers (three identical [Kewanee Model H35-250-G02, 250 HP] natural gas fired boilers with fuel oil back-up). In 1997 (after June 9, 1989), the boilers (10.5 [≥ 10] million BTU per hour) were installed.

Title V fee: Subject to Category II fee. NSPS Dc boilers with fuel oil backup.

Void: PTI No. 717-93A (EO Sterilizer) was voided on February 29, 2012, based upon FY2012 inspection.

GPTI No. 162-06 (Emergency diesel fuel fired engine generators) – See the July 6, 2010, Hellwig letter

Subject to (three identical boilers): NSPS Dc, New Source Performance Standards (NSPS) for Small Industrial-Commercial-Institutional Steam Generating Units (40 CFR, Part 60, Subpart Dc). Also, DMC is subject to Category II fees due to use of fuel oil in the boilers.

The boilers (3) may be subject to: Area Boiler MACT, NESHAP / MACT 6J, 40 CFR Part 63, Subpart JJJJJJ / 6J National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers, Page 15554, Federal Register / Vol. 76, No. 54 / Monday, March 21, 2011 / Rules and Regulations / Final rule. This rule does NOT apply to boilers that burn only gaseous fuels or any solid waste. AQD has decided not to take delegation of these standards and therefore no attempt has been made evaluate DMC's compliance with NESHAP / MACT 6J.

NOT subject to (because ethylene oxide sterilizers [2] have been removed and replaced by one Sterrad 100S hydrogen peroxide plasma sterilizer): NESHAP / MACT 5W, National Emission Standards for Hospital Ethylene Oxide Sterilizers that are Area Source, 40 CFR, Part 63, Subpart WWWW—National Emission Standards for Hospital Ethylene Oxide Sterilizers, Federal Register Page 73611 /Vol. 72, No. 248 / Friday, December 28, 2007 /Rules and Regulations / Final rule.

May be subject to: Area source NESHAP / MACT ZZZZ (4Z) / RICE MACT, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines and National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines / Final rule (Page 3568, Federal Register / Vol. 73, No. 13 / Friday, January 18, 2008 / Rules and Regulations / Final rule; Page 51570 Federal Register / Vol. 75, No. 161 / Friday, August 20, 2010 / Rules and Regulations / Final rule; Page 12863 Federal Register /Vol. 76, No. 46 /Wednesday, March 9, 2011 /Rules and Regulations / Direct final rule; amendments for August 20, 2010, final rule; etc.). AQD has decided not to take delegation of these standards and therefore no attempt has been made evaluate DMC's compliance with NESHAP / MACT 4Z.

DMC's one emergency diesel (CI RICE) generator (one other generator, which was salvaged from Harper Hospital, is not hooked up and is idle for several years), based upon manufacture date (manufactured on October 10, 1996, before April 1, 2006) is NOT subject to: NSPS IIII or 4I, New Source Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, 39154 Federal Register / Vol. 71, No. 132 / Tuesday, July 11, 2006 / Rules and Regulations / Final Rule; Page 48072 Federal Register / Vol. 79, No. 158 / Friday, August 15, 2014 / Rules and Regulations / Notice of final decision on reconsideration.

On September 20, 2016, I conducted a level-2 scheduled inspection of Huron Valley-Sinai Hospital (M4232), Detroit Medical Center (DMC), Vanguard Health Systems, Tenet Health System (Tenet bought Vanguard about 2014), Wayne State University, located at 1 William Carls Drive (fka 1601 E. Commerce Road), Commerce Township, Michigan 48382-2201. The inspection was conducted to determine compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451; and Michigan Department of Environmental Quality, Air Quality Division (MDEQ-AQD) administrative rules.

During the FY 2016 inspection, Mr. Michael Burdnie (Ph: 248-937-3331; Fax: 248-937-3308; Cell: 248-821-5440, E-mail: mBurdini@dmc.org), Director, Facility Services, assisted me.

As EO sterilizers (2) have been removed and replaced by one Sterrad 100S Hydrogen Peroxide Plasma Sterilizer based upon FY 2012 inspection, on September 20, 2016, I talked to Ms. Rebecca Webb (Phone: 248-937-3414; E-mail: rWebb@dmc.org) who stated that only one H2O2 sterilization unit was present. About 2013 Ms. Webb replaced Ms. Ruth A. Marsh (Ph: 248-937-5127, Fax: 248-937-3308; Pager: 248-527-8544; E-mail: rmarsh@dmc.org), CRCST, Central Sterile Processing and Materials Management Manager, who passed away about 2013.

Mr. Kenneth Bale (Ph: 248-937-3330, Fax: 248-937-3308, Pager: 248-527-8583, E-mail: kbale@dmc.org), Director, Facility, Engineering & Construction, Clinical Engineering, Security, Grounds, Valet, moved to DMC, Detroit, in 2008 and retired in June 2010. Ms.

Toni Goble (248-937-3346), Sr. Instrument Tech, Central Sterile Processing (CPD) and Mr. Steve Swegle (Ph: 248-937-3330), Stationary Equipment Tech, are no longer with the hospital per FY 2010 inspection.

PTI No. 717-93A for two Ethylene Oxide Sterilizers (3M Steri-Vac 5-XL Gas Sterilizer) with one Donaldson EO Abator –voided on February 29, 2012.

Based upon FY 2012 inspection, EO monitoring system (to monitor the concentration of EO in the sterilization room), two Ethylene Oxide Sterilizers (3M Steri-Vac 5-XL Gas Sterilizer) and one Donaldson EO Abator have been removed.

Sterrad 100S hydrogen peroxide (H₂O₂) low temperature plasma sterilizer replaced EO sterilizer in CY 2011.

PTI No. 717-93A was voided on February 29, 2012, as EO sterilizer does not exist anymore based upon February 7, 2012, inspection.

Three NSPS Dc Boilers

In 1997 (after June 9, 1989), DMC installed three identical (Kewanee Model H35-250-G02, 250 HP; Serial Nos. 12125, 12177 & 12178) natural gas (with fuel oil back-up) fired boilers of capacity 10.5 million BTU per hour (>10 million BTU per hour). These boilers (3) are subject to federal New Source Performance Standards for Small Industrial-Commercial-Institutional Steam Generating Units (40 CFR, Part 60, Subpart Dc). Hence, pursuant to Act 451 of 1994, as amended § 324.5522 (1)(b), the entire hospital facility is subject to Category II air quality fees. Pursuant to Rule 336.1282(b), the boilers are exempt from Rule 336.1201 (Permit-to-Install) subject to the condition that fuel oil (limited to No.1 and No.2) burnt has sulfur content no greater than 0.40 percent by mass. It may be noted that NSPS allows sulfur content up to 0.50 percent sulfur by mass (0.5 pounds of sulfur dioxide per million BTU heat input). Because DMC is operating its boilers under Rule 201-exempt status, DMC is required to comply with 0.40% S limit. However, as back-up fuel, DMC burns only 15 ppm sulfur Ultra Low Sulfur Diesel (ULSD).

1 BHP (Boiler Horse Power) = 33,475 BTU (9.811 kW) = energy needed to evaporate 34.5 pounds (15.65 kg) of water at 212 °F (100 °C) in one hour.

1 W = 1 J/s. 1 HP = 746 Watts (W).

The boilers produce steam at 310 degrees Fahrenheit and 65 psi. The boilers burn natural gas on a primary fuel basis. Once per month, the boilers are tested (1-hour test) burning Ultra Low Sulfur Diesel (ULSD) to ensure reliability.

The letter dated October 5, 2005, from Mr. Robert Yellen satisfies NSPS Dc, 60.7 Notification requirements. Per the letter dated October 5, 2005, from Mr. Andy Rusnak of Dernzo and Associates, Inc. fuel oil sulfur content is 0.03%S; Rule 336.1282(b) limit is 0.4%S. Peragon Laboratories of Livonia, Michigan, analysed the fuel oil sample on September 29, 2005. Per the analysis dated March 16, 2006, sulfur content in fuel oil (diesel) is ultra-low (0.03 %S Vs 0.4%S limit). Per Mr. Ken Bale, at each fuel oil delivery, Derenzo takes a sample and has the sample analyzed for sulfur. This program satisfies fuel oil certification or analyses and performance testing (NSPS Dc 60.48c(f), 60.8).

For most recent shipments, sulfur analyses by weight are: 7 ppm S or 0.001%S (7/24/08 shipment), 18 ppm S or 0.002%S (12/23/08 shipment) and 8 ppm S or 0.001%S (04/28/2010 shipment), 8.1 ppm S or 0.001%S (01/30/11 shipment) 8.1 ppm S or 0.001%S (06/20/11 shipment), 12.5 ppm S or 0.001%S (10/20/11 shipment), 9 ppm S or 0.001%S (10/14/11 shipment), 13.5 ppm (07/11/2012 shipment), 8.6 (04/02/2013 shipment), 8.7 (01/02/2013 shipment), 8.0 (04/29/2014 shipment), 9.5 (01/13/2014 shipment), 8.0 (04/29/2014 shipment), 9.5 (01/13/2014 shipment), 7.3 (11/14/2014 shipment), 7.1 (08/21/2014 shipment), 6.7 (02/25/2015 shipment), 5.8 (08/28/2015 shipment), 7.1 (07/17/2015 shipment), 6.5 (06/02/2016 shipment), 7.1 (01/05/2016 shipment). Paragon Laboratories, Inc. of Livonia conducted the sulfur analyses.

I stated, on September 20, 2016, to Burdnie that the hospital may discontinue fuel oil sulfur analysis provided it kept a proof of 15 ppm ULSD purchase and not any other fuel oil. Besides, ULSD is used only for testing (1-hour test per month = 12 hours per year) purposes using one common tank for both boilers and one generator. It may be noted that only low sulfur (in this case ULSD) can be fired in diesel (CI RICE) engines. Also, market forces have eliminated availability of LSD (500 ppm sulfur diesel).

The November 17, 2005 letter, from Mr. Andy Rusnak, stated that natural gas meters installation was completed by November 14, 2005. Per my inspection, each boiler has its own dedicated natural gas meter (GTS/GTX/E-class Turbine Meters, American Meter Company). In addition, each boiler and each emergency generator has its own fuel oil meter. Four fuel oil meters (3 for boilers and 1 for emergency generator) and three natural gas meters, in all, are present.

2-3 times per day natural and fuel oil meter readings are taken. Monthly fuel usage is tabulated (NSPS Dc 60.48c(g)).

1,801 gallons of ULSD diesel and 61.1 MM BTU natural gas were used in Boiler Nos. 1, 2 and 3 in CY 2015. Fuel usage records are kept and MAERS reports are submitted. The boilers are fired with ULSD only for testing: 1-hour testing once per month (total 12 hours per year << 48 hours and hence deemed to be natural gas only boilers concerning Area Boiler MACT 6J.

NSPS Dc Revisions:

1. 72 FR 32759 = Page 32759 Federal Register / Vol. 72, No. 113 / Wednesday, June 13, 2007 / Rules and Regulations / Final Rule – to add compliance alternatives and to revise certain recordkeeping and reporting requirements.
2. 74 FR 5091 = Page 5091 Federal Register / Vol. 74, No. 17 / Wednesday, January 28, 2009 / Rules and Regulations / Final Rule - to correct technical and editorial errors.

The NSPS Dc revisions simplified the natural gas usage recordkeeping.

Area Source, Boiler MACT, NESHAP / MACT 6J

As the boilers are designed to be capable of burning liquid fuels such as fuel oil, DMC's boilers are subject to: NESHAP / MACT 6J, 40 CFR Part 63, Subpart JJJJJJ / 6J National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial,

Commercial, and Institutional Boilers, Page 15554, Federal Register / Vol. 76, No. 54 / Monday, March 21, 2011 / Rules and Regulations / Final rule. This NESHAP / MACT 6J rule does NOT apply to boilers that burn only gaseous fuels or any solid waste; the DMC's boilers are designed for liquid fuels, such as fuel oil, as well; the boilers may be considered natural gas fired if the 48-hour limit is met.

The boilers are fired with ULSD only for testing: 1-hour testing once per month (total 12 hours per year << 48 hours per year). Hence the boilers are deemed to be natural gas only boilers and may be exempt from NESHAP / MACT 6J.

The final rule sets different requirements for boilers based on their size, which is defined as follows:

- ✓ **Large area source boilers have a heat input capacity equal to or greater than 10 million British thermal units (Btu) per hour (MMBtu/hr).**
- ✓ **Small area source boilers have a heat input capacity less than 10 MMBtu/hr.**

DMC has three large area source MACT 6J natural gas fired boilers (with fuel oil back-up) based upon design capacity (three 10.5 > 10 MM BTU / hour Kewanee Model H35-250-G02, 250 HP). An affected source is an existing source if you commenced construction or reconstruction of the affected source on or before June 4, 2010. DMC's boilers are existing boilers concerning the NESHAP / MACT 6J (installed in 1997). Existing area source boilers (biomass and oil) are required comply with the following:

1. **Tune-up every other year (biennial)**
2. **No numeric emission limits**

A gas-fired boiler that periodically fires liquid fuels during gas curtailment and supply emergencies or for periodic (not to exceed a total of 48 hours during any calendar year) testing is still considered a gas-fired boiler. DMC's boilers may be considered gas fired if records that prove 48-hour-limit are kept. In that case (< 48 hours), the NESHAP / MACT 6J rule does NOT apply to boilers that burn only gaseous fuels or any solid waste (solid waste rules apply).

The boilers are fired with 15 ppm ULSD only for testing: 1-hour testing once per month (total 12 hours per year << 48 hours per year). Hence may be exempt from NESHAP / MACT 6J.

The following notification requirements may apply:

1. **Initial Notification: no later than September 17, 2011**
2. **Notification of Compliance Status subject to tune-ups: No later than July 19, 2012**

The boilers were subject to former Boiler MACT 5D, Area Source 40 CFR, Part 63, Subpart DDDDD--National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters. However, on June 8, 2007, US Court of Appeals mandated that EPA vacate the Boiler MACT Rule in its entirety. New Boiler MACT 6J was promulgated.

AQD has decided not to take delegation of these standards and therefore no attempt has been made to evaluate the DMC's compliance with NESHAP / MACT 6J.

GPTI No. 162-06 Emergency diesel fuel fired generators

During the FY 2005 inspection, I asked Mr. Bale to obtain a general permit to install for the generators. DMC now has an approved permit (GPTI No. 162-06 dated June 6, 2006). DMC does not export power to a utility company. The emergency generator fuel usage records are kept.

The generators are tested for performance:

1. Weekly: 15-minute test
2. Monthly: 1-hour full load test
3. Annual: 4-hour full load test

Spec: 1500 kilowatt (1500 kW or 1.5 MW) Caterpillar, Inc. CAT 3516, 1500 kW (1.5 MW), 1875 kVA Emergency Generator.

Caterpillar Generator Set Model No. 3516, 1875 kVA, 1500 Kw (1.5 MW), PF =0.8

Engine Model No. 3516, Serial No. 25Z05336, 2,168 HP Power, 1,800 full load RPM, Manufactured 10/10/1996, ULSD (15 ppm sulfur diesel) only.

The generator's engine is not subject NSPS 4I (Manufactured 10/10/1996 < April 1, 2006).

Fuel usage for Caterpillar Generators is as follows:

1500 kW → 105 gallons per hour diesel (DMC)

1050 kW → 74 gallons per hour diesel

750 kW → 55 gallons per hour diesel

600 kW → 46 gallons per hour diesel

300 kW → 28 gallons per hour diesel

Diesel (15 ppm S ULSD) tank supplies fuel to both boilers (3) and generator (1 operating generator plus 1 inoperable generator salvaged from Harper Hospital, Detroit).

AQD Division Chief G. Vinson Hellwig sent Jul 6, 2010, letter stating that all existing GPTIs for diesel generators continue to be valid and remain in effect. No GPTI for the generators will be issued because US EPA issued new 1-hr NAAQS for NO2 on Apr 12, 2010 (188 micrograms per cubic meter).

DMC burns only 15 ppm sulfur (S) ULDS (GPTI No. 162-06 SC 1.2 limit: only diesel). Electric power is not exported (GPTI No. 162-06 SC 1.3, SC 1.10). During CY 2015, DMC used 415 gallons of diesel (15 ppm S ULSD) per year (GPTI No. 162-06 SC 1.4 limit: 136,000 gpy). The generator is operated properly according to the manufacturer's recommendation (GPTI No. 162-06 SC 1.5). Total capacity does not exceed 5 MW; one 1.5 MW generator is installed. One 1.0 MW Caterpillar Emergency Generator that is not part of this GPTI is on site to be hooked up. Harper Hospital donated this 1 MW Caterpillar generator. Fuel usage meter is present (GPTI No. 162-06 SC 1.8).

Fuel usage records are kept (GPTI No. 162-06 SC 1.11). All diesel usage is for testing:

1. Once per week for 15 minutes
2. Once per month for one half hour – full load testing
3. Once per year – 4-hour load bank testing

Exhaust gases are discharged vertically upwards, unobstructed (GPTI No. 162-06 SC 1.12)

One old 1 MW generator (Caterpillar Generator Set Model 1512, 1250 kVA, 1,000 kW 0.8 PF) is transferred from Harper Hospital to this hospital. The generator is idle and is not hooked up.

NESHAP / MACT ZZZZ / RICE MACT 4Z

Emergency diesel generators may be subject to RICE MACT 4Z, Area Source NESHAP / MACT ZZZZ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines and National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines / Final rule (Page 3568, Federal Register / Vol. 73, No. 13 / Friday, January 18, 2008 / Rules and Regulations / Final rule). For questions regarding the Area MACT 4J, DMC must deal directly with Region 5, US EPA, Chicago. If and only if the engine operates as an emergency engine under the rule (40 CFR 63.6675 & 63.6640; exceptions apply, e.g., interruptible service contract with a power utility) and is located at residential, institutional, or commercial establishments (including hospitals), the generators are exempt from RICE MACT.

AQD has decided not to take delegation of these standards and therefore no attempt has been made to evaluate DMC's compliance with NESHAP / MACT 4Z.

Area RICE MACT 4Z Diesel Emergency Generator - Existing (October 10, 1996 before Dec 19, 2002) RICE engines

Change oil/filter & inspect hoses/belts every 500 hours or annually; inspect air cleaner (CI) or spark plugs (SI) every 1,000 hours or annually. No emission standards.

These activities appear to be performed as part of preventive maintenance.

Conclusion

After June 29, 2005, letter of violation, DMC is in compliance with NSPS Dc. One 1-MW Caterpillar Emergency Generator (salvaged from Harper Hospital, Detroit) is on site but never electrically connected.

NAME J. S. Lenemahall

DATE 09/26/2016 SUPERVISOR Joyce K