

M1967

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

FY2015 Sched. Insp.

M196729613

FACILITY: ST. JOHN PROVIDENCE HOSPITAL		SRN / ID: M1967
LOCATION: 16001 WEST NINE MILE RD, SOUTHFIELD		DISTRICT: Southeast Michigan
CITY: SOUTHFIELD		COUNTY: OAKLAND
CONTACT:		ACTIVITY DATE: 05/27/2015
STAFF: Iranna Konanahalli	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: FY 2015 level-2 scheduled inspection of Providence Hospital		
RESOLVED COMPLAINTS:		

M1967 - SAR - 2015 05 07

Providence Hospital (M1967)
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 Southfield, Michigan 48075-4818

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PTI Nos.: 268-02 dated February 10, 2003 (PSD [FG-Boilers, SC 2.1 SO2 limit: 39 TPY] and ROP opt-out for boilers) and 185-94A dated October 7, 1997 (EO sterilizers). EO sterilizers (4) are idled but operable since August 2014.

PTI voids: PTI Nos. 36-98 for existing heating boilers (03/19/1998), 185-94 for EO sterilizer (10/07/1997) and 686-84 for three boilers (03/19/1998)

To be voided: 185-94A dated October 7, 1997 (EO sterilizers). The permit will be voided when the sterilizers are removed or permanently disabled. Sterilizers are idle since August 2014.

Subject to: New Source Performance Standards (NSPS Dc) for Small Industrial-Commercial-Institutional Steam Generating Units (40 CFR, Part 60, Subpart Dc). Fuel oil (ULSD) backup for two of three boilers (Boiler Nos. 1 & 2 & not 3 [NG only]). Boiler Nos. 1 [32.4 MM BTU / Hr] and 3 [16.7 MM BTU / Hr] are subject to NSPS Dc. PTI Grandfathered [installed: 1963] Boiler No. 2 [32.4 MM BTU / Hr] is not subject to NSPS Dc. However, Boiler No. 2 is also incorporated into the PSD opt-out permit (PTI No. 268-02).

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.

Subject to: Cat II Fee (Fuel Oil Backup NSPS Dc boilers – Boiler Nos. 1 & 3)

Boilers (principally natural gas fired with or without fuel oil backup) may be 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 rule does NOT apply to boilers that burn only

gaseous fuels or any solid waste.

Subject to: NESHAP / MACT Area Source WWWW (W5) National Emission Standards for Hospital Ethylene Oxide Sterilizers (Page 73611, Federal Register /Vol. 72, No. 248 / Friday, December 28, 2007 /Rules and Regulations / Final rule) - This final rule applies to any existing or new hospital ethylene oxide sterilization facility that is an area source of HAP. AQD has NOT taken delegation and an attempt is not made to determine compliance.

Providence's three (3) emergency 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). AQD has NOT taken delegation and an attempt is not made to determine compliance.

Not subject to (CI RICE Diesel generators are installed before 2006): 40 CFR Part 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition (CI) Internal Combustion Engines (ICE) Page 39154 Federal Register / Vol. 71, No. 132 / Tuesday, July 11, 2006 / Rules and Regulations /Final rule).

On May 07 and 27, 2015, I conducted a level-2 **scheduled** inspection of Providence Hospital ("Providence") located at 16001 West Nine Mile Road, Southfield, Michigan 48075-4818. 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) rules.

During the inspection, Mr. Gary Campbell (Cell: 248-867-8658; Operations: 248-867-8656; E-mail: Gary.Campbell@StJohn.org), chief engineer, and Mr. John Dadourian (Operations: 248-867-8656) assisted me. Also, Ms. Linda Lawrence (Phone: 248-849-3491; E-mail: Linda.Lawrence@StJohn.org) and Ms. Wanda Korzowski assisted me with EO sterilizers.

Mr. Joseph Serra (Phone 248-849-8088, Fax: 248-849-2840, E-mail: jserra@providence-hospital.org), manager, plant operations, buildings and grounds, retired about May 01, 2015.

Ms. Sally Johnson (Phone: 248-849-3491), Supervisor, Central Sterile Processing, separated about 2010. Mr. Kurtis VanDeWiele and Ms. Toni Patton, manager, Central Sterile Processing, separated from St. John Providence about 2008

PTI No. 185-94A Four Ethylene Oxide Sterilizers (3M Steri-Vac 5-XL) with two Donaldson EO Abator.

The surgical instruments are stacked, wrapped and placed in the sterilizer machine. A biological specimen is kept as a test pack to ensure sterilization. When the machine is started, it goes through 13-hour cycle: a canister (containing ethylene oxide, 100 grams per canister) is punctured and ethylene oxide is released in the chamber, after sufficient exposure time (1 hour), aeration cycle begins (12 hours). One EO canister (100 grams of ethylene oxide plus inerts per canister) is used per cycle. For safety, EO is monitored in the room. EO is a reproductive hazard.

13-hour cycle consists of 1 hour of sterilization and 12 hours of aeration. In CY 2014, total of 11 canisters (100 grams EO per canister) were used (SC 14 limit: 1200 grams or 12 canisters

per day). Since August 2014 EO sterilizers are idled. SteriTrack Instrument displays 0.00 ppm EO in work areas. EO usage records are kept using Appendix A (SC 12: calculations and records).

Ethylene oxide emissions are controlled (99.9%) using Donaldson EO Abator (SC 19). The Abator converts ethylene oxide (C_2H_4O) to carbon dioxide (CO_2) and water (H_2O). The reaction is accompanied by release of heat (exothermic) and is assisted by a proprietary catalyst. The catalyst bed is constructed of 304 stainless steel with high temperature silicone gasketing. The bed is filled with a proprietary catalyst.

90 percent of EO emissions occur during a purge cycle and the rest (10%) during an aeration cycle.

EO Sterilizers (four Steri-Vac 3M) are idled since August 2014. **“DO NOT USE”** signs are posted on them. PTI No. 185-94 will be voided upon removing sterilizers from the site; currently (May 2015) they are operable.

Three Hydrogen Peroxide (H_2O_2) Plasma Sterilizers are present: two large machines (Sterrad 100S) with one hour sterilization cycle and one small machine (Sterrad NX) with 25 minutes cycle. H_2O_2 Plasma machines are replacing EO sterilizers (FY 2015).

Hospital Sterilizers are not subject to National Emission Standards for Hazardous Air Pollutants (NESHAP) for Ethylene Oxide Commercial Sterilization and Fumigation Operations (40 CFR, Part 63, Subpart O). But, they are subject to: NESHAP / MACT 5W, 40 CFR, Part 63, Subpart W (5W), Area Source National Emission Standards for Hospital Ethylene Oxide Sterilizers (Page 73611, Federal Register / Vol. 72, No. 248 / Friday, December 28, 2007 / Rules and Regulations / Final rule). This final rule applies to any existing or new hospital ethylene oxide sterilization facility that is an area source of HAP. AQD has NOT taken delegation and an attempt is not made to determine compliance.

Mr. Jim Day (MDEQ-Office of Waste Management and Radiological Protection) will advise Providence regarding safe disposal of unused EO canisters according RCRA Lab Packs.

PTI No. 268-02 and NSPS Dc Boilers.

FG-Boilers: EU-Boiler1 (2003 NSPS Dc) and EU-Boiler2 (1963 non-NSPS Dc)

1. Boiler No. 1: English Boiler (Richmond, Virginia). Model 25 SC 250. Serial No. 22072. Heating surface = 2,946 sq. ft. 25,000 pounds per hour steam, 32.4 million BTU per hour, natural gas (with fuel oil back-up). Built in 2002 and installed in 2003. Low-NOx dual fuel (NG & ULSD diesel) burner. Subject to NSPS Dc.
2. Boiler No. 2: The Wickes Boiler Co. (Saginaw, Michigan). Model M67567M. ASME # 5894. HSB # 5894. NB No. 2756. Heating surface = 2,700 sq. ft. 25,000 pounds per hour steam, 32.4 million BTU per hour, natural gas (with fuel oil back-up). Installed in 1963. Part of PTI No. 268-02 to become synthetic minor source for PSD (SO_2). Boiler No. 2 was previously covered by PTI Nos. 36-98 and 686-84. Not subject to NSPS Dc as it was installed in 1963 (before 1989).

3. Boiler No. 3: Kewanee. Model H3S-500-G. Serial No. 14065. Heating surface = 2,500 sq. ft. 150 psi steam. 500 HP, 16.7 million BTU per hour (with no fuel oil back-up, i.e. natural gas only). This boiler is not part of PTI No. 268-02. Subject to NSPS Dc.

PTI (Rule 201) grandfathered Boiler #2 was installed in 1963. In 1999 (Boiler #3) and 2003 (Boiler #1), Providence installed two natural gas fired boilers of capacity 16.7 million BTU per hour (with no fuel oil back-up) and 32.4 million BTU per hour (with fuel oil back-up), respectively. These boilers 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 16.7 MMBTU/ hour boiler (Boiler No. 3, 1999) is exempt from Rule 336.1201 (Permit-to-Install).

Two 32.4 MMBTU/ hour boilers (Boiler Nos. 1 [2003] and 2 [1963] and not 3) are covered by PTI No. 268-02. Boiler #1 is equipped with low-NOx burner.

According to PTI No. 268-02, in 2003, Providence replaced the existing Boiler No. 1 with a new, which is also called Boiler No. 1, 32.4 million BTU per hour (natural gas with fuel oil back-up) boiler. 32.4 million BTU per hour (natural gas with fuel oil back-up) Boiler No. 2 is also incorporated into this permit although it is grandfathered (installed: 1963 before 1967) because Providence wanted a synthetic minor permit (SO₂) pursuant to federal Prevention of Significant Deterioration (PSD) regulations (PTI No. 268-02, FG-Boilers, SC 2.1 limit: 39 tpy sulfur dioxide). Although Boiler No. 3 (natural gas only) is not covered by this permit, it is subject to NSPS Dc since 1999.

Prior to the May 15, 2006, Violation Notice Providence was not in compliance with NSPS Subpart Dc (PTI No. 268-02, EU-Boiler1, SC 1.1). Refer to the letter of violation dated May 15, 2006 for details. Providence has now (FY2015) achieved compliance (PTI No. 268-02, EU-Boiler1, SC 1.1).

After May 15, 2006, Violation Notice, via March 24, 2003 letter Mr. Joseph Serra of Providence submitted NSPS Dc notification for Boiler 1, which began operation on March 12, 2003 (PTI No. 268-02, EU-Boiler1, SC 1.2).

After May 15, 2006, Violation Notice, Providence installed natural gas meter for the kitchen. Boiler No. 3 has its own meter. Every natural gas meter is read. Boilers' natural gas usage is determined by the difference. Amount (gallons) of fuel oil used is determined using a dip-stick method.

Fuel oil (ULSD Diesel 15 ppm sulfur) is used only during annual testing (PTI No. 268-02, FG-Boilers, SC 2.3 limit: 1,098,594 gallons per 12 month, 0.5%S, 137,000 BTU per gallon). The fuel oil burning test lasts a couple of hours. Only off-road Ultra Low Sulfur Diesel (ULSD 15 ppm S) (PTI No. 268-02, FG-Boilers, SC 2.2, SC 2.5 limit: 0.5%S & sulfur content documentation) is used in both boilers and generators. One shipment of off-road ULSD Diesel (15 ppm sulfur) was received on January 15, 2015 (\$/Gal = \$1.9990 for \$5,789.20) from D & W Oil Company, 14330 Wyoming Ave., Detroit, Michigan 48238 (313-834-2580). There are two fuel oil tanks: 12,000-gallon North Tank and 15,000-gallon South Tank.

Fuel (natural gas and off-road ULSD Diesel) usage records are kept (PTI No. 268-02, FG-Boilers, SC 2.4) and reported via MAERS on an annual basis.

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 revisions simplified the natural gas usage recordkeeping.

NESHAP / MACT 6J Area Boiler MACT

As the boilers are designed to be capable of burning liquid fuels such as fuel oil, Providence'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 hospital's boilers are designed for liquid fuels, such as fuel oil, as well.

AQD has decided not to take delegation of these standards and therefore no attempt has been made to evaluate the hospital's compliance with 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.

The hospital has three large area source MACT 6J natural gas fired boilers (with fuel oil back-up) based upon design capacity (two 32.4 MM BTU / hour and one 16.7 MM BTU / hour). An affected source is an existing source if you commenced construction or reconstruction of the affected source on or before June 4, 2010. Hence the hospital's boilers are existing boilers concerning the NESHAP / MACT 6J (installed in 1963, 1999, 2003). 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. The hospital'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 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

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

The hospital was subject to 40 CFR Part 63, Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters (Federal Register / Vol. 69, No. 176 / Monday, September 13, 2004 / Page 55218 / Rules and Regulations). However, on June 8, 2007, US Court of Appeals had mandated that EPA vacate the Boiler MACT Rule in its entirety; in the interim period, 112(j) MACT permit was required. US EPA re-promulgated the Area Source Boiler MACT as NESHAP / MACT 6J

01/09/12 - The U.S. District Court for the DC Circuit vacated the EPA's May 18, 2011, notice that delayed the effective dates of the Major Source Boiler MACT rule. The effective dates of the final rules published in the Federal Register on March 21, 2011 (76 FR 15608 and 76 FR 15704), are delayed until such time as judicial review is no longer pending or until the EPA completes its reconsideration of the rules, whichever is earlier.

12/23/11 - The EPA published the Major Source Boiler MACT reconsideration proposal (40 CFR 63, subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, Page 80598 Federal Register / Vol. 76, No. 247 / Friday, December 23, 2011 / Proposed Rules). The EPA will accept comment on the reconsideration proposal until February 21, 2012.

Three emergency diesel generators

There are three emergency diesel generators:

1. Emergency Generator 1: Caterpillar Model SR4B. Serial No. 9DR04139. Engine Model No. 340C (2001). 500 kVA, 400 kW (0.4 MW). 60 Hertz. PF=0.8.
2. Emergency Generator 2: Caterpillar Model 3508 (1999). Serial No. NA. Engine Model No. NA. 1125 kVA, 900 kW (0.9 MW). NA Hertz. PF=0.8.
3. Emergency Generator 3: Caterpillar Model NA. Serial No.. Engine Model No. 3412 (2002). 1,000 kVA, 800 kW (0.8 MW). 80 Hertz. PF=0.8.

Verify generators during the next inspection.

Each generator has its own day ULSD Diesel tank (about 100 gallon). Diesel is pumped from two large storage tanks (12,000-gallon North Tank and 15,000-gallon South Tank) to the day tanks (about 100 gallon each).

There are three emergency diesel generators (< 1 megawatts = 1,000 kilowatts), which are exempt from Rule 336.1201 (Permit-to-Install) pursuant to 336.1285 (g), internal combustion engines of heat input capacity 10 million BTU per hour or less. Per industry experts, 65 gallons per hour of diesel is consumed at full load by 1 MW diesel generator. (65 gal / hour) * 137,000 BTU / gallon) = 8.9 million BTU per hour. That is, 1 MW electricity generator is equivalent to 9 million BTU per hour heat input IC engine, approximately.

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, Henry Ford 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 the Providence's compliance with NESHAP / MACT 4Z.

Three emergency diesel generators are not subject to (installed before 2006): NSPS 4I, 40 CFR Part 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition (CI) Internal Combustion Engines (ICE) Page 39154 Federal Register / Vol. 71, No. 132 / Tuesday, July 11, 2006 / Rules and Regulations /Final rule) because the generators were installed before 2006.

Conclusion

Hospital Sterilizers are not subject to National Emission Standards for Hazardous Air Pollutants (NESHAP) for Ethylene Oxide Commercial Sterilization and Fumigation Operations (40 CFR, Part 63, Subpart O). Hospital Sterilizers are subject to NESHAP / MACT 5W Area Source, 40 CFR, Part 63, Subpart WWWW (5W) National Emission Standards for Hospital Ethylene Oxide Sterilizers. EO sterilizers will be removed soon. Unused EO canisters will be disposed of as RCRA Lab Packs.

The boilers are in compliance with NSPS Dc.

NAME *J. Penninghall* DATE *06/02/2015* SUPERVISOR *CJE*