

Lane Regional Air Protection Agency
Synthetic Minor Air Contaminant Discharge Permit (SM-ACDP)

REVIEW REPORT

Sacred Heart Medical Center at Riverbend

Permit No. 207536

1. General Background Information

Sacred Heart Medical Center at Riverbend (the facility) operates a hospital with steam and electricity generating capability at 3333 Riverbend Drive in Springfield, Oregon. The facility submitted a new application for the new facility on March 20, 2008. The current operation consists of the following:

- 1.a. **Three Emergency Generators (1G, 2G, and 3G):** These three (3) generators are compression ignition (CI) internal combustion engines rated at 2000 kW each. Each generator will be for emergency purposes, but fired regularly for maintenance, and each will burn Diesel #2. These generators were manufactured sometime in the first quarter of 2006 (before April 1, 2006) and are subject to the NSPS requirements for Compression Ignition (CI) Reciprocating Internal Combustion Engines (RICE) (40CFR60 subpart IIII). The generators are considered an "existing stationary RICE located at an area source of Hazardous Air Pollutants (HAP)" and meet the requirements of the RICE NESHAP (40CFR63 subpart ZZZZ) by complying with the RICE NSPS.
- 1.b. **Boiler 4 (B4):** This is a fire-tube boiler (forced draft burner into horizontal Morrison tube) that burns primarily natural gas with Diesel #2 as a backup. This boiler has a maximum rated capacity of 12.6 MM Btu/hr. This boiler is subject to NSPS requirements (40CFR60 subpart Dc).
- 1.c. **Boiler 5 (B5):** This is a fire-tube boiler (forced draft burner into horizontal Morrison tube) that burns primarily natural gas with Diesel #2 as a backup. This boiler has a maximum rated capacity of 33.6 MM Btu/hr. This boiler is subject to NSPS requirements (40CFR60 subpart Dc).
- 1.d. **Boiler 6 (B6):** This is a fire-tube boiler (forced draft burner into horizontal Morrison tube) that burns primarily natural gas with Diesel #2 as a backup. This boiler has a maximum rated capacity of 33.6 MM Btu/hr. This boiler is subject to NSPS requirements (40CFR60 subpart Dc).
- 1.e. **Ethylene Oxide Sterilizer (EtO):** This is an Ethylene Oxide Sterilizer with a 50 CFM Donaldson EtO Abator System. Maximum rated EtO flow rate is 0.017 lbs/min and the facility uses pure EtO in the sterilizer. This sterilizer is subject to the NESHAP for Hospital Ethylene Oxide Sterilizers requirements (40CFR63 subpart WWWW).

2. Reasons for Permit Action

The facility operates a process listed in Table A, Part II, of LRAPA Title 34 and is, therefore, required to obtain an air contaminant discharge permit (ACDP). Sacred Heart has a permit for the existing facility located in Eugene but this is a new facility requesting a new permit.

3. Enforcement History

There has been no enforcement actions performed against the facility.

4. Performance Test Results

Performance testing is not required by the permit.

5. Plant Site Emission Limits (PSELs)

The annual PSEL is set in agreement with the Synthetic Minor limits. Compliance with the annual PSEL shall be demonstrated by multiplying the actual fuel usage by the best available emission factor and summing the totals. The facility has the potential to emit above the major source thresholds for Oxides of Nitrogen (NO_x) and Sulfur Dioxide (SO₂).

Annual PSEL
(tons/year)

Source	PM	PM ₁₀	SO ₂	NO _x	CO	VOC
Boiler Totals	24	14	39	39	99	39

6. Emission Factors

The permittee is required to use the best available emission factors for purposes of estimating emissions. The attachment to this permit contains the emission factors used to estimate emissions.

7. Baseline Emission Rates (BER)

This is a new facility and hence the BER for all pollutants is zero (0) tons/year.

8. Significant Emission Rates (SERs)

All allowed emissions are less than the SER as shown below.

Pollutant	Proposed PSEL (tons/year)	BER (tons/yr)	Increase from BER (tons/year)	SER (tons/year)
Particulate, PM	24	0	24	25
Particulate, PM ₁₀	14	0	14	15
CO	99	0	99	100
NO _x	39	0	39	40
VOC	39	0	39	40
SO ₂	39	0	39	40

9. Hazardous Air Pollutants (HAP)

The projected HAP emissions from the facility are expected to be minimal. Ethylene Oxide (EtO) emissions are estimated to be 52.7 lbs/year. The EtO sterilizer and Donaldson Abator are

subject to the Subpart W area source NESHAP. The permit contains requirements that the facility sterilize only full loads, except under medically necessary circumstances.

10. Typically Achievable Control Technology (TACT)

LRAPA Title 32-008 requires an existing emission unit at a facility to meet TACT if the emissions unit has emissions of criteria pollutants greater than ten (10) tons per year of any gaseous pollutant or five (5) tons per year of particulate, and the emissions unit is not subject to the emissions standards under LRAPA Title 32, Title 33, Title 39, or Title 46 for the pollutants emitted, and the facility is required to have a permit. The boilers and generators are subject to NSPS and are not required to meet TACT.

11. New Source Review (NSR) and Prevention of Significant Deterioration (PSD)

Because the proposed PSEs for all regulated pollutants are below the Significant Emission Rates (SERs) in LRAPA Title 38, the facility is not subject to LRAPA's NSR requirements for PM₁₀ nor the PSD requirements for SO_x, NO_x, CO, and VOC.

12. New Source Performance Standards (NSPS)

Each boiler is subject to the NSPS requirements of 40 CFR Subpart Dc. The permit contains limits on sulfur emissions, sulfur content, monitoring for sulfur, and opacity for each boiler.

Each generator is subject to the NSPS requirements for 40 CFR Subpart IIII. The permit contains limits on the hours of operation for maintenance. The Subpart IIII NSPS allows the facility to meet the emission standards by way of manufacturer certification. The facility's application contains information on the generators and the manufacturer (Cummins) states that the generators are certified according to 40 CFR Part 89.

13. Continuous Compliance

To ensure compliance with the hourly and annual PSEs, the facility is required to keep a record of the following information for a period of two (2) years.

Parameter	Frequency	Monitoring Equipment
Amount of natural gas combusted by each boiler (cubic feet)	Monthly	Gas Meter
Amount of No. 2 fuel oil and combusted by each boiler (gallons)	Monthly	Oil Flow Meter
Amount of No. 2 fuel oil and combusted by each generator (gallons)	Monthly	Oil Flow Meter
Hours of maintenance and readiness checking operation of each generator	Monthly	Hour Meter

Parameter	Frequency	Monitoring Equipment
Certification of sulfur content of diesel fuel oil	Each Delivery	Fuel Supplier certificate.

14. Reporting Requirements

The facility is required to submit semi-annual reports to LRAPA.

15. Public Notice

The draft permit was on public notice from July 18, 2008 to August 17, 2008. No written comments were submitted during the 30-day comment period.

MAX/cmw
9/03/08

EMISSIONS DETAILS

Generators Combustion Emissions (3 Generators @ 60 Hz, 18.8 MM BTU/hr)

Pollutant	MaxDesign Power Rate (hp)	Emission Factor (gram/hp-hr)	Annual Emissions (tons/yr)	Hours/year=	8760
NOx	8046	7	543.9		
CO	8046	0.9	69.9		
VOC	8046	0.2	15.5		
PM	8046	0.04	3.1		
SO2	8046	0.58	45.1		

Emission factors are from facility via Cummins for #2 diesel
 Generators each rated at 2000 kW in standby mode
 Fuel Consumption during full standby rated at 137.3 gal/hour
 Total kW = 2000 x 3 = 6,000 kW or 8,046 Hp
 1kW = 1.3410 hp
 Facility estimates 6 hours/yr operation for each generator, double for PSEL

Boilers Combustion Emissions - GAS (3 Boilers w/ 79.8 MM BTU/hr Aggregate Heat Input)

Pollutant	MaxDesign Heat Input Rate (MM BTU/hr)	Emission Factor (lb/MM SCF)	Annual Emissions (tons/yr)	Hours/year	8760
NOx	79.8	100	34.3		
CO	79.8	84	28.8		
VOC	79.8	5.5	1.9		
PM	79.8	7.6	2.6		
SO2	79.8	0.6	0.2		

1020 BTU/SCF
 Boiler #4 is a Mohican 12.6 MM BTU/hr firetube boiler
 Boilers #5 and #6 are Mohican 33.6 MM BTU/hr firetube boilers
 Emission factors are from AP-42, Section 1.4

Boilers Combustion Emissions - DIESEL (3 Boilers w/ 79.8 MM BTU/hr Aggregate Heat Input)

Pollutant	MaxDesign Fuel rate (gal/hr)	Emission Factor (lb/1000 Gal)	Annual Emissions (tons/yr)	Hours/year	8760
NOx	570	20	49.9		
CO	570	5	12.5		
VOC	570	0.556	1.4		
PM	570	1.3	3.2		
SO2	570	71	177.3		

1020 BTU/SCF
 Boiler #4 is a Mohican 90 gal/hour diesel firetube boiler
 Boilers #5 and #6 are Mohican 240 gal/hr firetube boilers
 Emission factors are from AP-42, Section 1.3
 Facility estimates 1200 gallons/year Distillate (No.2 Diesel)

EtO Sterilizer and EtO Abator Emissions - Donaldson 50 CFM, 0.017 lb EtO/min Max.

Basis (max design rate):	0.017 lbs/min	8935.2 lbs/year	EtO Consumed
Gas:	100% Ethylene Oxide		
Emissions:	8935.2 lb EtO/year		
Sterilizer Chamber	8.04168 lb EtO/year	(assume 99.9% control)	
Aerator Chamber	44.676 lb EtO/year	(assume 95% control)	
Total EtO Emissions	52.71768 lb EtO/year	(sterilizer plus aerator)	

Heat is supplied electrically, therefore no combustion emissions.

Total Emissions

Pollutant	Potential Annual Emissions	PSEL
NOx	593.8	39
CO	98.7	99
VOC	18.8	39
PM10	9.0	14
SO2	222.5	39