CHRISTIANA CARE
HEALTH SYSTEM

4755 Ogletown-Stanton Road
Newark, DE 19718

RECEIVED
OCT 24 2017
AIR QUALITY MGT.

October 23, 2017

DNREC / Division of Air Quality
State Street Commons
100 W. Water Street, Suite 6A
Dover, DE 19904

Attention: Division Director

Subject: Facility I.D. Number: 1000300080
Update Renewal for Permit: AQM-003/00080 (R3)
(One Original and One Copy)

Dear Sir:

Attached is the Renewal Application and Compliance Certification Report required to be submitted on or before the renewal application due date of October 24, 2017, under the Title V Operating Permit AQM-003/00080 (Christiana Hospital).

This submittal is to meet the October renewal application due date, and obtain a new permit on or before the expiration date of October 24, 2018.

Sincerely,

Robert A. Mulrooney
Senior Vice President
Facilities and Services

RAM/tfr

Attachments

7 DE Admin. Code 1130
Title V State Operating Permit Program
ADMINISTRATIVE INFORMATION
Air Quality Management Section

AQM-1001

ADMINISTRATIVE INFORMATION FOR:	FOR DEPARTMENT USE, ONLY
☐ INITIAL APPLICATION	I.D. NO.:
☒ RENEWAL APPLICATION *(check one)*	PERMIT NO.:
☐ MODIFICATION	DATE:

SOURCE INFORMATION

1. SOURCE NAME: Christiana Hospital
2. DATE FORM COMPLETED: 10/24/2017
3. SOURCE STREET ADDRESS: 4755 Ogletown-Stanton Road
4. CITY: Newark
5. ZIP: 19718
6. COUNTY: New Castle
7. PRIMARY STANDARD INDUSTRIAL CLASSIFICATION *(SIC)* CATEGORY: Health Care
8. PRIMARY *SIC* NO.: 8062
9. SOURCE ENVIRONMENTAL CONTACT PERSON: Charles C. Anderson, Power Plant Supervisor
10. CONTACT PERSON'S TELEPHONE NO (302) 733-3910

OWNER INFORMATION

11. NAME: Christiana Care Health Services
12. ADDRESS: 4755 Ogletown-Stanton Road
13. CITY: Newark
14. STATE: DE
15. ZIP: 19718
16. OWNER'S AGENT *(if applicable)*: N/A

OPERATOR INFORMATION

17. NAME: Same as Owner
18. ADDRESS:
19. CITY:
20. STATE:
21. ZIP:

APPLICANT INFORMATION

22. WHO IS THE PERMIT APPLICANT: *(check one)*
☒ OWNER
☐ OPERATOR

23. ALL CORRESPONDENCE TO: *(check one)*
☐ OWNER
☐ OPERATOR
☒ SOURCE

24. CONTACT PERSON AND/OR TITLE FOR WRITTEN CORRESPONDENCE: Robert A. Mulrooney, Senior Vice President, Facilities and Services
25. TECHNICAL CONTACT FOR SUBMITTAL OF APPLICATION: Joseph L. Gaines, Air Regulatory Consultant
26. CONTACT PERSON'S TELEPHONE NO.: (704)442-8274
27. TOTAL COST OF PLANT: $174,000,000
(Including property, buildings and air pollution control equipment, original cost basis)

COST OF PROPOSED MODIFICATIONS:
(Modification Applications only): N/A

28. PRESENT STATUS OF EQUIPMENT (check appropriate box(es) and complete applicable items)

OPERATING PERMIT:

☒ For existing plant, date construction completed *(original facility)* January 1982

☐ Name Change pending, effective date

CONSTRUCTION PERMIT *(for modifying sources)*

☐ Equipment to be modified or constructed	Estimated Starting Date	Estimated Completion date
☐ Basic Equipment	See attached information	
☐ Air Pollution Control Equipment	See attached information	

☐ Change of Location Pending

29. ARE HAZARDOUS MATERIALS* OR COMPOUNDS OF SUCH MATERIALS ARE EMITTED INTO THE ATMOSPHERE FROM ANY OPERATION AT THIS LOCATION:

YES

*As defined in Section 112(b) of the November 15, 1990 Clean Air Act Amendments

30. 1990 CLEAN AIR ACT AMENDMENTS, §112(r)

a. The facility is subject to the requirements of §112(r) of the 1990 Clean Air Act Amendments.

b. The facility has registered in compliance with the State of Delaware "Regulations for the Management of Extremely Hazardous Substances."

(if a registration has not been filed, a "Compliance Schedule" is required to be submitted with this Application).

31. 1990 CLEAN AIR ACT AMENDMENTS, Title VI Requirements

a. Does your facility have any air conditioner or refrigeration equipment that uses CFCs, HCFCs or other ozone-depleting substances?

YES

b. Does any air conditioner(s) or any pieces(s) of refrigeration equipment contain a refrigerant charge greater than fifty (50) pounds?

(if the answer is "YES," describe what type of equipment and how many units are at the facility).

YES: Three Trane centrifugal 1470-ton chillers
Two Trane air-cooled 150-ton chillers
Two Trane 105 Ton Centrifugal Chillers
Three 60 ton DX HVAC Units
Three 75 ton DX HVAC Units
Three 105 Ton DX HVAC Units
FourTrane centrifugal 1000-ton chillers
One 150 Ton DX HVAC Unit
Two 50 Ton Chillers
One 90 Ton DX HVAC Unit

c. Do your facility personnel maintain, service, repair or dispose of any motor vehicle air conditioners (MVACs) or appliances?

NO

d. Cite and describe which Title VI requirements, if any, are applicable to your facility.

40 CFR Part 82, Subpart F (Class I and Class II refrigerants)

32. Complete the following table, indicating each Emission Unit and each Emission Point ID.
Provide the Pint Description, and indicate which forms and other information are included as part of this application.

Emission Unit	Emmision Point ID	Point Description	AQM-1001A	AQM-1001B	AQM-1001C	AQM-1001D	AQM-1001E	AQM-1001F	AQM-1001G	AQM-1001H	AQM-1001J	AQM-1001K	AQM-1001L	AQM-1001M	AQM-1001N	AQM-1001V	AQM-1001W	AQM-1001X	AQM-1001Y	AQM-1001Z	AQM-1001AA	AQM-1001BB	AQM-1001CC	Process Flow Diagram	Site Plan: Stack Data and Locations	Emissions Calculations Sheets	Stack Test Results	Supplemental/Other (Specify)
001	001	Boiler No.1	✔													✔			✔							✔		
002	002	Boiler No.2	✔													✔			✔							✔		
003	003	Boiler No.3	✔													✔			✔							✔		
004	004	Boiler No.4	✔													✔			✔							✔		
006-S	006-S	3M Steri-Vac 8XL Ethylene Oxide Sterilizer		✔								✔				✔			✔							✔		
006	006	Methanol Use (Fugitive)																	✔							✔		
007	007	Formaldehyde Use (Fugitive)																	✔							✔		
EU-107	EU-107	Cummins Cogenerator										✔				✔			✔							✔		
108	108	Emergency Generator 1(A)										✔							✔							✔		
109	109	Emergency Generator 2(B)										✔							✔							✔		
110	110	Emergency Generator 3(C)										✔							✔							✔		
111	111	Emergency Generator 3(D)										✔							✔							✔		

33. I, the undersigned, hereby certify under penalty of law that I am a *Responsible Official* and that I have personally examined and am familiar with the information submitted in this document and all of its attachments. Based on my inquiry of those individuals with prmary responsiblity for obtaining the information, I certify that the information is, on knowledge and belief, true, accurate and complete. I am aware that there are significant pentlaties for submitting false or incomplete information, including the possibility of fine or imprisonment.

By signing this form, I certify that I have not changed, altered, or deleted any portions of this application.

BY: _____ DATE: 10/24/2017

Robert A. Mulrooney
Typed or Printed Name of Signatory

Senior Vice President, Facilities and Services
Title of Signatory

(Use multiple copies of this form if you have more than one unit. One completed form AQM-1001A shall be submitted for each individual unit. For units of less than one (1) MMBtu/hr capacity, applicant may submit a list of those units, specifying type of fuel fired.)

EMISSION POINT NO. 001, 002, 003

AQM-1001A
COMBUSTION UNIT

1. Type of Unit: D-Type Water Tube Nebraska Boiler

   Date Installed: May 1984 Original Cost of this unit: $200,000 ea. of three units

   When more than one unit is present, identify with Company's identification or code for this unit:
   001, 002, 003

2. Rated Capacity-Input (MM Btu/hr): 49.0 (each of three)
   (Refer to manufacturer's specifications if necessary)

3. Does this unit belong to one of the following categories? *(If Yes, check the appropriate category)*

   YES

   - [x] A. Direct fired sources used solely for heating and ventilation;
   - [ ] B. Unit with a capacity of less than 10 million BTU per hour input;

   If the answer is YES, you are required to complete SECTION I, ONLY.
   If the answer is NO, complete both SECTIONS I and II.

SECTION I. FUEL

4. Type of Primary Fuel (Check):

   - A. [ ] Coal
   - B. [ ] Fuel Oil # 2 (Ultra-Low Sulfur Diesel Fuel Oil)
   - C. [x] Natural Gas
   - D. [ ] Propane
   - E. [ ] Butane
   - F. [ ] Wood
   - G. [ ] Other - Describe

5. Secondary Fuel (if any, specify type): Fuel Oil # 2 (Ultra-Low Sulfur Diesel Fuel Oil)

Emission Points 001, 002, 003

AQM-1001A
Continued

6. FUEL COMPOSITION

Type	Percent Ash[a]		Percent Sulfur[b]		MAXIMUM HEAT CONTENT
	Maximum	Average	Maximum	Average	BTU/Unit Quantity[c,d]
Primary (Nat. Gas)	N/A	N/A	N/A	N/A	1030 Btu/scf typical
Secondary (ULSD)	N/A	N/A	0.0015%	0.0015%	140,000 Btu/gal typical

7. Maximum Fuel Usage Rate to which permit will be conditioned (Please specify units):

	RESPECTIVE QUANTITIES[d]	
MONTH	PRIMARY	SECONDARY
JANUARY	n/a	n/a
FEBRUARY	n/a	n/a
MARCH	n/a	n/a
APRIL	n/a	n/a
MAY	n/a	n/a
JUNE	n/a	n/a
JULY	n/a	n/a
AUGUST	n/a	n/a
SEPTEMBER	n/a	n/a
OCTOBER	n/a	n/a
NOVEMBER	n/a	n/a
DECEMBER	n/a	n/a
YEARLY TOTAL--->	n/a	n/a

[a]As received basis, Proximate Analysis for Ash
[b]As received basis, Ultimate Analysis for Sulfur
[c]Higher Heating Value, BTU/unit.
[d]Suggested units are: tons for solid fuel, 1,000 gallons for liquid fuels and 1,000 cubic feet for gaseous fuels. If other units are used, please specify:

8. Maximum operating schedule for this unit:

24 hours/day 7 days/week 52 weeks/year

9. IMPORTANT: Complete AQM-1001K for Air Pollution Control Equipment and stack parameters. If there is no control equipment, complete only Section 1 of AQM-1001K.

(Use multiple copies of this form if you have more than one unit. One completed form AQM-1001A shall be submitted for each individual unit. For units of less than one (1) MMBtu/hr capacity, applicant may submit a list of those units, specifying type of fuel fired.)

EMISSION POINT NO. 004

AQM-1001A
COMBUSTION UNIT

1. Type of Unit: D-Type Water Tube Nebraska Boiler

   Date Installed: 2006 Original Cost of this unit: $550,000

   Where more than one unit is present, identify with Company's identification or code for this unit:
   004

2. Rated Capacity-Input (MM Btu/hr): 46.4
   (Refer to manufacturer's specifications if necessary)

3. Does this unit belong to one of the following categories? *(If Yes, check the appropriate category)*

   YES

   [✔] A. Direct fired sources used solely for heating and ventilation;
   B. Unit with a capacity of less than 10 million BTU per hour input;

   If the answer is YES, you are required to complete SECTION I, ONLY.
   If the answer is NO, complete both SECTIONS I and II.

SECTION I. FUEL

4. Type of Primary Fuel (Check):

   A. [ ] Coal
   B. [ ] Fuel Oil # 2 (Ultra-Low Sulfur Diesel Fuel Oil)
   C. [✔] Natural Gas
   D. [ ] Propane
   E. [ ] Butane
   F. [ ] Wood
   G. [ ] Other - Describe

5. Secondary Fuel (if any, specify type): Fuel Oil # 2 (Ultra-Low Sulfur Diesel Fuel Oil)

Emission Point 004

AQM-1001A
Continued

6. FUEL COMPOSITION

Type	Percent Ash[a]		Percent Sulfur[b]		MAXIMUM HEAT CONTENT
	Maximum	Average	Maximum	Average	BTU/Unit Quantity[c,d]
Primary (Natural Gas)	N/A	N/A	N/A	N/A	1030 Btu/scf typical
Secondary (# 2 Oil)	N/A	N/A	0.0015%	0.0015%	140,000 Btu/gal typical

7. Maximum Fuel Usage Rate to which permit will be conditioned (Please specify units):

	RESPECTIVE QUANTITIES[d]	
MONTH	PRIMARY	SECONDARY
JANUARY	n/a	n/a
FEBRUARY	n/a	n/a
MARCH	n/a	n/a
APRIL	n/a	n/a
MAY	n/a	n/a
JUNE	n/a	n/a
JULY	n/a	n/a
AUGUST	n/a	n/a
SEPTEMBER	n/a	n/a
OCTOBER	n/a	n/a
NOVEMBER	n/a	n/a
DECEMBER	n/a	n/a
YEARLY TOTAL--->	n/a	n/a

[a]As received basis, Proximate Analysis for Ash
[b]As received basis, Ultimate Analysis for Sulfur
[c]Higher Heating Value, BTU/unit.
[d]Suggested units are: tons for solid fuel, 1,000 gallons for liquid fuels and 1,000 cubic feet for gaseous fuels. If other units are used, please specify:

8. Maximum operating schedule for this unit:

24 hours/day 7 days/week 52 weeks/year

9. IMPORTANT: Complete AQM-1001K for Air Pollution Control Equipment and stack parameters. If there is no control equipment, complete only Section 1 of AQM-1001K.

Department of Natural Resources and Environmental Control Division of Air and Waste Management Air Quality Management Section	AQM-1001B *SECTION B*

SECTION B: BATCH PROCESS OPERATIONS ("BP") (Complete a separate Form for each Batch Process)

NOTE: Complete Section B, Batch Process Profile, for each Batch Process in this Permit Application. See instructions for further clarification and information.

1. BATCH PROCESS I.D. NUMBER –or- FACILITY DESIGNATION

006-S

2. BATCH PROCESS DESCRIPTION
(Provide description specifying product produced and operations occurring: e.g., production of XYZ drug in Reactor 6, coating and sorting)

Ethylene Oxide Sterilizer for the purpose of sterilizing surgical equipment

3. OPERATING SCENARIOS ("OS")
(Provide the total of the Operating Scenarios occurring in this Batch Process)

One scenario

4. EQUIPMENT ("E")
(Provide a listing of the Equipment used in this Batch Process)

3M-Steri-Vac 8XL Ethylene Oxide Sterilizer

5. CONTROL DEVICES ("CD")
(Provide the number of, and identify, the air pollution Control Devices used in this Batch Process; complete AQM-1001K for Pollution Control Equipment)

None

6. EMISSION POINTS ("PT")
(Identify the total amount of Emission Points found in this Batch Process)

006-S

7. Emission Summary of Regulated Air Contaminants for this Batch Process ("BP"). (Maximum Emissions) (Provide for each Operating Scenario)

CONTAMINANT CATEGORY/NAME	BATCH PROCESS ("BP") MAXIMUM EMISSIONS (Pounds per Batch)[1]		
	FUGITIVE EMISSIONS[2]	EMISSIONS FROM EMISSION POINTS ("PT")	TOTAL EMISSIONS[3]
VOC (total)			
NOX			
CO			
SO_2			
PM10			
Other			
PM10 (total)			
HAPs (total) (§112(b) definition)		0.375	0.375

CONTAMINANT NAME	CAS No.	BATCH PROCESS ("BP") MAXIMUM EMISSIONS (Pounds per Batch)[1]		
		FUGITIVE EMISSIONS[2]	EMISSIONS FROM EMISSION POINTS ("PT")	TOTAL EMISSIONS[3]
Ethylene Oxide	75-21-8		0.375	0.375

[1]These are your requested emission limits;
(Provide overall air contaminant emissions for all Operating Scenarios for this Batch Process).

[2]Batch Process Fugitive Emissions are the fugitive emissions generated from the equipment used in the Batch Process;
(Provide the total annual fugitive emissions of each air contaminant from all Operating Scenarios in the Batch Process).

[3](Summation of Columns 1 and 2).

8. Are any of the determined emission limits the result of an "Alternate Emission Limit"?[1] NO

[1]If any of the emission levels quantified in the previous sections are entirely or in part limited by an "Alternate Emission Limit", select "YES" and attach a supplemental sheet explaining the basis for the Alternate Emission Limit. Some examples of Alternate Emission Limits are: a probationary rule, a federally-enforceable rule, or an approved case-by-case rule.

9. EQUIPMENT INVENTORY ("E")
(Provide a list and description of all major equipment described in one (1) Batch Process; provide specific information for each piece of major equipment)

BATCH PROCESS I.D. NUMBER -or- FACILITY DESIGNATION[1]	EQUIPMENT I.D.	TYPE/DESCRIPTION[2]	SIZE OR CAPACITY[3]
006-S	006-S	Steri-Vac Ethylene Oxide Canister	170 grams per canister

[1]Batch Process I.D. Number or Facility Designation, as provided in Section B(1).

[2]An overview for the piece of equipment, which includes its function, attributes and make and model, if known; e.g., Genco AC2200 Glass-Lined Reactor.

[3]The maximum volume of flow accommodated by the piece of equipment; e.g., 250-gallon Kettle, 500-gallon Reactor, 50-pound-per-hour Dispenser.

10. CONTROL DEVICE INVENTORY ("CD")*

Complete AQM-1001K for each air pollution control device; if there is no control equipment, complete only Section 1 of AQM-1001K)

CONTROL DEVICE I.D.	FACILITY'S DESIGNATION[1]	TYPE/DESCRIPTION[2]
N/A	N/A	N/A

* " Control Device" refers to an Air Pollution Control Apparatus, not a control apparatus which is necessary to execute a process.

[1]The NAME your facility uses for the piece of equipment.

[2]An overview for the piece of equipment, which includes its attributes and make and model, if known.

Department of Natural Resources and Environmental Control Division of Air and Waste Management Air Quality Management Section	AQM-1001B Continued

FACILITY I.D. NO.: 1000300080

11. OPERATING SCENARIO DESCRIPTION
(For a batch Process, the process line used to produce a single product is synonymous with an Operating Scenario ("OS"); complete this section for each Operating Scenario ("OS").

Attach a block/flow diagram for each Operating Scenario ("OS").

OPERATION SCENARIO I.D. NUMBER: OS: 1	OVERALL RUN TIME: Maximum (hours): 8 Minimum (hours): 2

FACILITY'S DESIGNATION and PRODUCT NAME (if applicable): Surgery Unit; Sterilized Surgical Instruments

PRODUCT DESCRIPTION: Sterilized Surgical Instruments

List major raw materials for each Operating Scenario (" OS")

PROCESS STEP		I.D. NUMBERS		STEP TIME (Hours)		GAS DISCHARGE INFORMATION FLOW (acfm)		TEMPERATURE (°F)	
OS No.[1]	DESCRIPTION[2]	EQUIPMENT[3]	CONTROL DEVICE[4]	MIN.[5]	MAX.[5]	MIN.	MAX.	MIN.	MAX.
1	Sterilizing Surgical Instruments	006-S	N/A	2	8	4.5	4.5	100	131

1Sequential Number, starting at 1.
2Brief description of operations occurring during this scenario.
3Use Equipment I.D. Number from Equipment Inventory ("E").
4Identify Air Pollution Control Device.
5Minimum and maximum amounts of time needed for this operation to occur, in hours, rounded to the nearest tenth.

Department of Natural Resources and Environmental Control Division of Air and Waste Management Air Quality Management Section	AQM-1001B Continued

FACILITY I.D. NO.: 1000300080

12. EMISSIONS OF REGULATED AIR CONTAMINANTS FOR THIS OPERATING SCENARIO ("OS")

CONTAMINANT CATEGORY / NAME	TOTAL MAXIMUM EMISSIONS FROM OPERATING SCENARIO *(at Maximum Flow Rates and Maximum Run Times)* *(pounds per batch)*
VOC (total)	0.375
NOx	
CO	
SO2	
PM (total)	
Other	
PM10 (total)	
HAPs[1]	0.375

CONTAMINANT NAME	*CAS* NUMBER	TOTAL MAXIMUM EMISSIONS FROM OPERATING SCENARIO *(at Maximum Flow Rates and Maximum Run Times)* *(pounds per batch)*
Ethylene Oxide	75-21-8	0.375

1As defined by Section 112(b) of the 1990 Clean Air Act Amendents.

Department of Natural Resources and Environmental Control Division of Air and Waste Management Air Quality Management Section	AQM-1001K STACK PARAMETERS AND AIR POLLUTION CONTROL EQUIPMENT

NAME OF COMPANY: Christiana Care

SECTION I. SUMMARY SHEET *(Make additional copies, if necessary)*

EMISSION POINT SUMMARY	EMISSIONS UNIT DESCRIPTION(S)	CONTROL EQUIPMENT			STACK PARAMETERS					CONTROL EFFICIENCY	CAPTURE OR COLLECTION EFFICIENCY %	BASIS OF ESTIMATE
		TYPE	DATE INSTALLED	COST $	HEIGHT *ft.*	DIAMETER *ft.*	TEMP. *°F*	FLOW *acfm*	EXIT VELOCITY *ft/sec*			
108	Dual Fuel Emergency Generator 1(A)	NSCR*	2017	N/A	36	1.67	1,022	18,269	139	N/A	100%	Vendor Information
109	Dual Fuel Emergency Generator 2(B)	NSCR*	2017	N/A	36	1.67	1,022	18,269	139	N/A	100%	
110	Dual Fuel Emergency Generator 3(C)	NSCR*	2017	N/A	36	1.67	1,022	18,269	139	N/A	100%	
111	Dual Fuel Emergency Generator 4(D)	NSCR*	2017	N/A	36	1.67	1,022	18,269	139	N/A	100%	
006-S	3M-Steri-Vac Ethylene Oxide Sterilizer	N/A	N/A	N/A	42	0.0625	131	4.45	24.2	N/A	100%	

*NSCR = Non-Selective Catalytic Reduction

**Maximum annual emissions for each generator

1. If an emission unit has secondary control equipment in addition to primary control equipment, use a separate line and indicate, under TYPE, that it is a secondary control.
2. If the stack is rectangular, specify the dimensions. If there is no stack for a particular point, enter the minimum height of release under HEIGHT, and write NA (Not Applicable) under DIAMETER.
3. Capture or collection efficiency is the efficiency with which the pollutants are collected at the emission source before being sent to the control device.

SECTION I. SUMMARY SHEET (Continued) (Make Additional copies, if necessary)	AQM-1001K (Continued)

NAME OF COMPANY: Christiana Care

SECTION I. SUMMARY SHEET ***(Make additional cpies, if necessary)***

EMISSION POINT NUMBER	NAME AND CHEMICAL COMPOSITION OF POLLUTANTS		MAXIMUM POLLUTANT EMISSION BEFORE CONTROLS *(Specify Units)*		AMOUNT EMITTED AFTER CONTROLS		BASIS OF ESTIMATE (Attach copies of calculations)
			INLET *(lb/hr)*	OUTLET *(lb/hr)*	MAXIMUM *(lb/hr)*	MAXIMUM *(tons/yr)**	
108, 109, 110, 111 Total Emissions of Four (4) Cummins Emergency Generators	Particulate Matter	(PM)	4.79	4.79	4.79	0.479	Basis of Estimate is provided on Permit Application Document Dated September 12, 2016: "Air Construction Permit Application for Proposed Replacement of Six (6) Emergency Generators"
	Sulfur Dioxide	(SO_x)	0.155	0.155	0.155	0.0155	
	Nitrogen Oxides	(NOx)	153	153	153	15.3	
	VOC	(VOC)	0	0	0	0	
	Carbon Monoxide	(CO)	83.8	83.8	83.8	8.38	
	Carbon Dioxide	(CO_2)	17,007	17,007	17,007	1,701	
EU-107 Cummins Cogenerator	Particulate Matter	(PM)	0.374	0.374	0.374	1.64	Comparison of Engine emission Rates with DNREC Reg 1144 and EPA Part 60 Subpart JJJJ Table 1 Limits
	Sulfur Dioxide	(SO_x)	0.0091	0.00913	0.00913	0.040	
	Nitrogen Oxides	(NOx)	6.23	1.20	1.20	5.26	
	VOC	(VOC)	0.600	0.600	0.600	2.63	
	Carbon Monoxide	(CO)	12.9	4.00	4.00	17.52	
	Carbon Dioxide	(CO_2)	2,358	2,358	2,358	10,326	
	Formaldehyde	(CH_2O)	1.03	1.03	0.308	1.35	
	Ammonia	(NH_3)	0.27	0.27	0.27	1.18	
006-S	Ethylene Oxide	(C_2H_4O)	0.187	0.187	0.187	0.82	Table 9 of Monthly Worksheets

*Basis: annual limit = 200 hours for each generator

7 DE Admin. Code 1130 Title V State Operating Permit Program APPLICABLE REQUIREMENTS Air Quality Management Section	AQM-1001V

SOURCE NAME: Christiana Hospital

Emissions Units: 108, 109, 110, 111

1. Provide any restrictions on operation which affect emissions or operations: (e.g., only one unit is operated at a time):

CONTAMINANT	APPLICABLE REGULATION[1] 2.0	EMISSION STANDARD[1] 2.1	RECORDKEEPING REGULATION[2] 3.0	REQUIREMENT[2] 3.1	REPORTING REGULATION[3] 4.0	REQUIREMENT[3] 4.1
Emission Units	7 DE 1144 Section 2.1, 5.1, 6.1.2	Verifying no visible smoking after initial startup	7 DE 1130 6.1.3.2.2, 6.2.1, 1.4, 7.3.3, 7.3.5; 7 DE 1144 5.1	Record date/time/hrs of operation, fuel usage, visible emissions, stack tests, monthly rolling annual emissions. Keep fuel oil certification and oxidation catalyst operating/ maintenance vendor recommendations. Retain records 5 years	7 DE 1130 6.1.3.3.3.2, 6.1.3.3.3.3, 6.1.3.3.3.4, 6.1.3.3.3.5	Report excess emissions and other violations to DNREC 24-hr complaint line 800-662-8802; submit annual compliance certification on Form AQM-1001BB
Emission Units		Odors shall not be detectable beyond property boundary				
Emission Units	7 DE 1144 Section 4.3	Each generator limited to 200 annual hours of operation				
Emission Units	7 DE 1144 Section 4.4	No generators used for testing or maintenance before 5 p.m. during ozone codes Purple, Red or Orange				
Emission Units	7 DE 1144 Section 6.1.2	Each generator to be equipped with non-resettable hour metering device;				
Emission Units	7 DE 1144 7.4, 11.6	NSCR control device shall be operated in conformance with vendor instructions and maintenance schedules				

7 DE Admin. Code 1130 Title V State Operating Permit Program APPLICABLE REQUIREMENTS Air Quality Management Section	AQM-1001V

SOURCE NAME: Christiana Hospital

Emissions Units: 006-S

1. Provide any restrictions on operation which affect emissions or operations: (e.g., only one unit is operated at a time):

CONTAMINANT	APPLICABLE REGULATION[1] 2.0	EMISSION STANDARD[1] 2.1	RECORDKEEPING REGULATION[2] 3.0	REQUIREMENT[2] 3.1	REPORTING REGULATION[3] 4.0	REQUIREMENT[3] 4.1
Ethylene Oxide	7 DE 1100	EtO emissions limited to 4.5 lb/day and 0.82 tons per rolling 12-month period	N/A	Record mass of ethylene oxide bottales and % EtO in each bottle; daily mass of EtO used; cumulative monthly and calendar totals; daily hours of operation and cumulative monthly and calendar totals; date and time of each sterilization cycle	N/A	Report excess emissions and other violations to DNREC 24-hr complaint line 800-662-8802; detailed excess emissions report within 30 days confirming report; submit annual compliance certification on Form AQM-1001BB

7 DE Admin. Code 1130 Title V State Operating Permit Program APPLICABLE REQUIREMENTS Air Quality Management Section	AQM-1001V

SOURCE NAME: Christiana Hospital Emissions Units: EU-107

1. Provide any restrictions on operation which affect emissions or operations: (e.g., only one unit is operated at a time):

CONTAMINANT	APPLICABLE REGULATION[1] 2.0	EMISSION STANDARD[1] 2.1	RECORDKEEPING REGULATION[2] 3.0	REQUIREMENT[2] 3.1	REPORTING REGULATION[3] 4.0	REQUIREMENT[3] 4.1
Emission Units	Regulations described in Permit APC-2015/0083, dated 8/24/2015: 7DE 1101, 1102, 1130, 1112, 1104, 1114, 1119, 1144, 1117	NOx shall not exceed 5.26 tons per twelve month period. Non-Methane Hydrocarbon (NMHC) emissions shall not exceed 2.63 tons per 12-month period. PM10 emissions shall not exceed 0.7 lb/hr and 1.64 tons per twelve month period. Carbon Monoxide Emissions shall not exceed 17.52 tons per 12 month period. Carbon Dioxide Emissions shall not exceed 10,326 tons per 12 month period. Sulfur Dioxide Emissions shall not exceed 0.04 tons per 12-month period. Formaldehyde Emissions shall not exceed 0.31 lb/hr and 1.35 tons per 12 month period Ammonia emissions shall not exceed 0.270 lb/hr and 1.18 tons per twelve month period	N/A	Measure fuel usage. Demonstrate compliance on monthly reporting worksheets.	N/A	Report excess emissions and other violations to DNREC 24-hr complaint line 800-662-8802; detailed excess emissions report within 30 days confirming report; submit annual compliance certification on Form AQM-1001BB

[1]2.0-2.1 Provide any specific emission standard(s) and limitations(s) set by regulations(s) which are applicable to the emission unit (e.g., VOC content of coating, not to exceed 3.5

[2]3.0-3.1 Provide any specific recordkeeping regulation which is applicable to the emissions unit.

[3]4.0-4.1 Provide any specfic reporting regulation which is applicable to the emissions unit.

7 De Admin Code 1130 Title V State Operating Permit Program Air Quality Management Section	AQM-1001Y

COMPLIANCE STATUS

FOR DEPARTMENT USE ONLY
I. D. NO.:
PERMIT No.:
DATE:

SOURCE INFORMATION

1. Source Name: Christiana Hospital
2. Source Street Address: 4755 Ogletown-Stanton Road
3. City: Newark 4. Date Form Prepared: 10/24/2017 5. Source I.D. No.: *(if known)*

The Division of Air and Waste Management requires each applicant for a permit to complete status form for each emission unit regardless of its compliance status. The compliance status of each emission unit must be stated, and compliance schedule form AQM-1001AA must be completed and submitted for emissions units in noncompliance at the time the permit is issued.

6. EMISSIONS UNITS IN COMPLIANCE

The following emissions units are in compliance with all *Applicable Requirements,* and will continue to comply with such requirements during the permit:

EMISSIONS POINT NO.	EMISSIONS UNIT NO.	EMISSIONS UNIT DESCRIPTION
001	001	Boiler No.1
002	002	Boiler No.2
003	003	Boiler No.3
004	004	Boiler No.4
006-S	006-S	3M Steri-Vac 8XL Ethylene Oxide Sterilizer
006	006	Methanol Use (Fugitive)
007	007	Formaldehyde Use (Fugitive)
107	107	Cummins Cogenerator
108	108	Diesel Emergency Generator 1 (A)
109	109	Diesel Emergency Generator 2 (B)
110	110	Diesel Emergency Generator 3 (C)
111	111	Diesel Emergency Generator 4 (D)
201	201	Surgical Center Boiler No. 1
202	202	Surgical Center Boiler No. 2
203	203	Surgical Center Emergency Generator No.1
301	301	Medical Arts Pavillion II Blr 1
302	302	Medical Arts Pavillion II Blr 2
303	303	Medical Arts Pavillion II Blr 3
304	304	Medical Arts Pavillion II Emergency Generator
401	401	Cancer Center Blr 1
402	402	Cancer Center Blr 2
403	403	Cancer Center Emergency Generator 1
404	404	Cancer Center Emergency Generator 2
405	405	Cancer Center Expansion 2 Boilers
501	501	Textiles Area Natural Gas Dryers
502	502	Two ironers

7. EMISSIONS UNITS IN COMPLIANCE, BUT SUBJECT TO FUTURE COMPLIANCE DATES

The following emission units, which are currently in compliance with all *Applicable Requirements*, will achieve on a timely basis and maintain, compliance with future compliance dates as they become applicable during the permit term:

EMISSIONS POINT NO.	EMISSIONS UNIT NO.	EMISSIONS UNIT DESCRIPTION	FUTURE COMPLIANCE DATE
None	None	None	None

COMPLIANCE STATUS *(Continued)*	AQM-1001Y *(Continued)*

8. EMISSIONS UNITS NOT IN COMPLIANCE - COMPLIANCE TO BE ACHIEVED PRIOR TO PERMIT ISSUANCE: The following emissions units are not in compliance with all *Applicable Requirements at the time of permit application; however,* these emissions units will achieve compliance with all *Applicable Requirements* prior to permit issuance, and will continue to comply with such requirements during the permit term:and will continue to comply with such requirements during the permit term:

EMISSIONS POINT NO.	EMISSIONS UNIT NO.	EMISSIONS UNIT DESCRIPTION	DATE COMPLIANCE TO BE ACHIEVED
None	None	None	None

9. EMISSIONS UNITS IN COMPLIANCE - COMPLIANCE WILL NOT BE ACHIEVED PRIOR TO PERMIT ISSUANCE The following emissions units are not in compliance with all *Applicable Requirements* at the time of permit issuance. Form AQM-1001AA must be submitted for emission units not in compliance with all *Applicable Requirements* at the time of permit issuance. Form AQM-1001AA is submitted for the following emissions units:

EMISSIONS POINT NO.	EMISSIONS UNIT NO.	EMISSIONS UNIT DESCRIPTION	FUTURE COMPLIANCE DATE
None	None	None	None

NOTE: For emission units not in compliance complete Form AQM-1001AA.

Appendix

Emission Calculation Tables

Table 1
Christiana Care
Blrs 1-4 Emissions Based Exclusively on Heat Input from Natural Gas and Current DNREC NOx Emission Limit (Blrs 1-3)

Pollutant		Emission Factors Nat. Gas (lb/MMcf)	Maximum (Potential) Hourly Emissions (lb/hr) Emission Unit # 001 Blr. 1	002 Blr. 2	003 Blr. 3	Total Blrs 1-3	004 Blr. 4	Total Blrs 1-4	Annual Emissions (ton/yr) Emission Unit # 001 Blr. 1	002 Blr. 2	003 Blr. 3	Total Blrs 1-3*	004 Blr. 4**	Subtotal Blrs 1-4	Emission Unit # 105 Surgi Blr 1	106 Surgi Blr 2	Subtotal Surgical Ctr Boilers	Total All Boiler Units
PM		7.60	0.362	0.362	0.362	1.08	**0.342**	1.43	1.013	1.013	1.013	**3.04**	**1.12**	4.16	1.2E-04	1.2E-04	2.4E-04	4.16
SO_2		0.600	0.0285	0.0285	0.0285	0.0856	**0.027**	0.113	0.0800	0.0800	0.0800	**0.240**	**0.088**	0.328	1.3E-05	1.3E-05	2.6E-05	0.328
NO_x		100	4.76	4.76	4.76	14.3	**4.50**	18.8	13.3	13.3	13.3	**40.0**	**14.74**	54.7	0.00120	0.00120	0.00240	54.7
VOC		5.50	0.262	0.262	0.262	0.785	**0.248**	1.03	0.733	0.733	0.733	**2.20**	**0.811**	3.01	1.5E-05	1.5E-05	3.0E-05	3.01
CO		84.0	4.00	4.00	4.00	12.0	**3.78**	15.8	11.2	11.2	11.2	**33.6**	**12.4**	46.0	3.0E-04	3.0E-04	6.0E-04	46.0
Lead		5.0E-04	2.4E-05	2.4E-05	2.4E-05	7.1E-05	2.3E-05	9.4E-05	6.7E-05	6.7E-05	6.7E-05	2.0E-04	7.4E-05	2.7E-04	7.6E-08	7.6E-08	1.5E-07	2.7E-04
HAPs	CAS #																	
Antimony & Compounds	SBC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Arsenic & Compounds	ASC	2.0E-04	9.5E-06	9.5E-06	9.5E-06	2.9E-05	9.0E-06	3.8E-05	2.7E-05	2.7E-05	2.7E-05	8.0E-05	2.9E-05	1.1E-04	3.4E-08	3.4E-08	6.7E-08	1.1E-04
Benzene	71432	0.00210	1.0E-04	1.0E-04	1.0E-04	3.0E-04	9.5E-05	3.9E-04	2.8E-04	2.8E-04	2.8E-04	8.4E-04	3.1E-04	0.00115	0	0	0	0.00115
Beryllium & compounds	BEC	0	0	0	0	0	0	0	0	0	0	0	0	0	2.5E-08	2.5E-08	5.0E-08	5.0E-08
Cadmium & compounds	CDC	0.00110	5.2E-05	5.2E-05	5.2E-05	1.6E-04	5.0E-05	2.1E-04	1.5E-04	1.5E-04	1.5E-04	4.4E-04	1.6E-04	6.0E-04	2.5E-08	2.5E-08	5.0E-08	6.0E-04
Chromium All/Total	CRC	0.00140	6.7E-05	6.7E-05	6.7E-05	2.0E-04	6.3E-05	2.6E-04	1.9E-04	1.9E-04	1.9E-04	5.6E-04	2.1E-04	7.7E-04	2.5E-08	2.5E-08	5.0E-08	7.7E-04
Cobalt compounds	COC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ethyl benzene	100414	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Formaldehyde	50000	0.0750	0.00357	0.00357	0.00357	0.0107	0.00338	0.0141	0.01000	0.01000	0.01000	0.0300	0.0111	0.0411	2.9E-06	2.9E-06	5.8E-06	0.0411
Lead & Lead compounds	PBC	5.0E-04	2.4E-05	2.4E-05	2.4E-05	7.1E-05	2.3E-05	9.4E-05	6.7E-05	6.7E-05	6.7E-05	2.0E-04	7.4E-05	2.7E-04	7.6E-08	7.6E-08	1.5E-07	2.7E-04
Manganese & compounds	MNC	0	0	0	0	0	0	0	0	0	0	0	0	0	5.0E-08	5.0E-08	1.0E-07	1.0E-07
Mercury & Compounds	HGC	0	0	0	0	0	0	0	0	0	0	0	0	0	2.5E-08	2.5E-08	5.0E-08	5.0E-08
Nickel & Compounds	NIC	0	0	0	0	0	0	0	0	0	0	0	0	0	2.5E-08	2.5E-08	5.0E-08	5.0E-08
Phosphorus	7723140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polycyclic Organic Matter	POM	6.4E-04	3.0E-05	3.0E-05	3.0E-05	9.1E-05	2.9E-05	1.2E-04	8.5E-05	8.5E-05	8.5E-05	2.6E-04	9.4E-05	3.5E-04	2.0E-07	2.0E-07	4.0E-07	3.5E-04
Selenium compounds	SEC	0	0	0	0	0	0	0	0	0	0	0	0	0	1.3E-07	1.3E-07	2.5E-07	2.5E-07
Toluene	108883	0.00340	1.6E-04	1.6E-04	1.6E-04	4.9E-04	1.5E-04	6.4E-04	4.5E-04	4.5E-04	4.5E-04	0.00136	5.0E-04	0.00186	0	0	0	0.00186
Trichloroethane, 1,1,2-	79005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Xylene	1330207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maximum HAP									0.0100	0.0100	0.0100	0.0300	0.0111	0.0411				**0.0411**
Total HAPs			0.00401	0.00401	0.00401	0.0120	0.00380	0.0158	0.0112	0.0112	0.0112	0.0337	0.0124	0.0462				**0.0462**
Allowable Max. Fuel Use (MMcf nat. gas)			0.0476	0.0476	0.0476	0.143	0.04505	0.188	**267**	**267**	**267**	800	295	1,095	0	0	0	1,095
Maximum Fuel Use (Mgal No. 2)			0	0	0	0	0	0	0	0	0	0	0	0	0.120	0.120	0.240	0.240
Maximum Fuel Use (Mgal No. 6)			0	0	0	0	0	0	0	0	0	0	0	0			0	0
Projected Annual Fuel Use (Billion Btu)																		
Maximum Hourly Fuel Use (MMBtu/hr)			49.0	49.0	49.0	147.0	46.4	193										
Annual Operating Hours									**5,605**	**5,605**	**5,605**		**6,544**		876	876		
Hourly fuel usage limit (MMCF/hr)									**0.0476**	**0.0476**	**0.0476**		**0.04505**					
Annual Operating Hours (% of calendar max.)									**64.0%**	**64.0%**	**64.0%**		**74.7%**		10%	10%		

***Blrs 1-3 annual emissions based on 40 ton/yr total NOx limit**

****Blr 4 Potential Annual Emissions (6,544 annual hrs)**

Table 2
Christiana Care
Blrs 1-4 Maximum Allowable Emissions Based on No. 2 Oil and Current DNREC Annual NOx Emission Limits

Pollutant		Emission Factors ULSD No. 2 Oil (lb/Mgal)	Maximum (Potential) Hourly Emissions (lb/hr) Emission Unit # 001 Blr. 1	002 Blr. 2	003 Blr. 3	Blrs 1-3	004 Blr. 4	Subtotal Blrs 1-4	Allowable Annual Emissions (ton/yr) Emission Unit # 001 Blr. 1	002 Blr. 2	003 Blr. 3	Blrs 1-3*	004 Blr. 4**	Subtotal Blrs 1-4	Emission Unit # 105 Surgi Blr 1	106 Surgi Blr 2	Subtotal Surgical Ctr Boilers	Total All Boiler Units
PM		2.00	**0.700**	**0.700**	**0.700**	2.10	**0.663**	2.76	1.33	1.33	1.33	**4.00**	1.47	5.47	1.2E-04	1.2E-04	2.4E-04	5.47
SO_2		0.213	**0.0746**	**0.0746**	**0.0746**	0.224	**0.0706**	0.294	0.142	0.142	0.142	**0.426**	**0.157**	0.583	1.3E-05	1.3E-05	2.6E-05	0.583
NO_x		20.0	**7.00**	**7.00**	**7.00**	21.0	**6.63**	27.6	13.3	13.3	13.3	**40.0**	**14.74**	54.7	0.00120	0.00120	0.00240	54.7
VOC		0.252	**0.0882**	**0.0882**	**0.0882**	0.265	**0.0835**	0.348	0.168	0.168	0.168	**0.504**	0.186	0.690	1.5E-05	1.5E-05	3.0E-05	0.690
CO		5.00	**1.75**	**1.75**	**1.75**	5.25	1.66	6.91	3.33	3.33	3.33	**10.00**	3.69	13.7	3.0E-04	3.0E-04	6.0E-04	13.7
Lead		0.00126	4.4E-04	4.4E-04	4.4E-04	0.00132	4.2E-04	0.00174	8.4E-04	8.4E-04	8.4E-04	0.00252	0.00093	0.00345	7.6E-08	7.6E-08	1.5E-07	0.00345
HAPs	CAS #																	
Antimony & Compounds	SBC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Arsenic & Compounds	ASC	5.6E-04	2.0E-04	2.0E-04	2.0E-04	5.9E-04	1.9E-04	7.7E-04	3.7E-04	3.7E-04	3.7E-04	0.00112	4.1E-04	0.00153	3.4E-08	3.4E-08	6.7E-08	0.00153
Benzene	71432	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beryllium & compounds	BEC	4.2E-04	1.5E-04	1.5E-04	1.5E-04	4.4E-04	1.4E-04	5.8E-04	2.8E-04	2.8E-04	2.8E-04	8.4E-04	3.1E-04	0.00115	2.5E-08	2.5E-08	5.0E-08	0.00115
Cadmium & compounds	CDC	4.2E-04	1.5E-04	1.5E-04	1.5E-04	4.4E-04	1.4E-04	5.8E-04	2.8E-04	2.8E-04	2.8E-04	8.4E-04	3.1E-04	0.00115	2.5E-08	2.5E-08	5.0E-08	0.00115
Chromium All/Total	CRC	4.2E-04	1.5E-04	1.5E-04	1.5E-04	4.4E-04	1.4E-04	5.8E-04	2.8E-04	2.8E-04	2.8E-04	8.4E-04	3.1E-04	0.00115	2.5E-08	2.5E-08	5.0E-08	0.00115
Cobalt compounds	COC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ethyl benzene	100414	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Formaldehyde	50000	0.0480	0.0168	0.0168	0.0168	0.0504	0.0159	0.0663	0.0320	0.0320	0.0320	0.0960	0.0354	0.131	2.9E-06	2.9E-06	5.8E-06	0.131
Lead & Lead compounds	PBC	0.00126	4.4E-04	4.4E-04	4.4E-04	0.00132	4.2E-04	0.00174	8.4E-04	8.4E-04	8.4E-04	0.00252	0.00093	0.00345	7.6E-08	7.6E-08	1.5E-07	0.00345
Manganese & compounds	MNC	8.4E-04	2.9E-04	2.9E-04	2.9E-04	8.8E-04	2.8E-04	0.00116	5.6E-04	5.6E-04	5.6E-04	0.00168	6.2E-04	0.00230	5.0E-08	5.0E-08	1.0E-07	0.00230
Mercury & Compounds	HGC	4.2E-04	1.5E-04	1.5E-04	1.5E-04	4.4E-04	1.4E-04	5.8E-04	2.8E-04	2.8E-04	2.8E-04	8.4E-04	3.1E-04	0.00115	2.5E-08	2.5E-08	5.0E-08	0.00115
Nickel & Compounds	NIC	4.2E-04	1.5E-04	1.5E-04	1.5E-04	4.4E-04	1.4E-04	5.8E-04	2.8E-04	2.8E-04	2.8E-04	8.4E-04	3.1E-04	0.00115	2.5E-08	2.5E-08	5.0E-08	0.00115
Phosphorus	7723140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polycyclic Organic Matter	POM	0.00330	0.00116	0.00116	0.00116	0.00347	0.00109	0.00456	0.00220	0.00220	0.00220	0.00660	0.00243	0.0090	2.0E-07	2.0E-07	4.0E-07	0.0090
Selenium compounds	SEC	0.00210	7.4E-04	7.4E-04	7.4E-04	0.00221	7.0E-04	0.00290	0.00140	0.00140	0.00140	0.00420	0.00155	0.00575	1.3E-07	1.3E-07	2.5E-07	0.00575
Toluene	108883	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trichloroethane, 1,1,2-	79005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Xylene	1330207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maximum HAP							0.0159		0.0320	0.0320	0.0320	0.0960	0.0354	0.131				**0.131**
Total HAPs							0.0193		0.0388	0.0388	0.0388	0.116	0.0429	0.159				**0.159**
Maximum Fuel Use (MMcf natural gas)															0	0	0	
Maximum Fuel Use (Mgal No. 2)			0.350	0.350	0.350	1.05	0.331	1.38	1,333	1,333	1,333	4,000	1,474	5,474	0.120	0.120	0.240	5,474
Maximum Fuel Use (Mgal No. 6)			0	0	0	0	0	0	0	0	0	0	0	0			0	0
Projected Annual Fuel Use (Billion Btu)																		
Maximum Hourly Fuel Use (MMBtu/hr)			49.0	49.0	49.0	147.0	46.4	193										
Annual Operating Hours									3,810	3,810	3,810		4,447		876	876		
Annual Operating Hours (% of calendar max.)									43%	43%	43%		51%		10%	10%		

***Blrs 1-3 annual emissions based on 40 ton/yr total NOx limit** ****Blr 4 annual emissions based on 14.74 ton/yr total NOx limit**