INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
We make Indiana a cleaner, healthier place to live.

Frank O'Bannon
Governor

Lori F. Kaplan
Commissioner

100 North Senate Avenue
P. O. Box 6015
Indianapolis, Indiana 46206-6015
(317) 232-8603
(800) 451-6027
www.state.in.us/idem

CONSTRUCTION PERMIT and PERMIT-BY-RULE OFFICE OF AIR QUALITY

Saint Margaret Mercy Hospital
U.S. Highway 30
Dyer, Indiana 46311

(herein known as the Permittee) is hereby authorized to construct and operate subject to the conditions contained herein, the emission units described in Section A (Source Summary) of this permit.

This permit is issued to the above mentioned company under the provisions of 326 IAC 2-1.1, 326 IAC 2-5.1, 326 IAC 2-10 and 40 CFR 52.780, with conditions listed on the attached pages.

Operation Permit No.:CP-089-15693-00429	
Issued by: Original Signed by Paul Dubenetzky Paul Dubenetzky, Branch Chief Office of Air Quality	Issuance Date: August 26, 2002

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SECTION A SOURCE SUMMARY

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ). The information describing the source contained in conditions A.1 through A.3 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this permit pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

A.1 General Information [326 IAC 2-5.1-3(c)]

The Permittee owns and operates boilers in a stationary medical and surgical hospital.

Authorized individual:	Power Plant Manager
Source Address:	U.S. Highway 30, Dyer, Indiana 46311
Mailing Address:	5454 Hohman Avenue, Hammond, Indiana 46320
SIC Code:	8062
Source Location Status:	Lake
County Status:	Attainment for all criteria pollutants
Source Status:	Permit-By-Rule Minor Source, under PSD

A.2 Emissions Units and Pollution Control Equipment Summary

This stationary source is approved to operate the following emissions units and pollution control devices:

(a) Two (2) natural gas-fired boilers, identified as B-1 and B-2, each having a maximum heat input capacity of 36.6 MMBtu per hour. The boilers use fuel oil No.2 as a backup fuel.

(b) One (1) natural gas-fired boiler, identified as B-3, having a maximum heat input capacity of 10.5 MMBtu per hour. The boiler uses fuel oil No. 2 as a backup fuel.

(c) Two (2) diesel emergency generators, identified as EG-1 and EG-2, having a maximum capacity of 750 kW for EG-1 and 1,000 kW for EG-2, constructed in 1996 and 1985, respectively.

(d) One (1) twenty thousand (20,000) gallon underground storage tank used to store fuel oil No. 2.

Note: The new boilers replace the boilers built in 1952, 1972, and 1980.

SECTION B GENERAL CONSTRUCTION CONDITIONS

B.1 Permit No Defense [IC 13]

This permit to construct does not relieve the Permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.

B.2 Definitions

Terms in this permit shall have the definition assigned to such terms in the referenced regulation. In the absence of definitions in the referenced regulation, any applicable definitions found in IC 13-11, 326 IAC 1-2, and 326 IAC 2-1.1-1 shall prevail.

B.3 Effective Date of the Permit [IC13-15-5-3]

Pursuant to IC 13-15-5-3, this permit becomes effective upon its issuance.

B.4 Revocation of Permits [326 IAC 2-1.1-9(5)]

Pursuant to 326 IAC 2-1.1-9(5)(Revocation of Permits), the Commissioner may revoke this permit if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.

B.5 Modification to Permit [326 IAC 2]

All requirements and conditions of this construction permit shall remain in effect unless modified in a manner consistent with procedures established for modifications of construction permits pursuant to 326 IAC 2 (Permit Review Rules).

B.6 NSPS Reporting Requirement

Pursuant to the New Source Performance Standards (NSPS), Part 60., Subpart Dc, the source owner/operator is hereby advised of the requirement to report the following at the appropriate times:

(a) Commencement of construction date (no later than 30 days after such date);

(b) Anticipated start-up date (not more than 60 days or less than 30 days prior to such date);

(c) Actual start-up date (within 15 days after such date); and

(d) Date of performance testing (at least 30 days prior to such date), when required by a condition elsewhere in this permit.

Reports are to be sent to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue, P. O. Box 6015
Indianapolis, IN 46206-6015

The application and enforcement of these standards have been delegated to the IDEM, OAQ. The requirements of 40 CFR Part 60 are also federally enforceable.

SECTION C SOURCE OPERATION CONDITIONS

Entire Source

C.1 PSD Minor and Permit-by-Rule Source Status [326 IAC 2-2] [40 CFR 52.21] [326 IAC 2-10]

(a) The total source potential to emit all criteria pollutants of is less than 20 tons per year. Therefore the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration) will not apply.

(b) Any change or modification which increases actual VOC or NOx emissions to 5 tons per year or 20 tons per year for all other pollutants from this source shall require approval from IDEM, OAQ prior to making the change.

(c) Any change or modification which increases actual to 2 tons per year of any single hazardous air pollutant, 5 tons per year of any combination of hazardous air pollutants, or 20 tons per year of any other regulated pollutant from this source shall require approval from IDEM, OAQ prior to making the change.

C.2 Source Modification [326 IAC 2-7-10.5]

(a) The Permittee must comply with the requirements of 326 IAC 2-7-10.5 whenever the Permittee seeks to construct new emissions units, modify existing emissions units, or otherwise modify the source.

(b) Any application requesting an amendment or modification of this permit shall be submitted to:

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue, P.O. Box 6015
Indianapolis, Indiana 46206-6015

Any such application should be certified by the “responsible official” as defined by 326 IAC 2-7-1(34) only if a certification is required by the terms of the applicable rule.

C.3 Inspection and Entry

Upon presentation of proper identification cards, credentials, and other documents as may be required by law, and subject to the Permittee’s right under all applicable laws and regulations to assert that the information collected by the agency is confidential and entitled to be treated as such, the Permittee shall allow IDEM, OAQ, U.S. EPA, or an authorized representative to perform the following:

(a) Enter upon the Permittee's premises where a permitted source is located, or emissions related activity is conducted, or where records must be kept under the conditions of this permit;

(b) Have access to and copy, at reasonable times, any records that must be kept under this title or the conditions of this permit or any operating permit revisions;

(c) Inspect, at reasonable times, any processes, emissions units (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit or any operating permit revisions;

(d) Sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with this permit or applicable requirements; and

(e) Utilize any photographic, recording, testing, monitoring, or other equipment for the purpose of assuring compliance with this permit or applicable requirements.

C.4 Permit Revocation [326 IAC 2-1-9]

Pursuant to 326 IAC 2-1-9(a)(Revocation of Permits), this permit to construct and operate may be revoked for any of the following causes:

(a) Violation of any conditions of this permit.

(b) Failure to disclose all the relevant facts, or misrepresentation in obtaining this permit.

(c) Changes in regulatory requirements that mandate either a temporary or permanent reduction of discharge of contaminants. However, the amendment of appropriate sections of this permit shall not require revocation of this permit.

(d) Noncompliance with orders issued pursuant to 326 IAC 1-5 (Episode Alert Levels) to reduce emissions during an air pollution episode.

(e) For any cause which establishes in the judgment of IDEM, the fact that continuance of this permit is not consistent with purposes of this article.

C.5 Opacity [326 IAC 5-1]

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:

(a) Opacity shall not exceed an average of twenty percent (20%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.

(b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

C.6 Stack Height [326 IAC 1-7]

The Permittee shall comply with the applicable provisions of 326 IAC 1-7 (Stack Height Provisions), for all exhaust stacks through which a potential (before controls) of twenty-five (25) tons per year or more of particulate matter or sulfur dioxide is emitted by using good engineering practices (GEP) pursuant to 326 IAC 1-7-3.

Testing Requirements

C.7 Performance Testing [326 IAC 3-6]

(a) Compliance testing on new emissions units shall be conducted within 60 days after achieving maximum production rate, but no later than180 days after initial start-up, if specified in Section D of this approval. All testing shall be performed according to the provisions of 326 IAC 3-6 (Source Sampling Procedures), except as provided elsewhere in this permit, utilizing any applicable procedures and analysis methods specified in 40 CFR 51, 40 CFR 60, 40 CFR 61, 40 CFR 63, 40 CFR 75, or other procedures approved by IDEM, OAQ.

A test protocol, except as provided elsewhere in this permit, shall be submitted to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality

100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

no later than thirty-five (35) days prior to the intended test date. The Permittee shall submit a notice of the actual test date to the above address so that it is received at least two weeks prior to the test date.

(b) All test reports must be received by IDEM, OAQ within forty-five (45) days after the completion of the testing. An extension may be granted by the IDEM, OAQ, if the source submits to IDEM, OAQ, a reasonable written explanation within five (5) days prior to the end of the initial forty-five (45) day period.

The documentation submitted by the Permittee does not require certification by the "authorized individual" as defined by 326 IAC 2-1.1-1.

Compliance Monitoring Requirements

C.8 Compliance Monitoring [326 IAC 2-1.1-11]

Compliance with applicable requirements shall be documented as required by this permit. The Permittee shall be responsible for installing any necessary equipment and initiating any required monitoring related to that equipment. All monitoring and record keeping requirements not already legally required shall be implemented when operation begins.

C.9 Monitoring Methods [326 IAC 3]

Any monitoring or testing required by Section D of this permit shall be performed according to the provisions of 326 IAC 3, 40 CFR 60, Appendix A, or other approved methods as specified in this permit.

SECTION D.1 EMISSIONS UNIT OPERATION CONDITIONS

Facility Description: Boilers

(a) Two (2) natural gas-fired boilers, identified as B-1 and B-2, each having a maximum heat input capacity of 36.6 MMBtu per hour. The boilers use fuel oil No.2 as a backup fuel.

(b) One (1) natural gas-fired boiler, identified as B-3, having a maximum heat input capacity of 10.5 MMBtu per hour. The boiler uses fuel oil No. 2 as a backup fuel.

(c) Two (2) diesel emergency generators, identified as EG-1 and EG-2, having a maximum capacity of 750 kW for EG-1 and 1,000 kW for EG-2, constructed in 1996 and 1985, respectively.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards

D.1.1 Permit By Rule [326 IAC 2-10]

Pursuant to 326 IAC 2-10 (Permit by Rule), the Permittee shall comply with the following conditions:

(a) The source's total actual emissions for every 12-month period shall be limited to less than 20% of any threshold for the following:

(1) A major source of regulated air pollutants.

(2) A major source of hazardous air pollutants, as defined in Section 112 of the Clean Air Act. [326 IAC 2-10-3(1)]

(b) The source shall not rely on air pollution control equipment to comply with the above-mentioned limitations. [326 IAC 2-10-3(2)]

(c) Not later than thirty (30) days after receipt of written request by the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ), or U.S. Environmental Protection Agency (EPA), the owner or operator shall demonstrate that the source is in compliance with the above-mentioned conditions. [326 IAC 2-10-4]

(d) Compliance demonstration shall be based on actual emissions for each twelve (12) consecutive month period and may include, but is not limited to, fuel or material usage or production records. No other demonstration of compliance shall be required. [326 IAC 2-10-4]

(e) The Permit by Rule approval does not relieve the source of the responsibility to comply with the provisions of any applicable federal, state, or local requirements, such as New source Performance Standards (NSPS), 40 CFR Part 60, or National Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Part 61. [326 IAC 2-10-5]

(f) Any change or modification which will alter operations in such a way that the source will no longer comply with 326 IAC 2-10 (Permit by Rule), must obtain the appropriate approval from the OAQ under 326 IAC 2-1.1, 326 IAC 2-2, 326 IAC 2-3, 326 IAC 2-7, 326 IAC 2-8, or 326 IAC 2-9 before such change may occur. This source may at any time apply for a state operating permit under 326 IAC 2-6.1, a Part 70 permit under

326 IAC 2-7, a FESOP under 326 IAC 2-8, or an operating agreement under 326 IAC 2-9, as applicable. [326 IAC 2-10-1(b)]

(g) Any violation of 326 IAC 2-10 (Permit by Rule) may result in administrative or judicial enforcement proceedings under IC 13-30-3 and penalties under IC 13-30-4.

D.1.2 General Provision Relating to NSPS [326 IAC 12-1] [40 CFR 60, Subpart A]

The provisions of 40 CFR 60, Subpart A - General Provisions, which are incorporated by reference in 326 IAC 12-1, apply to the facility described in this section except when otherwise specified in 40 CFR 60, Subpart Dc.

D.1.3 Particulate Matter Limitation (PM) 326 IAC 6-2-3]

Pursuant to 326 IAC 6-2-4 (Emission Limitations for facilities specified in 326 IAC 6-2-1(d)), particulate matter emissions from Boilers B-1, B-2, and B-3, which were constructed after September 21, 1983, shall be limited to 0.34 pounds per MMBtu heat input.'

This limitation was calculated using the following equation:

$$Pt = \frac{1.09}{Q^{0.26}}$$

Where:

Pt = Pounds of particulate matter emitted per million Btu heat input
Q = Total source maximum operating capacity in MMBtu per hour (includes boilers B-1 through B-3 for a total capacity of 83.7 MMBTu/hour)

D.1.4 Sulfur Dioxide (SO_2) [40 CFR 60, Subpart Dc]

Pursuant to 40 CFR 60, Subpart Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units), boilers B-1, B-2, and B-3 are subject to the following requirements:

(a) The SO_2 emissions from boilers B-1, B-2, and B-3 shall not exceed five tenths (0.5) pounds per million Btu heat input; or

(b) The sulfur content of the fuel oil shall not exceed five-tenths percent (0.5%) by weight. [40 CFR 60.42c(d)]

Pursuant to 40 CFR 60 Subpart Dc, the fuel oil sulfur content limit applies at all times, including periods of startup, shutdown, and malfunction.

Compliance Determination Requirements

D.1.5 Permit by Rule Fuel Limits

In order to comply with D.1.1:

(a) The input of natural gas and natural gas equivalents to the 3 boilers (B-1, B-2, and B-3) and the the two emergency generators (EG-1 and EG-2) shall be limited to 400 million cubic feet (MMcf) per twelve consecutive month period. For the purpose of determining compliance, every 1,000 gallons of #2 fuel oil burned in a boiler is equivalent to 0.2 MMcf of natural gas; and every 1,000 gallons of diesel fuel burned in an emergency generator is equivalent to 4.5 MMcf of natural gas. This usage limit is required to limit actual nitrogen oxides to less than 20 tons per year.

(b) The input of fuel oil (both diesel and #2 fuel oil) to the 3 boilers (B-1, B-2, and B-3) and the two emergency generators (EG-1 and EG-2) shall be limited to 558,000 gallons per twelve consecutive month period. This usage limit is required to limit actual emissions of sulfur oxide from the entire source to less than 20 tons per year (based on a sulfur content of 0.5% by weight for the fuel oil).

(c) These limits in paragraphs (a) and (b) above also ensure that the actual emissions of carbon monoxide and PM10 from the entire source are less than 20 tons per year.

D.1.6 Sulfur Dioxide Emissions and Sulfur Content

Pursuant to 40 CFR 60, Subpart Dc, the Permittee shall demonstrate compliance utilizing one of the following options:

(a) Providing vendor analysis of fuel delivered, if accompanied by a vendor certification; or

(b) Analyzing the oil sample to determine the sulfur content of the oil via the procedures in 40 CFR 60, Appendix A, Method 19.

(1) Oil samples may be collected from the fuel tank immediately after the fuel tank is filled and before any oil is combusted; and

(2) If a partially empty fuel tank is refilled, a new sample and analysis would be required upon filling.

Record Keeping and Reporting Requirements

D.1.7 Record Keeping Requirements

(a) To document compliance with Condition D.1.4, the Permittee shall maintain records in accordance with (1) through (6) below. Note that pursuant to 40 CFR 60 Subpart Dc, the fuel oil sulfur limit applies at all times including periods of startup, shutdown, and malfunction.

(1) Calendar dates covered in the compliance determination period;

(2) Actual fuel oil usage since last compliance determination period and equivalent sulfur dioxide emissions;

(3) A certification, signed by the owner or operator, that the records of the fuel supplier certifications represent all of the fuel combusted during the period, the natural gas fired boiler certification does require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1); and

If the fuel supplier certification is used to demonstrate compliance the following, as a minimum, shall be maintained:

(4) Fuel supplier certifications.

(5) The name of the fuel supplier; and

(6) A statement from the fuel supplier that certifies the sulfur content of the fuel oil.

The Permittee shall retain records of all recording/monitoring data and support information for a period of five (5) years, or longer if specified elsewhere in this permit, from the date of the monitoring sample, measurement, or report. Support information includes all calibration and maintenance records and all original strip-chart recordings

for continuous monitoring instrumentation, and copies of all reports required by this permit.

(b) In order to demonstrate compliance with Condition D.1.5, the Permittee shall maintain records of the fuel usage.

(c) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

D.1.8 Reporting Requirements

The Permittee shall certify, on the form provided, that natural gas was fired in the boilers at all times during each calendar year. Alternatively, the Permittee shall report the number of days which an alternate fuel was burned during each calendar year. This report shall be submitted annually.

SECTION D.2 FACILITY OPERATION CONDITIONS

Facility Description: Storage Tank

(d) One (1) twenty thousand (20,000) gallon underground storage tank used to store fuel oil No. 2.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-8-4(1)]

D.2.1 Volatile Organic Compound Storage Vessels [40 CFR 60, Subpart Kb]

(a) The fuel storage tanks are subject to 40 CFR 60, Subpart Kb because the maximum capacity of the tank is greater than 40m^3, the tank stores volatile organic liquids (including petroleum), and construction commenced after July 23, 1984.

Pursuant to 40 CFR 60.116(b) paragraphs (a) and (b), the Permittee shall maintain records as stated in Condition D.2.2.

(b) The tanks are exempt from the General Provisions (Part 60, Subpart A) and from all other provisions of this subpart because the storage tank has a capacity greater than 75m^3 but less than 151m^3, storing liquid with a maximum true vapor pressure less than 15.0 kPa.

Record Keeping and Reporting Requirement [326 IAC 2-8-4(3)] [326 IAC 2-8-16]

D.2.2 Record Keeping Requirements

Pursuant to 40 CFR 60, Subpart Kb (326 IAC 12), the Permittee shall maintain records in accordance with (a) through (d) below:

(a) The volatile organic liquid stored in the tank;

(b) The period of storage;

(c) The maximum true vapor pressure of the volatile organic liquid during the storage period; and

(d) The dimensions of the storage tank and an analysis showing the capacity of the storage tank.

The Permittee shall notify the Administrator within 30 days when the maximum true vapor pressure of the liquid exceeds the respective maximum true vapor pressure values for each volume range. (Available data on the storage temperature may be used to determine the maximum vapor pressure as indicated in 40 CFR 60.117(b)(e)(1) through (3)).

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE DATA SECTION

NATURAL GAS FIRED BOILER CERTIFICATION

Source Name: Saint Margaret Mercy Hospital
Source Address: U.S. Highway 30, Dyer, Indiana 46311
Mailing Address: 5454 Hohman Avenue, Hammond, Indiana 46320
CP No.: 089-15693-00429

9 Natural Gas Only **9** Alternate Fuel burned From:_____ To:_____

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. Signature:
Printed Name:
Title/Position:
Date:

A certification by the responsible official as defined by 326 IAC 2-1.1-1 is required for this report.

Indiana Department of Environmental Management
Office of Air Quality

Addendum to theTechnical Support Document (TSD) for a Construction Permit and Permit-By-Rule

Source Background and Description

Source Name:	Saint Margaret Mercy Hospital
Source Location:	U.S. Highway 30, Dyer, Indiana 46311
County:	Lake
SIC Code:	8062
Permit No.:	089-15693-00429
Permit Reviewer:	ERG/EH

On June 24, 2002, the Office of Air Quality (OAQ) had a notice published in the Gary Post Tribune, Merrillville, Indiana, stating that St. Margaret Mercy Hospital had applied for a Construction Permit and Permit-By-Rule to operate three (3) natural gas and distillate oil boilers, two (2) emergency generators, and one (1) underground storage tank. The notice also stated that OAQ proposed to issue a permit for this operation and provided information on how the public could review the proposed permit and other documentation. Finally, the notice informed interested parties that there was a period of thirty (30) days to provide comments on whether or not this permit should be issued as proposed.

Upon further review, the OAQ has decided to make the following revisions to the permit (added language has been bolded, and the language with a line through it has been deleted). The Table of Contents has been modified, if applicable, to reflect these changes.

1. IDEM has identified that the permit is missing the requirement of 320 IAC 6-2-3 (Particulate Matter Limitations for Indirect Heating) applicable to the three (3) boilers (B1, B2, and B3). The original TSD indicated that this rule applies. The following changes have been made to the permit. Also, the Condition numbers is Section D.1 have been revised accordingly.

D.1.3 Particulate Matter Limitation (PM) 326 IAC 6-2-3]

Pursuant to 326 IAC 6-2-4 (Emission Limitations for facilities specified in 326 IAC 6-2-1(d)), particulate matter emissions from Boilers B-1, B-2, and B-3, which were constructed after September 21, 1983, shall be limited to 0.34 pounds per MMBtu heat input.'

This limitation was calculated using the following equation:

$$Pt = \frac{1.09}{Q^{0.26}}$$

Where:

Pt = Pounds of particulate matter emitted per million Btu heat input

Q = Total source maximum operating capacity in MMBtu per hour (includes boilers B-1 through B-3 for a total capacity of 83.7 MMBTu/hour)

2. The major source level for NOx in Lake County was mistakenly taken as 20 tons per year instead of 100 tons per year. This means the NOx emission should have been limited to 20 tons

per year, instead of 5 tons per year. Also, the contribution of NOx and SO2 emissions from the emergency generators were not taken into account when the fuel limits were calculated. Therefore, a new fuel limit was calculated [(see Appendix A for calculations)(revised)]. The following shows the changes to the permit:

D.1.~~4~~**5** Permit by Rule Fuel Limits

~~In order to comply with condition D.1.1, the total amount of natural gas and natural gas equivalents burned shall be less than 100 MMcf per twelve (12) consecutive month period. For the purposes of determining compliance, every gallon of distillate fuel oil burned shall be equivalent to 200 cf of natural gas, based on nitrogen oxide emissions. This throughput limit ensures that the actual emissions of nitrogen oxides from the entire source are less than 5 tons per year. This throughput limit also ensures that the actual emissions of sulfur dioxide, carbon monoxide, and PM10 from the entire source are less than 20 tons per year (based on a sulfur content of 0.5% by weight for the fuel oil.~~

In order to comply with D.1.1:

(a) The input of natural gas and natural gas equivalents to the 3 boilers (B-1, B-2, and B-3) and the two emergency generators (EG-1 and EG-2) shall be limited to 400 million cubic feet (MMcf) per twelve consecutive month period. For the purpose of determining compliance, every 1,000 gallons of #2 fuel oil burned in a boiler is equivalent to 0.2 MMcf of natural gas; and every 1,000 gallons of diesel fuel burned in an emergency generator is equivalent to 4.5 MMcf of natural gas. This usage limit is required to limit actual nitrogen oxides to less than 20 tons per year.

(b) The input of fuel oil (both diesel and #2 fuel oil) to the 3 boilers (B-1, B-2, and B-3) and the two emergency generators (EG-1 and EG-2) shall be limited to 558,000 gallons per twelve consecutive month period. This usage limit is required to limit actual emissions of sulfur oxide from the entire source to less than 20 tons per year (based on a sulfur content of 0.5% by weight for the fuel oil).

(c) These limits in paragraphs (a) and (b) above also ensure that the actual emissions of carbon monoxide and PM10 from the entire source are less than 20 tons per year.

3. A change was made to clarify that the natural gas certification forms are due annually. The following changes were made to the permit:

D.1.~~7~~**8** Reporting Requirements

The Permittee shall certify, on the form provided, that natural gas was fired in the boilers at all times during each calendar year. Alternatively, the Permittee shall report the number of days which an alternate fuel was burned during each calendar year. **This report shall be submitted annually.**

4. Upon further review, IDEM, OAQ believes it is necessary to further document the location of the hospital. This is in order to have the exact location in the record to demonstrate that the hospital is in the SO2 attainment region of the county. The following specifies the location of the hospital as it relates to the SO2 nonattainment boundary:

> The hospital's northern boundary is the public easement (i.e., the municipally owned strip of land where street lights, storm sewers and sidewalks would be installed by the city if needed) adjacent to the Southern nonattainment boundary, Highway 30. All of the hospital's property is located south of Highway 30.

5. The potential to emit of PM from the boiler while burning #2 fuel oil is 5.2 tons per year. The threshold given in the compliance monitoring guidance for emission units requiring compliance monitoring is greater than this. Also, there are no NSPS or NESHAPs that apply to the source

that regulate PM; there is no limit on PM emissions; and the boilers do not control devices. Therefore, compliance monitoring, specifically visual emissions monitoring, is not required.

Appendix A (Revised): Calculation of Fuel Limits

Company Name:	Saint Margaret Mercy Hospital
Address City IN Zip:	US Hwy 30, Dryer, IN 46311
CP:	089-15693
Plt ID:	089-00429
Reviewer:	ERG/EH
Date:	8/16/02

The potential to emit (PTE) of SO2 and NOx are greater than the permit by rule requirement of 20 tons per year. The PTE of SO2 is 188.2 tons per year and the PTE of NOx is 66.5 tons per year. Therefore, fuel limits must be determined to keep the actual emissions below the 20 tons per year.

SO2 Limit

The contributions to the SO2 emissions are as follows:

only #2 fuel oil burned in boilers	185.9 tpy
only natural gas burned in boilers	0.2 tpy
diesel burned in emergency generators	2.3 tpy

Because the emissions of SO2 from burning natural gas in the boilers is so small, the emissions should be subtracted from the limit to accurately evaluate the limits to boilers and the diesel engines.
(20 tpy - 0.2 tpy = 19.8 tpy)

To get the fuel limit when considering SO2, the ratio of the limit and the PTE is multiplied by the maximum fuel usage (see Appendix A of TSD for the calculation of the fuel usage):

$$\left(\frac{19.8}{185.9}\right)(5237.2\ \text{kgal}) = 558\ \text{kgal \#2}$$

The emission factor for SO2 from the diesel generators is converted to fuel quantity units assuming a sulfur concentration of 0.5%:

$$\left(\frac{0.505\ \text{lb of SO2}}{\text{MMBtu}}\right)\left(\frac{140\ \text{MMBtu}}{\text{kgal}}\right) = \frac{71\ \text{lb of SO2}}{\text{kgal diesel}}$$

This is the same emission factor as the one for burning #2 fuel oil in the boiler. Therefore, the limit of 558 kgal is the total limit for both types of fuel.

NOx limit

The contributions to NOx emissions as limited by the above limits are as follows:

only #2 fuel oil burned in boilers	5.6 tpy
only natural gas burned in boilers	36.7 tpy

diesel burned in emergency generators 14.1 tpy

The fuel limit for natural gas when considering NOx is calculated in the same way the fuel oil limit for SO2:

$$\left(\frac{20}{36.7}\right)\left(\frac{733.2\text{MMcf}}{\text{yr}}\right)=400\frac{\text{MMCF}}{\text{yr}}$$

The equivalents for fuel oil burned in the boiler and fuel oil burned in the emergency generators are also calculated in the same way as the SO2 equivalents. First, the emission factor obtained from Section 3.4.4 of AP-42 for the emergency generators must be calculated.

$$\left(\frac{3.2\text{ lb of NOx}}{\text{MMBtu}}\right)\left(\frac{140\ \ \text{MMBtu}}{\text{kgal}}\right)=\ 448\ \ \frac{\text{lb}}{\text{kgal diesel}}$$

Then the equivalent for fuel oil burned in the diesel generators:

$$\frac{448\text{ lb / kgal diesel}}{100\text{ lb / MMcf}}\ =\ \frac{4.5\text{ MMcf}}{1\text{ kgal diesel}}$$

And, the equivalent for fuel oil burned in the boilers:

$$\frac{20\text{ lb / kgal \# 2}}{100\text{ lb / MMcf}}\ =\ \frac{0.2\ \text{MMcf}}{1\text{ kgal \#2 fuel oil}}$$

Indiana Department of Environmental Management
Office of Air Quality

Technical Support Document (TSD) for a Construction Permit and Permit-By-Rule

Source Background and Description

Source Name:	Saint Margaret Mercy Hospital
Source Location:	U.S. Highway 30, Dyer, Indiana 46311
County:	Lake
SIC Code:	8062
Permit No.:	089-15693-00429
Permit Reviewer:	ERG/EH

The Office of Air Quality (OAQ) has reviewed a construction permit and Permit-By-Rule application from the Saint Margaret Mercy Hospital relating to the operation of three (3) new boilers.

Emission Units and Pollution Control Equipment

(a) One (1) natural gas-fired boiler having a maximum heat input capacity of 16.8 MMBtu per hour. This boiler was constructed in 1972, uses fuel oil No. 2 as a backup fuel which has a maximum sulfur content of 0.5 % by weight, and will be removed and replaced by boiler B-1.

(b) One (1) natural gas-fired boiler having a maximum heat input capacity of 9.6 MMBtu per hour. This boiler was constructed in 1952, uses fuel oil No.2 as a backup fuel which has a maximum sulfur content of 0.5 % by weight, and will be removed and replaced by boiler B-3.

Note: These units did not have a construction permits because they were constructed prior to permitting rules. The boilers constructed in 1972 and 1952 are being replaced by the new boilers B-1 and B-3 listed in the New Equipment section of the TSD.

Unpermitted Emission Units and Pollution Control Equipment

(c) One (1) natural gas-fired boiler having a maximum heat input capacity of 25.1 MMBtu per hour. This boiler was constructed in 1980, uses fuel oil No.2 as a backup fuel which has a maximum sulfur content of 0.5 % by weight, and will be removed and replaced by boiler B-2.

Permitted Emission Units and Pollution Control Equipment

(d) One (1) diesel powered emergency generators, identified as EG1, having a maximum operating capacity of 750 kW and operating for not more than 500 hours per year, constructed in 1996.

(e) One (1) diesel powered emergency generators, identified as EG2, having a maximum operating capacity of 1000kW and operating for not more than 500 hours per year, constructed in 1985.

Note: These units do not have construction permits. The boiler constructed in 1980 is being replaced by new boiler B-2 in the New Equipment section of the TSD. The emergency generators are exempt based on their potential to emit emission levels.

New Emission Units and Pollution Control Equipment Receiving Advanced Source Modification Approval

The application includes information relating to the prior approval for the construction and operation of the following equipment:

(a) Two (2) natural gas-fired boilers, identified as B-1 and B-2, each having a maximum heat input capacity of 36.6 MMBtu per hour. The boilers use fuel oil No. 2 as a backup fuel.

(b) One (1) natural gas-fired boiler, identified as B-3, having a maximum heat input capacity of 10.5 MMBtu per hour. The boiler uses fuel oil No.2 as a backup fuel.

(c) One (1) twenty thousand 20,000 gallon underground storage tank used to store fuel oil No. 2.

Existing Approvals

There are no existing permits issued to this source. This source has been operating under the permit-by-rule regulations.

Enforcement Issue

(a) IDEM is aware that the 1980 natural gas/distillate oil boiler has been constructed prior to receipt of the proper permit. The boiler is listed in this Technical Support Document under the condition entitled Unpermitted Emission Units and Pollution Control Equipment.

(b) IDEM is reviewing this matter and will take appropriate action. This proposed permit is intended to satisfy the requirements of the construction permit and permit by rule rules.

Recommendation

The staff recommends to the Commissioner that this Construction Permit/Permit-By-Rule be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

An administratively complete application for the purposes of this review was received on March 11, 2002. Additional information was received on March 21, 2002.

Emission Calculations

See Appendix A of this document for detailed emissions calculations (pages 1 through 5).

Potential To Emit for the Source

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as “the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted,

stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA."

This table reflects the PTE before controls after the above modifications have been made. Control equipment is not considered federally enforceable until it has been required in a federally enforceable permit.

Pollutant	Potential To Emit (tons/year)
PM	5.6
PM-10	5.6
SO_2	188.2
VOC	2.4
CO	30.8
NO_x	66.5

Note: For the purpose of determining Title V applicability for particulates, PM-10, not PM, is the regulated pollutant in consideration.

(a) The potential to emit (as defined in 326 IAC 2-1.1-1(16)) of SO_2 is equal to or greater than 100 tons per year. Therefore, the source is subject to the provisions of 326 IAC 2-7.

(b) Pursuant to 326 IAC 2-10, this source, otherwise required to obtain a Title V permit, has agreed to accept a Construction Permit with Permit-By-Rule that restricts PTE to below 20% of major source levels. The source has agreed to limit SO_2, CO and NOx emissions to less than twenty (20) tons per twelve (12) consecutive month period. Therefore, this source will be issued a Construction Permit and Permit-By-Rule.

(c) Fugitive Emissions
Since this type of operation is not one of the twenty-eight (28) listed source categories under 326 IAC 2-2 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive emissions are not counted toward determination of PSD and Emission Offset applicability.

Potential to Emit After Issuance

The table below summarizes the potential to emit, reflecting all limits, of the significant emission units after controls. The control equipment is considered federally enforceable only after issuance of this Federally Enforceable State Operating Permit.

	Potential to Emit (tons/year)						
Process/facility	PM	PM-10	SO_2	VOC	CO	NO_X	HAPs
Boilers B1 through B3	5.6	5.6	Less than 20	2.4	Less than 20	Less than 20	Negligible
Permit-by-Rule Limit	--	20	20	5	20	5	2 (single) 5 (combination)
Title V Major Level	--	100	100	25	100	25	10 (single) 25 (combination)

County Attainment Status

The source is located in the SO_2 attainment area of Lake County.

Pollutant	Status
PM-10	Attainment
SO_2	Attainment
NO_2	Attainment
Ozone	Nonattainment
CO	Attainment
Lead	Attainment

(a) Volatile organic compounds (VOC) are precursors for the formation of ozone. Therefore, VOC emissions are considered when evaluating the rule applicability relating to the ozone standards. Lake County has been designated as a nonattainment or unclassifiable for ozone.

(b) This portion of Lake County has been classified as attainment or unclassifiable for PM_{10}, SO_2, CO, and lead. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

(c) Fugitive Emissions
Since this type of operation is not one of the 28 listed source categories under 326 IAC 2-2, 40 CFR 52.21, or 326 IAC 2-3 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive particulate matter (PM) and volatile organic compound (VOC) emissions are not counted toward determination of PSD and Emission Offset applicability.

Federal Rule Applicability

(a) Boilers B-1, B-2, and B- 3 are subject to the New Source Performance Standard, 40 CFR 60, Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units (326 IAC 12) because:

(1) Boilers B-1 through B-3 will be constructed in 2002 (after the June 9, 1989 applicability date);

(2) The boilers each have a maximum heat input capacity greater than 10 MMBtu/hr and less than 100 MMBtu/hr.

Pursuant to 40 CFR 60, Subpart Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units), the sulfur content of the fuel oil burned in each of these boilers shall not exceed five-tenths percent (0.5%) by weight [40 CFR 60.42c(d)]. This fuel oil sulfur content limit applies at all times, including periods of startup, shutdown, and malfunction. The source must demonstrate compliance by either:

(1) Providing vendor analysis of fuel delivered with vendor certification; or

(2) Analyzing the oil sample to determine the sulfur content of the oil via the procedures in 40 CFR 60, Appendix A, Method 19. Oil samples may be collected from the fuel tank immediately after the fuel tank is filled and before any oil is combusted. If a partially empty fuel tank is refilled, a new sample and analysis would be required after filling.

(b) This source is subject to the New Source Performance Standard (NSPS), 40 CFR 60, Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984 (326 IAC 12), because the storage tank to be located at this source has a capacity greater than 40 cubic meters (10,567 gallons), the tank is used to store petroleum liquids, and it will be constructed in June 2002. Since the storage capacity of the tank is less than 151 cubic meters (39,898 gallons) and the

vapor pressure of the tank contents are less than 2.16 psi, this storage tank is subject only to the record keeping provisions of 40 CFR 60.116b paragraphs (a) and (b).

(c) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs)(326 IAC 14 and 40 CFR Part 63) applicable to this source.

State Rule Applicability - Entire Source

326 IAC 2-6 (Emission Reporting)

This source is located in Lake County and the potential to emit NOx is less than ten (10) tons per year. Therefore, 326 IAC 2-6 does not apply to this source.

326 IAC 5-1 (Visible Opacity Limitations)

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:

(a) Opacity shall not exceed an average of twenty percent (20%) any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.

(b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

326 IAC 2-10 (Permit by Rule)

Pursuant to 326 IAC 2-10 (Permit by Rule), this source shall comply with the following conditions:

(a) The source's total actual emissions for every 12-month period shall be limited to less than 20% of any threshold for the following:

(1) A major source of regulated air pollutants.

(2) A major source of hazardous air pollutants, as defined in Section 112 of the Clean Air Act. [326 IAC 2-10-3(1)]

(b) The source shall not rely on air pollution control equipment to comply with the above-mentioned limitations. [326 IAC 2-10-3(2)]

(c) Not later than thirty (30) days after receipt of written request by the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ), or U.S. Environmental Protection Agency (EPA), the owner or operator shall demonstrate that the source is in compliance with the above-mentioned conditions. [326 IAC 2-10-4]

(d) Compliance demonstration shall be based on fuel usage for each twelve (12) consecutive month period. No other demonstration of compliance shall be required. [326 IAC 2-10-4]

Permit by Rule Fuel Limits

In order to comply with the permit by rule emission limitations, the total amount of natural gas and natural gas equivalents burned shall be less than 100 MMcf per twelve (12) consecutive month period. For the purposes of determining compliance, every gallon of distillate fuel oil burned shall be equivalent to 200 cf of natural gas, based on nitrogen oxide emissions. This throughput limit ensures that the actual emissions of nitrogen oxides from the entire source are less than 5 tons per year. This throughput limit also ensures that the actual emissions of sulfur

dioxide, carbon monoxide, and PM10 from the entire source are less than 20 tons per year (based on a sulfur content of 0.5% by weight for the fuel oil.)

Derivation of Permit By Rule Fuel Limits:

Worst case pollutant/fuel combination is NOx while burning fuel oil. Although SO_2 emissions at maximum capacity are greater than NOx, NOx emissions must be reduced by a greater percentage (90%) to get below the 5 tons per year Permit By Rule limit for NOx. SO_2 only requires an 89% reduction.

$$\text{Emission factor for NOx for fuel oil} = \frac{\text{20 lb of NOx}}{\text{k gal of fuel oil}}$$

Therefore, to determine the gallons of fuel oil to remain below 5 tons per year of NOx:

$$\text{(Amount of fuel oil per year)} * \left(\frac{\text{20 lb NOx}}{\text{kgal of oil}}\right) * \left(\frac{\text{ton}}{\text{2000 lb}}\right) \leq \text{5 tons per year}$$

$$\text{amount of fuel oil per year} \leq \text{500 kgal}$$

$$\text{Emission factor for NOx for natural gas} = \frac{\text{100 lb NOx}}{\text{MMCF}}$$

$$\text{(amount of natural gas per year)} * \left(\frac{\text{100 lb NOx}}{\text{MMCF}}\right)\left(\frac{\text{ton}}{\text{2000 lb}}\right) < \text{5 tons per year}$$

$$\text{amount of natural gas per year} < \text{100 MMCF}$$

The equivalency of burning natural gas and fuel oil with respect to NOx emissions:

$$\frac{\text{100 MMCF}}{\text{500 kgal}} = \text{200 cf of natural gas per 1 gallon of fuel oil}$$

State Rule Applicability - Individual Facilities

326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants (HAP))

The operation of the four new boilers (identified as B-1 through B-3) will emit less than 10 tons per year of a single HAP or 25 tons per year of a combination of HAPs. Therefore, 326 IAC 2-4.1 does not apply.

326 IAC 8-1-6 (New Facilities - General Reduction Requirement)

The new boilers (identified as B-1 through B-3) each have potential to emit VOC of less than twenty-five (25) tons per year; therefore, these units are not subject to the requirements of 326 IAC 8-1-6.

326 IAC 7-1.1-1(Sulfur Dioxide Emissions)

The source is not subject to 326 IAC 7-1.1-1 because the facilities potential to emit is less than twenty-five (25) tons per year.

326 IAC 6-2-4 (Particulate Matter Emission Limitations for Sources of Indirect Heating)

Pursuant to 326 IAC 6-2-4 (Particulate Matter Emission Limitations for Sources of Indirect Heating), the PM emissions from boilers B-1, B-2, and B-3 shall be limited to 0.34 pounds per MMBtu heat input.

This limitation was calculated using the following equation:

$$Pt = \frac{1.09}{Q^{0.26}}$$

Where Pt = Pounds of particulate matter emitted per million Btu heat input; and
Q = Total source maximum operating capacity in MMBtu per hour (includes boilers B-1 through B-8)
Q = 83.7 MMBtu/hour

$$Pt = \frac{1.09}{(83.7)^{0.26}} = 0.34 \text{ lb/MMBtu heat input}$$

Note: Based on the emission factor for No.2 fuel oil, the boilers are in compliance with this rule.

326 IAC 6-1 (Nonattainment Area Limitations)

This source is not subject to the provisions of 326 IAC 6-1 because the potential to emit particulate matter is less than ten (10) tons per year.

326 IAC 6-1-11.1 (Lake County Fugitive Particulate Matter Control Requirements)

The provisions of 326 IAC 6-1-11.1 do not apply to this source because the potential to emit fugitive particulate matter is less than five (5) tons per year.

326 IAC 6-1-11.2 (Lake County Particulate Matter Contingency Measures)

The provisions of 326 IAC 6-1-11.2 do not apply to this source because the potential PM-10 emissions are less than ten (10) tons per year.

State Rule Applicability - Emergency Generator

For the two (2) emergency generators EG1 and EG2, the potential to emit air pollutants was calculated at a maximum of 500 operating hours per year for each unit. As a result, the operation of each emergency generator shall in no case exceed 500 hours of operation per twelve (12) consecutive month period. Any changes to the source that would require operating either emergency generator for more than 500 hours per year requires prior approval from IDEM, OAQ.

Testing Requirements

No stack tests are required for this source because the emission estimates were calculated using AP-42 emission factor with a reliability rating above D.

Conclusion

The operation of these utility boilers shall be subject to the conditions of the attached proposed Construction Permit/Permit by Rule (No.: 089-15693-00429).

Appendix A: Emission Calculations

Natural Gas Combustion Only

MMBTU/HR<100

Small Industrial Boiler

Company Name: Saint Margaret Mercy Hospital

Address City IN Zip: US Hwy 30, Dyer, IN, 46311

CP: 089-15693

Plt ID: 089-00429

Reviewer: ERG/EH

Date: 03/25/2002

Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr
83.7	733.2

	Pollutant					
	PM*	PM10*	SO2	NO_x	VOC	CO
Emission Factor in lb/MMCF	7.6	7.6	0.6	100.0 **see below	5.5	84.0
Potential Emission in tons/yr	2.8	2.8	0.2	36.7	2.0	30.8

*PM emission factor is filterable PM only. PM10 emission factor is condensable and filterable PM10 combined.

**Emission Factors for NO_x: Uncontrolled = 100, Low NO_x Burner = 50, Low NO_x Burners/Flue gas recirculation = 32

Methodology

Note: Maximum heat input equals 36.6 MMBtu/hr because the hospitals are legally limited by law to have 100% full backup power at any time.

This legal requirement limits the maximum design to 36.6 MMBtu/hr for this new boiler house.

All Emission factors are based on normal firing.

MMBtu = 1,000,000 Btu

MMCF - 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Emission Factors from AP-42, Chapter 1.4, Tables 1.4-1, 1.4-2, and 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03

(AP-42 Supplement D 3/98)

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

See next page for HAPs emissions calculations.

Appendix A: Emission Calculations

Natural Gas Combustion Only

MMBTU/HR<100

Small Industrial Boiler

Company Name: Saint Margaret Mercy Hospital

Address City IN Zip: US Hwy 30, Dyer, IN, 46311

CP: 089-15693

Plt ID: 089-00429

Reviewer: ERG/EH

Date: 03/25/2002

HAPs - Organics

	Benzene	Dichlorobenzene	Formaldehyde	Hexane	Toluene
Emission Factor in lb/MMCF	2.1E-03	1.2E-03	7.5E-02	1.8E+00	3.4E-03
Potential Emission in tons/yr	7.699E-04	4.399E-04	2.750E-02	6.599E-01	1.246E-03

HAPs - Metals

	Lead	Cadmuim	Chromium	Manganese	Nickel
Emission Factor in lb/MMCF	5.0E-04	1.1E-03	1.4E-03	3.8E-04	2.1E-03
Potential Emission in tons/yr	1.833E-04	4.033E-04	5.132E-04	1.393E-04	7.699E-04

Methodology is the same as previous page.

The five highest organic and metal HAPs emission factors are provided above.

Additional HAPs emission factors are available in AP-42, Chapter 1.4.

Appendix A: Emission Calculations
Commercial/Institutional/Residential Combustors (< 100 MMBtu/hr)
#1 and #2 Fuel Oil

Company Name: Saint Margaret Mercy Hospital
Address City IN Zip: US Hwy 30, Dyer, IN, 46311
CP: 089-15693
Plt ID: 089-00429
Reviewer: ERG/EH
Date: 03/25/2002

Heat Input Capacity MMBtu/hr	Potential Throughput kgals/year	S = Weight % Sulfur
83.7	5237.2	0.5

	Pollutant				
	PM*	SO2	NO_x	VOC	CO
Emission Factor in lb/kgal	2.0	71 *(142.0 S)*	20.0	0.34	5.0
Potential Emission in tons/yr	5.2	185.9	52.4	0.9	13.1

*PM emission factor is filterable PM only. Condensable PM emission factor is 1.3 lb/kgal.

Methodology
Note: Maximum heat input equals 36.6 MMBtu/hr because the hospitals are legally limited by law to have 100% full backup power at any time. This legal requirement limits the maximum design to 36.6 MMBtu/hr for this new boiler house.
1 gallon of No. 2 Fuel Oil has a heating value of 140,000 Btu

Potential Throughput (kgals/year) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 kgal/1,000 gal x 1 gal/0.140 MMBtu

Emission Factors are from AP-42, Tables 1.3-1, 1.3-2, and 1.3-3 (SCC 1-03-005-01/02/03) Supplement E 9/98 (see errata file)
Emission (tons/yr) = Throughput (kgals/yr) x Emission Factor (lb/kgal)/2,000 lb/ton
Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).

See page 2 for HAPs emissions calculations.

Appendix A: Emission Calculations
Commercial/Institutional/Residential Combustors (< 100 MMBtu/hr)
#1 and #2 Fuel Oil
HAPs Emissions

Company Name: Saint Margaret Mercy Hospital
Address City IN Zip: US Hwy 30, Dyer, IN, 46311
CP: 089-15693
Plt ID: 089-00429
Reviewer: ERG/EH
Date: 03/25/2002

HAPs - Metals

	Arsenic	Beryllium	Cadmium	Chromium	Lead
Emission Factor in lb/MMBtu	4.0E-06	3.0E-06	3.0E-06	3.0E-06	9.0E-06
Potential Emission in tons/yr	1.47E-03	1.10E-03	1.10E-03	1.10E-03	3.30E-03

HAPs - Metals (continued)

	Mercury	Mangamese	Nickel	Selenium
Emission Factor in lb/MMBtu	3.0E-06	6.0E-06	3.0E-06	1.5E-05
Potential Emission in tons/yr	1.10E-03	2.20E-03	1.10E-03	5.50E-03

Methodology

No data was available in AP-42 for organic HAPs.
Potential Emissions (tons/year) = Throughput (MMBtu/hr)*Emission Factor (lb/MMBtu)*8,760hrs/yr / 2,000lb/ton

Appendix A: Emission Calculations
Internal Combustion Engines - Diesel Fuel
Turbine (>600 HP)
Reciprocating

Company Name: Saint Margaret Mercy Hospital
Address City IN Zip: US Hwy 30, Dyer, IN, 46311
CP: 089-15693
Plt ID: 089-00429
Reviewer: ERG/EH
Date: 3/25/2002

A. Emissions calculated based on heat input capacity (MMBtu/hr)

Heat Input Capacity MMBtu/hr

0.0

	Pollutant					
	PM*	PM10*	SO2	NO_x	VOC	CO
Emission Factor in lb/MMBtu	0.31	0.31	0.29	4.41	0.36	0.95
Potential Emission in tons/yr	0.00	0.00	0.00	0.00	0.00	0.00

'B. Emissions calculated based on output rating (hp)

Power Output Capacity Horsepower (hp)

Potential Throughput hp-hp/yr

2347.0

1173500.0

	Pollutant					
	PM*	PM10*	SO2	NO_x	VOC	CO
Emission Factor in lb/hp-hr	0.0007	0.0007	0.0040 (0.00809S)	0.0240	0.0007	0.0067
Potential Emission in tons/yr	0.41	0.41	2.35	14.08	0.42	3.92

S= Sulfur = 0.5%
**NOx emission factor: uncontrolled = 0.024 lb/hp-hr, controlled by ignition timing retard = 0.013 lb/hp-hr
Note that the PM10 emission factor in lb/hp-hr is not provided in the Supplement B update of AP-42.
An average conversion factor of 1hp-hr = 7,000Btu is provided below.

Methodology

Potential Througput (hp-hr/yr) = hp * 8760 hr/yr

Emission Factors are from AP 42 (Supplement B 10/96)Table 3.4-1 and Table 3.4-2

1 hp-hr = 7000 Btu, AP42 (Supplement B 10/96), Table 3.3-1, Footnote a.

Emission (tons/yr) = [Heat input rate (MMBtu/hr) x Emission Factor (lb/MMBtu)] * 8760 hr/yr / (2,000 lb/ton)
Emission (tons/yr) = [Potential Throughput (hp-/hr/yr) x Emission Factor (lb/hp-hr)] / (2,000 lb/ton)

*No information was given regarding which method was used to determine the PM emission factor or whether condensable PM is included. The PM10 emission factor is filterable and

Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not i

TOTAL POTENTIAL TO EMIT SUMMARY

	PM*	PM10*	SO2	NO_x	VOC	CO
Boilers	5.2	5.2	185.9	52.4	2.0	30.8
Storage Tank - #2 FO (TANKS PGRM)	-	-	-	-	0.002	-
Diesel Emergency Generators	0.4	0.4	2.3	14.1	0.4	3.9
TOTAL	**5.6**	**5.6**	**188.2**	**66.5**	**2.4**	**34.7**