

STATE OF MISSOURI



DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: **06 2007 - 010** Project Number: 2007-04-005

Parent Company: Washington University in St. Louis

Parent Company Address: 660 South Euclid Avenue, St. Louis, MO 63110-1093

Installation Name: Washington University School of Medicine

Installation Address: 500 South Euclid Avenue, St. Louis, MO 63110

Location Information: City of St. Louis

Application for Authority to Construct was made for:

Replacement of two existing boilers with two new ones. The existing boilers are rated at 93 MMBTU/hr and 124 MMBTU/hr and the replacement boilers are rated at 84 MMBTU/hr each. This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

- Standard Conditions (on reverse) are applicable to this permit.
- Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

JUN 21 2007

EFFECTIVE DATE

A handwritten signature in black ink, appearing to read "James L. Kavanagh".

DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the City of St. Louis Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant source(s). The information must be made available not more than 60 days but at least 30 days in advance of this date.

A copy of this permit and permit review shall be kept at the installation address and shall be made available to City of St. Louis Air Pollution Control Program personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant source(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Permitting Section at (314) 613-7300. If you prefer to write, please address your correspondence to the City of St. Louis, Air Pollution Control Program, 1415 North 13th Street, St. Louis, Missouri 63106-4424, attention: Chief of Permitting.

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Permit No.	
Project No.	2007-04-005

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

Washington University School of Medicine
City of St. Louis

1. Emission Limitation

- A. Washington University School of Medicine shall emit less than forty (40) tons of Nitrogen Oxides (NO_x) from Boiler #4 and Boiler #5 in any consecutive 12-month period.
- B. Washington University School of Medicine shall emit less than forty (40) tons Sulfur Oxides (SO_x) from Boiler #4 and Boiler #5 in any consecutive 12-month period.
- C. Attachment A and Attachment B or equivalent forms approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Conditions 1(A) and 1(B). Washington University School of Medicine shall maintain all records required by this permit for not less than five (5) years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request.
- D. Washington University School of Medicine shall report to the City of St. Louis Air Pollution Control Program's Enforcement Section, 1415 North 13th Street, St. Louis, Missouri 63106-4424, no later than ten (10) days after the end of the month during which the records from Special Condition Number 1(C) indicate that the source exceeds the limitation of Special Conditions Number 1(A) and/or 1(B).

2. New Source Performance Standards (NSPS) Requirements

Washington University School of Medicine shall comply with all appropriate monitoring, testing, reporting, and record keeping requirements of 40 CFR Part 60, Subpart Dc—*Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (5) REVIEW

Project Number: 2007-04-005
Installation ID Number: 510-0040
Permit Number:

Washington University School of Medicine
500 South Euclid Avenue
St. Louis, MO 63110

Complete: 03/26/2007

Parent Company:
Washington University in St. Louis
660 South Euclid Avenue
St. Louis, MO 63110-1093

City of St. Louis

REVIEW SUMMARY

- Washington University School of Medicine has applied for authority to replace two existing boilers with two new ones. The existing boilers are rated at 93 MMBTU/hr and 124 MMBTU/hr and the replacement boilers are rated at 84 MMBTU/hr each.
- Hazardous Air Pollutant (HAP) emissions are expected as a result of fuel combustion from the proposed boilers. Potential HAPs emissions are, however, below 0.5 lb/hr.
- Subpart Dc—*Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units* of the New Source Performance Standards (NSPS) applies to the new boilers.
- None of the National Emission Standards for Hazardous Air Pollutants (NESHAPs) or currently promulgated Maximum Achievable Control Technology (MACT) regulations apply to the proposed boilers.
- No air pollution control equipment is being used in association with the new boilers.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of NO_x and SO_x are conditioned to below de minimis levels by this permit.
- This installation is located in the City of St. Louis, a nonattainment area for ozone (O₃) and an attainment area for all other criteria air pollutants.
- This installation is on the List of Named Installations [10 CSR 10-6.020(3)(B), Table 2] because its fossil-fuel boilers (or combination thereof) total more than 250 million British thermal units per hour heat input.

- Ambient air quality modeling was not performed since potential emissions of the application are conditioned below de minimis levels.
- Emissions testing for the new boilers may be required to comply with New Source Performance Standards (NSPS) Subpart Dc—*Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*.
- An application to amend the installations Part 70 Operating Permit is required within 1 year of starting operation of the new boilers.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Washington University School of Medicine is a large medical school complex located within the City of St. Louis, Missouri. Air pollutant sources at this installation include heating boilers, emergency generators, fuel oil tanks, a pathological incinerator, and parts washers.

The school is a major source under both operating and construction permits. It currently operates under Part 70 Operating permit number OP2004-018 that expires on June 20, 2009.

The following construction permits have been issued to Washington University School of Medicine from the City of St. Louis Air Pollution Control Program.

Table 1. Previously Issued Construction Permits

Permit Number	Description
95-05-056	Boiler
95-05-056PM	Increase Sulfur content of fuel oil
98-10-060	Emergency Generators and Tanks
01-05-013	Boiler
01-05-014	Emergency Generator

PROJECT DESCRIPTION

Washington University School of Medicine will replace two existing boilers with two new boilers. The existing boilers are rated at 93 MMBTU/hr and 124 MMBTU/hr while the replacement boilers are rated at 84 MMBTU/hr each.

The new boilers have a dual fuel (natural gas and #2 fuel oil) capability. Natural gas will be the primary fuel and fuel oil will be the back up fuel. No control devices are installed on the new boilers.

EMISSIONS/CONTROLS EVALUATION

The emission factors used in this analysis were obtained from the Environmental Protection Agency (EPA) document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 1.3 *Fuel Oil Combustion (9/98)* and Section 1.4 *Natural Gas Combustion (7/98)*. Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8760 hours per year). Since the new boilers have a dual fuel capability the potential emissions were evaluated on a worse case fuel basis. The following table provides an emissions summary for this project. The applicant requested the SO_x and NO_x de minimis emissions limits to avoid Prevention of Significant Deterioration (PSD) review for SO_x and Nonattainment area review for NO_x.

Table 2. Emissions Summary (tons per year)

Pollutant	Regulatory De Minimis Levels	Existing Potential Emissions	Existing Actual Emissions (2006 EIQ)	Potential Emissions of the Application	Conditioned Potential of this application
PM ₁₀	15.0	N/D	20.18	5.48	N/A
SO _x	40.0	N/D	0.18	378.43	<40.00
NO _x	40.0	N/D	38.52	105.12	<40.00
VOC	40.0	N/D	1.49	3.97	N/A
CO	100.0	N/D	21.22	60.60	N/A
HAPs	10.0/25.0	N/D	0.00	1.36	N/A

N/A = Not Applicable; N/D = Not Determined

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of NO_x and SO_x are conditioned to below de minimis levels.

APPLICABLE REQUIREMENTS

Washington University School of Medicine shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, please consult your operating permit.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110

The emission fee is the amount established by the Missouri Air Conservation Commission annually under Missouri Air Law 643.079(1). Submission of an Emissions Inventory Questionnaire (EIQ) is required June 1 for the previous year's emissions.

- *Operating Permits*, 10 CSR 10-6.065
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Control of Odors in the Ambient Air*, 10 CSR 10-5.160

SPECIFIC REQUIREMENTS

- *New Source Performance Regulations*, 10 CSR 10-6.070 – *New Source Performance Standards (NSPS) for—Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*, 40 CFR Part 60, Subpart Dc.
- *Restriction of Emission of Sulfur Compounds*, 10 CSR 10-6.260
- *Maximum Allowable Emission of Particulate Matter From Fuel Burning Equipment Used for Indirect Heating*, 10 CSR 10-5.030
- *Control of Emissions of Nitrogen Oxides*, 10 CSR 10-5.510

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

 Maurice Chemweno
 Environmental Engineer

 Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated March 20, 2007, received March 28, 2007, designating Washington University in St. Louis as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.

Mr. Michael Koch
Environmental Manager
Washington University School of Medicine
660 South Euclid Avenue
St. Louis, MO 63110-1093

RE: New Source Review Permit - Project Number: 2007-04-005

Dear Mr. Koch:

Enclosed with this letter is your permit to construct. Please study it carefully. Also, note the special conditions, if any, on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files.

Operation in accordance with these conditions, your new source review permit application and with your amended operating permit is necessary for continued compliance.

The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you have any questions regarding this permit, please do not hesitate to contact Maurice Chemweno at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or by telephone at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Kendall B. Hale
New Source Review Unit Chief

KBH:mcl

Enclosures

c: City of St. Louis
PAMS File 2007-04-005
Permit Number: