

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director

PERMIT BOOK

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OCT 10, 2012

CERTIFIED MAIL: 70041350000314153922
RETURN RECEIPT REQUESTED

Mr. Christian Johanningmeier
Superintendent
Columbia Municipal Power Plant
1501 Business Loop 70 East
Columbia, MO 65201

RE: New Source Review Temporary Permit Request - Project Number: 2012-07-066
Installation ID Number: 019-0002
Temporary Permit Number:
Expiration Date: September 1, 2012 102012-005

Dear Mr. Johanningmeier:

The Missouri Department of Natural Resources' Air Pollution Control Program has completed a review of your request to temporarily burn a miscanthus grass/coal blend fuel in your coal-fired boilers (EP-01 and EP-02) at Columbia Municipal Power Plant, located in Columbia, Missouri. The Air Pollution Control Program is hereby granting your request to conduct this temporary operation at this location in accordance with Missouri State Rule 10 CSR 10-6.060(3).

The Columbia Municipal Power Plant proposes to burn a miscanthus grass/coal blend for a trial period in order to assess the feasibility of combusting the blend in their coal-fired boilers. The trial period will consist of burning no more than 600 tons of miscanthus grass. The study will test the boiler efficiencies and material flow properties of various miscanthus grass/coal blends. Possible blends up to 50 percent by weight of miscanthus grass are planned. The miscanthus grass is received by truck as approximately 3-inch material, at 8,000 to 9,000 Btu per pound. Existing equipment will be used during the trial evaluation. The usage of the miscanthus grass/coal blend is not expected to change or cause an increase in design capacity of the boiler and the raw material handling/processing operations.

The emission factors used in this analysis were obtained from Environmental Protection Agency document AP-42, Compilation of Air Pollutant Emission Factors, Fifth Edition, Section 1.6, Wood Residue Combustion in Boilers (9/03) and the facility's 2011 Emission Inventory Questionnaire. The following table compares the potential hourly emissions while combusting a 50 percent miscanthus grass/50 percent coal blend versus combusting straight coal.

Table 1: Potential Hourly Combustion Emissions Comparison (lb/hr)

Fuel	PM	PM ₁₀	PM _{2.5}	Sulfur Oxides	Nitrogen Oxides	Carbon Monoxide	VOC ^a	HAPs ^b
Miscanthus Grass/Coal Blend	1.00	8.20	7.89	397.90	158.04	2.54	112.17	0.00025
Coal Only	1.744	16.16	15.58	789.48	192.13	0.727	72.65	0.00047

^aVOC = Volatile Organic Compounds

^bHAP = Hazardous Air Pollutants

The potential emissions from the increase in haul road traffic were calculated using AP-42 Section 13.2.1, Paved Roads (1/11). The potential emissions from the miscanthus grass storage piles and weigh hopper loading were calculated using the drop point equation found in AP-42 Section 13.2.4, Aggregate Handling and Storage Piles (11/06). The potential emission during the trial burn period of miscanthus grass from the emission points mentioned above were found to be less the 0.06 tons of particulate matter, less than 0.02 ton of particulate matter less than 10 microns in aerodynamic diameter (PM₁₀), and less than 0.003 tons of particulate matter less than 2.5 microns in aerodynamic diameter (PM_{2.5}). Therefore these emission points will not affect the issuance of this temporary permit.

Subsequent notification should be made to the Air Pollution Control Program once the testing period of miscanthus grass has ceased. The following conditions apply to this temporary activity:

1. Columbia Municipal Power Plant shall combust no more than 600 tons of miscanthus grass in their coal fired boilers.
2. No later than 90 days following the expiration of this permit, Columbia Municipal Power Plant shall submit a project report to the Air Pollution Control Program. This report shall include:
 - a. A copy of the analytical data for each batch of miscanthus grass used during any trial.
 - b. The start date, start time, and duration of each trial.
 - c. The quantity in tons and the Btu content of the miscanthus grass used for each trial.
 - d. A table of emission factors developed as a result of stack testing while burning miscanthus grass/coal blend. The developed emission factor table shall be complete with sample calculations and a full stack testing report.
 - e. The emission factors shall be reported in units of pounds pollutant per million BTU's and pounds pollutant per ton of miscanthus grass.
 - f. A comparison of the emission factors developed for the miscanthus grass and the emission factors for coal.
 - g. A comparison of the steam production rates of the miscanthus grass/coal fuel versus just straight coal.
 - h. A summary and discussion of the methods used to develop the emission factors.
 - i. Conclusions reached concerning the long term feasibility of using miscanthus grass as a coal substitute in the coal fired boilers.

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Although stack testing is not required for this temporary activity, Columbia Municipal Power Plant should be aware that stack test results would be helpful if Columbia Municipal Power Plant should decide to pursue further permitting under 10 CSR 10-6.060, *Construction Permits Required*.

This temporary permit does not give Columbia Municipal Power Plant the authority to exclude any emissions associated with this temporary activity from any applicable emission limit. Additionally, Columbia Municipal Power Plant is still obligated to meet all other applicable air pollution control rules, Department of Natural Resources' rules, or any other applicable federal, state, or local agency regulations. Specifically, you shall not violate:

- 10 CSR 10-6.165, *Restriction of Emission of Odors*
- 10 CSR 10-6.170, *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*
- 10 CSR 10-6.220, *Restriction of Emission of Visible Air Contaminants*
- 10 CSR 10-6.260, *Restriction of Emission of Sulfur Compounds*
- 10 CSR 10-6.400, *Restriction of Emission of Particulate Matter From Industrial Processes*

It is stated within the New Sources Performance Standard (NSPS) 40 CFR Part 60 - Subpart Da, *Standards of Performance for Electric Utility Steam Generating Units for Which Construction Is Commenced After September 18, 1978* that any change to an existing fossil-fuel-fired steam generating unit to accommodate the use of combustible materials, other than fossil fuels, shall not bring that unit under the applicability of this subpart. Therefore the addition of the miscanthus grass fuel supplement does not trigger applicability to the subpart mentioned above.

Please be aware that National Emission Standards for Hazardous Air Pollutants for Source Categories (MACT) 40 CFR Part 63 – Subpart UUUUU, *National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units* does apply to the coal fired electric utility steam generating units at your facility. The compliance date of subpart mentioned for existing coal fired electric utility steam generating units is April 16, 2015.

A copy of this letter should be kept with the unit and be made available to Department of Natural Resources' personnel upon verbal request. If you have any questions regarding this determination, please do not hesitate to contact Gerad Fox at the departments' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102, or by telephone at (573) 75 1-4817. Thank you for your time and attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM


 Kyra L. Moore
 Director

KLM:gfk

c: Northeast Regional Office
PAMS File: 2012-07-066