

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

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

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OCT 24 2011

CERTIFIED MAIL: 70041350000314153878
RETURN RECEIPT REQUESTED

PERMIT BOOK

Mr. Kenneth J. Anderson
Managing Supervisor - Air Quality
Ameren Corporation
PO Box 66149, MC 602
St. Louis, MO 63166-6149

RE: New Source Review Temporary Permit Request - Project Number: 2011-08-080
Installation ID Number: 099-0016
Temporary Permit Number: **102011-013**
Expiration Date: February 12, 2012

Dear Mr. Anderson:

The Missouri Department of Natural Resources' Air Pollution Control Program has completed a review of your request to test the use of two coal additives, M-Sorb and S-Sorb, at the Ameren Missouri Rush Island Energy Center, located in Festus, 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).

According to your application, Ameren Missouri Rush Island Energy Center (Ameren – Rush Island) is planning to conduct a testing program for adding two additives to the coal combusted in boilers Units 1 and 2. Two materials, designated as M-Sorb and S-Sorb, will be added to the feedstock coal. M-Sorb is a halide salt solution consisting principally of a 50% solution of calcium bromide in water. S-Sorb is a proprietary mixture of calcium carbonate, calcium oxide, calcium sulfate, aluminum oxide, and iron oxide. The M-Sorb additive is expected to reduce mercury emissions by promoting oxidation of elementary mercury in the flue gas to an oxidized form which is then adsorbed onto particulates in the flue gas and captured in the unit's electrostatic precipitator (ESP). The S-Sorb additive is expected to reduce nitrogen oxides (NO_x) by the preferential scavenging that occurs for NO_x when the S-Sorb is added to coal.

Along with the expected reductions in NO_x and mercury, the presence of S-Sorb in the refined coal may impact particulate matter (PM) emissions since it increases the amount of non-combustibles. However the amount of S-Sorb additive, 0.5% of total coal feed, is small in

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relation to the typical ash content of the feedstock coal (5-7%). The existing ESPs for Unit 1 and Unit 2 are expected to collect and remove any additional PM loading. There are no hazardous air pollutants (HAPs) contained in the additives.

For this 60-day testing program, some additional particulate emissions can be expected from the handling of the S-Sorb additive (Note that the M-Sorb additive comes in solution form and will not have any handling emissions associated with it.). The maximum amount of S-Sorb material handled will be 5,000 tons. There will be 2 silo vent emission points and 4 conveyor transfer points. The conveyor transfer points will be totally enclosed. The silo vents have a design outlet PM emission rate of 0.01 grains per dry standard cubic foot. With total air flow of 1,350 actual cubic feet per minute, this equates to less than 0.12 pounds of PM per hour (equivalent to 0.51 tons per year).

Ameren – Rush Island plans to do the majority of the testing relating to possible emission increases/decreases at a smaller boiler at the University of North Dakota Energy & Environmental Research Center (EERC). During the test runs at EERC, PM emissions at the inlet and outlet of the ESP as well as emissions of oxygen (O₂), carbon dioxide (CO₂), carbon monoxide (CO), nitrogen oxides (NO_x), and mercury from the boiler will be continuously monitored. However, Ameren Missouri contends that they will need to perform the testing of the refined coal on a full-scale basis for approximately 60 days so that, in addition to the testing at the EERC, they can have assurances that there are no long-term impacts on the operation of the Rush Island Unit 1 and 2 boilers. According to Ameren Missouri, the impacts from the sorbent additions often do not manifest themselves during short term tests and time is required to determine the cumulative effects on the plant processes. Some of these impacts include ash depositions in the furnace and the boilers, and ash collection and accumulation in ash handling systems and monitoring. In addition, the coal pulverizer operations will be monitored to ensure that there is no cumulative deterioration of coal fineness due to the addition of the sorbents.

In summary, emissions of NO_x and mercury are expected to be reduced by the addition of the M-Sorb and S-Sorb additives. Particulate emissions associated with the handling of the S-Sorb additive are expected to be around 0.12 pounds per hour. A very small increase of PM emissions may be associated with the S-Sorb additive; however most will either end up in the Ameren – Rush Island ash or be captured by the ESP. Since all pollutants are expected to have emissions below de minimis levels and additional testing is being conducted to measure the effects of the coal additives on emission levels, permission to temporarily burn the coal refined with the M-Sorb and S-Sorb additives is granted up to the expiration date stated above. In order to continue burning the refined coal past the expiration date, the Ameren – Rush Island will need to seek permission from the Air Pollution Control Program.

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You are still obligated to meet all applicable air pollution control rules, Department of Natural Resources' rules, or any other applicable federal, state, or local agency regulations. Specifically, you should avoid violating 10 CSR 10-6.045 *Open Burning Requirements*, 10 CSR 10-6.220, *Restriction of Emission of Visible Air Contaminants*, 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*, and 10 CSR 10-6.165, *Restriction of Emission of Odors*.

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 Susan Heckenkamp 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:shl

c: St. Louis Regional Office
PAMS File: 2011-08-080