

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: 022010-005 Project Number: 2009-04-073

Parent Company: Buzzi Unicem USA

Parent Company Address: 100 Broadhead Road, Bethlehem, PA 18017

Installation Name: River Cement Company dba Buzzi Unicem USA

Installation Address: 1000 River Cement Road P.O. Box 1003,  
Festus, MO 63028

Location Information: Jefferson County, S40, T23, R6E

Application for Authority to Construct was made for:  
The use of an alternative fuel in the cement kiln at the facility in Festus, Missouri.  
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.

FEB 16 2010

EFFECTIVE DATE

Handwritten signature of Kyrin L. Moore in black ink.

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 departments' 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. Also, you must notify the Department of Natural Resources Regional office responsible for the area within which you are located within 15 days after the actual start up of this (these) air contaminant source(s).

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' 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 Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

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Permit No.	
Project No.	2009-04-073

**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."*

River Cement Company dba Buzzi Unicem USA  
Jefferson County, S40, T23, R6E

1. River Cement Company dba Buzzi Unicem USA shall not combust filter cake material in amounts greater than 22,030 tons per year. The filter cake material will be used as an alternate fuel for coal or petroleum coke in the kiln system.
2. Chemical Analysis of Filter Cake Material Requirement
  - A. River Cement Company dba Buzzi Unicem USA shall verify the metals content of the filter cake by testing. River Cement Company dba Buzzi Unicem USA shall test those metals that contribute to the emissions of any Hazardous Air Pollutant (HAP). The metal content of the filter cake material cannot exceed an amount that will cause the HAP emissions to be greater than the Screen Modeling Action Level (SMAL) for that HAP.
  - B. River Cement Company dba Buzzi Unicem USA shall verify sulfur content of the filter cake by testing. The sulfur content of the filter cake material cannot exceed that of coal or petroleum coke.
  - C. River Cement Company dba Buzzi Unicem USA shall maintain a record of the metal and sulfur content of the coal and petroleum coke being used in the kiln for comparison against the test results of the filter cake.
  - D. Testing shall be conducted on a sample of filter cake material from each vendor. In addition, testing shall be conducted at least once every year while the filter cake material is being used as an alternative fuel. River Cement Company dba Buzzi Unicem USA shall maintain a record of all test results for not less than five (5) years and shall make them available to any Missouri Department of Natural Resources' personnel upon request.
  - E. If the test results show that the metal and/or sulfur content of the filter cake material is higher than that of coal/petroleum coke and the resulting HAP emission rate is greater than the SMAL for any HAP, River Cement Company dba Buzzi Unicem USA shall apply for a new construction permit to account for the revised information.

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

Project Number: 2009-04-073  
Installation ID Number: 099-0002  
Permit Number:

River Cement Company dba Buzzi Unicem USA      Complete: June 2, 2009  
1000 River Cement Road  
P.O. Box 1003  
Festus, MO 63028

Parent Company:  
Buzzi Unicem USA  
100 Broadhead Road  
Bethlehem, PA 18017

Jefferson County, S40, T23, R6E

REVIEW SUMMARY

- River Cement Company dba Buzzi Unicem USA has applied for authority to use an alternative fuel in the cement kiln at the facility in Festus, Missouri.
- Hazardous Air Pollutant (HAP) emissions are expected in insignificant amounts from the combustion of filter cake material.
- Subpart Y *Standards of Performance for Coal Preparation Plants*, applies to some of the coal handling equipment.
- The Maximum Achievable Control Technology (MACT) standard, 40 CFR Part 63, Subpart LLL, *National Emission Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry*, applies to the kiln.
- No air pollution control equipment is being used in association with the new equipment.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Projected actual emissions of all criteria air pollutants are below de minimis levels.
- This installation is located in Jefferson County, a nonattainment area for ozone (O<sub>3</sub>) 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] as a Portland Cement Plant.

- Ambient air quality modeling was not performed since projected actual emissions of the application are below de minimis levels.
- Emissions testing is not required for the equipment/source.
- Revision to the installation's Part 70 Operating Permit application is required for this installation within 1 year of equipment startup.
- Approval of this permit is recommended with special conditions.

### INSTALLATION DESCRIPTION

River Cement Company dba Buzzi Unicem USA (River Cement) operates an existing Portland cement plant located in Jefferson County which is an existing major source of air pollutants for New Source Review (NSR) purposes and a Part 70 source by operating permits. River Cement operates two (2) cement kilns at the Selma Plant, one installed in 1965 and the other in 1969. Both kilns were shut down and a new preheater/calcliner kiln was started in July 2009 under Permit #122005-005. The following permits have been issued to River Cement Company from the Air Pollution Control Program.

Table 1: Permits issued by the Air Pollution Control Program

Permit Number	Description
122003-008A	Amendment of Permit 122003-008 for the applicability of NSPS Subpart Y.
122005-005A	Amendment of Permit 122005-005 and correction to as-built emission sources at the installation.
122005-005	A Section (8) permit for the replacement of two existing long-dry clinker production systems and their attending raw mill systems, with a single new clinker production line that will operate with an in-line raw mill and preheater/precalcliner kiln system, in addition to adding finish grinding capacity.
122003-008	A Section (5) permit for an indirect-fired solid fuel mill/feed system to replace the direct-fired solid fuel systems currently being used on the existing cement kilns. A net emission increase analysis was conducted on all the criteria air pollutants for this project.
052002-013	A Section (5) permit for the replacement of four existing air separators at Finish Mill Number 1 and Finish Mill Number 2 with two air separators of a slightly larger capacity. A net emission increase analysis was conducted on PM10 for this project.
1299-018	A temporary permit issued on December 2, 1999, to conduct a test program of oxygen enrichment to the combustion zone of the cement kiln.
OP2000112	A Part 70 Operating Permit issued on November 6, 2000.
0693-008	A Section (5) permit issued on June 14, 1993, for modification of fuel storage permit 0687-13A and fuel utilization permit 1288-004A in order to permit a change in the total number and volume of tanks, an increase in the annual fuel storage and utilization quantity, the addition of a vacuum operated truck, railcar, and on site container cleaning facility and the addition of another burner system to each kiln for the direct burning of high viscosity liquid (HVL) waste fuel.

0293-006	A Section (5) permit issued on January 22, 1993, to increase the cement storage capacity by one (1) silo with the addition of a reclaim conveyor and five (5) dust collectors.
0687-013B	An amendment to Permit No. 0687-013A issued on November 30, 1990, for modification of waste fuel storage permit.
1288-004A	An amendment issued on June 18, 1991, to modify the hazardous waste combustion Permit No. 1288-004.
0687-013A	An amendment issued on January 26, 1990, to modify Permit No. 0687-013A to allow the installation and operation of three (3) 22,000 gallon and six (6) 39,000 gallon storage tanks in place of the ten (10) 30,000 gallon storage tanks originally permitted.
1288-004	A Section (5) permit issued on December 9, 1988, to allow River Cement Company to burn hazardous waste fuel D001 [ignitable, nonlisted hazardous waste]. This submittal covers the physical burning of the fuel. (Ref. J.Pintor, RC, letter to M.Stansfield, MDNR, 1/29/87) "Peripherals necessary to allow a cement kiln to burn hazardous waste fuel. These include a fuel supply system and an oxygen monitor in the kiln stack."
0687-013	A Section (5) permit issued on June 29, 1987, Construction of storage tanks associated with the burning of hazardous waste fuel D001 [ignitable, nonlisted hazardous waste], (Ref. J.Pintor, RC, letter to M.Stansfield, MDNR, 1/22/87). Construction of ten (10) 30,000 gallon tanks for storage of hazardous waste fuel.

## PROJECT DESCRIPTION

River Cement Company dba Buzzi Unicem USA (Buzzi) is requesting the authority to use a diatomaceous filter cake material as an alternate fuel in the cement kiln at the cement manufacturing plant in Festus, Missouri. The filter material is a non-hazardous waste that can be used as a supplemental fuel to coal or coke in the kilns. The heating value of the filter cake material is 8,068 Btu/lb. According to an analysis performed on the filter cake material, the trace metals content of the alternative fuel is lower than that found in typical coal ash and similar to that found in petroleum coke. The sulfur content of the alternative fuel is less than 0.8%. This is lower than sulfur content of petroleum coke, which is about 5.0%.

Buzzi proposes to mix the filter cake material with the petroleum coke and feed it into the kiln at a rate of 12.8% by weight (based on weight used in the old kilns). Using the 2008 throughput values, the amount of filter cake material expected to be used would be 22,030 tons. The additional solid fuel would also cause an increase of PM10 emissions due to the additional delivery, handling and grinding of the alternative fuel. Table 2 outlines the equipment affected by the new alternative fuel. However, no changes or modification to the existing equipment is necessary to utilize the new material.

Table 2: List of affected equipment

Emission Point	Description	Emission Point	Description
4-K-02D	Cement Kiln - AF Combustion	8-B-06B	TP: COKE/COAL BELT 1730-FURNACE STORAGE TANK
8-B-03A	Haul Road: (paved) Coke/coal Entry Pile	8-B-07	TP:COKE/COAL BINS(2542/2550) TO BELTS(2623/2634)
8-B-03B	Haul Road: (unpaved) Coke/Coal Entry Pile	8-B-09AF	Raw Mill fluid Bed Furnace 1 – Alternate Fuel Combustion
8-B-04	Coke/Coal Storage Stckpile – Load In/Out	8-B-09BF	Raw Mill Fluid Bed Furnace 2 – Alternate Fuel Combustion
8-B-05	COKE/COAL HOPPER	8-B-12A	NORTH SOLID FUEL SILO
8-B-06	TP:COKE/COAL FROM BELT 1728-1730 & INT CRUSHER 1415	8-B-12B	SOUTH SOLID FUEL SILO
8-B-06A	TP: COKE/COAL BELTS 1730-1731 & 1731-1722 (2TP)	8-B-12	Coal Mill System

### EMISSIONS/CONTROLS EVALUATION

To determine if the use of the proposed alternative fuel would result in a significant emissions increase, projected actual emissions of the new fuel as defined in 40 CFR 52.21(b)(41) was evaluated for the use in the actual-to-projected-actual applicability test as outlined in 40 CFR 52.21(a)(2)(iv)(c). This applicability test, however, is not applicable to Hazardous Air Pollutant (HAP) emissions.

Buzzi proposes to burn approximately 22,030 tons of filter cake material at a rate not to exceed 12.8% weight of coal/petroleum coke used in the old kilns. A special condition can be found in this permit limiting the amount of filter material that can be burned annually. Therefore, the maximum future actual emissions are the potential emissions based on 40 CFR 52.21(b)(41)(ii)(d), and the projected actual emissions are the combustion emissions of coal/petroleum coke with the limited burning capacity of filter cake.

The emission factors used in this analysis were obtained from information submitted by the applicant on the characteristics of the filter cake material. Based on the chemical analysis of the filter cake, an increase in nitrogen oxides (NOx), carbon monoxide (CO) or volatile organic compounds (VOC) is not expected. A special condition is included in this permit that requires the testing of the composition of the filter cake to ensure that the content of sulfur and trace metals of the filter cake material will not exceed that of coal/coke. By including this testing condition, there will not be an increase in HAP or SOx emissions.

Baseline actual emissions (BAE) for each pollutant were taken from the installation's 2007 and 2008 Emissions Inventory Questionnaire (EIQ). The following table provides an emissions summary for this project.

Table 3: Emissions Summary (tons per year)

Pollutant	Regulatory De Minimis Levels	Existing Potential Emissions	Baseline Emissions (2007-8 EIQ)	Potential Emissions of the New Fuel*	PTE – BAE
PM <sub>10</sub>	15.0	Major	26.9	29.2	2.2
SOx	40.0	Major	55.4	58.4	3.0
NOx	40.0	Major	102.9	108.4	5.5
VOC	40.0	Major	0	0	0
CO	100.0	Major	5.1	5.0	-0.09
HAPs	10.0/25.0	Major	0	<SMAL*	<SMAL

\*A condition of this permit requires the sulfur content of the filter cake material be below that of existing fuels. Therefore, the potential emissions for SOx were evaluated at the same level as the existing fuels. A condition of this permit requires testing of the metal content of the filter cake such that the HAPs emissions will not exceed any SMALs.

### PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Projected actual emissions of all criteria air pollutants are below de minimis levels.

### APPLICABLE REQUIREMENTS

River Cement Company dba Buzzi Unicem USA 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

- *Restriction of Emission of Odors*, 10 CSR 10-3.090

#### SPECIFIC REQUIREMENTS

- *Restriction of Emission of Particulate Matter From Industrial Processes*, 10 CSR 10-6.400
- *New Source Performance Regulations*, 10 CSR 10-6.070 – *NSPS for Coal Preparation Plants*, 40 CFR Part 60, Subpart Y
- *Maximum Achievable Control Technology (MACT) Regulations*, 10 CSR 10-6.075, *National Emission Standards for the Portland Cement Manufacturing Industry*, 40 CFR Part 63, Subpart LLL

#### 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.

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Emily Wilbur  
Environmental Engineer

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Date

#### PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated April 4, 2009, received April 27, 2009, designating Buzzi Unicem USA as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- St. Louis Regional Office Site Survey, dated June 10, 2009.

Mr. James King  
Plant Manager  
River Cement Company dba Buzzi Unicem USA  
1000 River Cement Road  
P.O. Box 1003  
Festus, MO 63018-0903

RE: New Source Review Permit - Project Number: 2009-04-073

Dear Mr. King:

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 Emily Wilbur, at the Departments' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or 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:ewl

Enclosures

c: St. Louis Regional Office  
PAMS File: 2009-04-073

Permit Number: