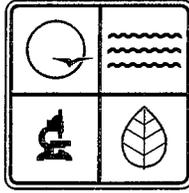


STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI AIR CONSERVATION COMMISSION



PERMIT BOOK

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: **112006-012** Project Number: **2006-08-032**

Owner: **Buzzi Unicem USA**

Owner's Address: **100 Brodhead Rd., Suite 230, Bethlehem, PA 18017**

Installation Name: **Lone Star Industries, dba Buzzi Unicem USA**

Installation Address: **2524 S. Sprigg St., Cape Girardeau, MO 63702**

Location Information: **Cape Girardeau County, S18, T30N, R14E**

Application for Authority to Construct was made for:

Increase in kiln operating rate due to oxygen injection into the kiln and calciner. Subsequent increase in ancillary equipment at installation. 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 (listed as attachments starting on page 2) are applicable to this permit.

NOV 21 2006

EFFECTIVE DATE


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. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the 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 as provided in RSMo 643.075. If you choose to appeal, the Air Pollution Control Program must receive your written declaration within 30 days of receipt of this permit.

If you choose not to appeal, this certificate, the project review, 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 Department of Natural Resources has established the Outreach and Assistance Center to help in completing future applications or fielding complaints about the permitting process. You are invited to contact them at 1-800-361-4827 or (573) 526-6627, or in writing addressed to Outreach and Assistance Center, P.O. Box 176, Jefferson City, MO 65102-0176.

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 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.	2006-08-032

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."

Lone Star Industries, dba Buzzi Unicem USA
Cape Girardeau County, S18, T30N, R14E

1. Stack Testing Requirements – New PH/PC Kiln System
 - A. Lone Star Industries, dba Buzzi Unicem USA (Lone Star) shall conduct performance testing on the existing kiln system (KP-2A) after installation of the oxygen injection system sufficient to quantify the emission rates of the following criteria pollutants from the kiln system.
 - 1) Sulfur oxides (SO_x),
 - 2) Nitrogen oxides (NO_x), and
 - 3) Volatile organic compounds (VOC).These tests shall be done in accordance with the procedures outlined below.
 - B. A completed Proposed Test Plan (form enclosed) must be submitted to the Air Pollution Control Program at least 30 days prior to the proposed test date of any such performance tests so that a pretest meeting may be arranged, if necessary, and to assure that the test date is acceptable for an observer to be present. The Proposed Test Plan must include specification of test methods to be used and be approved by the Director prior to conducting the required emissions testing.
 - C. Within 60 days of achieving the maximum production rate of the modified kiln system, the owner/operator shall have conducted the required performance tests.
 - D. Any required performance testing shall be conducted during periods of representative conditions and should also be conducted at the maximum process/production rates or within ten percent (10%) of this stated capacity, not to include periods of start-up, shutdown, or malfunction. However, if performance testing is conducted at a production rate which is less than 90% of the maximum stated capacity of the equipment, then ten percent (10%) above the production rate at which the performance test was conducted shall become the new maximum allowable hourly production rate for the unit.

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SPECIAL CONDITIONS:

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

- E. Two (2) copies of a written report of the performance test results must be submitted to the Director within 90 days of completion of the performance testing. The report must include legible copies of the raw data sheets, analytical instrument laboratory data, and complete sample calculations from the required Environmental Protection Agency (EPA) Method for at least one (1) sample run for each air pollutant tested.
 - F. No later than thirty (30) days after the performance test results are submitted, Lone Star shall provide the Director with a report that establishes the potential emissions of each air pollutant tested in Special Conditions No. 1.A. This report shall report the potential emission rates in pounds per hour, tons per year, pounds per ton of kiln feed and pounds per ton of clinker produced from the modified kiln system in order that the Air Pollution Control Program may verify the potential emissions from this project.
 - G. If the results of the performance testing shows that the emission rates for SO_x, NO_x, or VOC are greater than those used in the emissions analysis herein, then Lone Star shall evaluate what effects these higher emission rates would have had on the permit applicability of this project. Lone Star shall submit the results of any such evaluation in a timely manner for Air Pollution Control Program review and approval.
 - H. The above time frames associated with this performance testing condition may be extended upon request of Lone Star and approval by the Director.
2. Record Retention Requirements
Lone Star shall maintain all records required as outlined in 40 CFR 52.21 supporting the findings of the actual-to-projected-actual applicability tests used in Lone Star's analysis.

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

Project Number: 2006-08-032
Installation ID Number: 031-0021
Permit Number:

Lone Star Industries, dba Buzzi Unicem USA
2524 S. Sprigg St.
Cape Girardeau, MO 63702

Complete: August 7, 2006
Reviewed: October 26, 2006

Parent Company:
Buzzi Unicem USA
100 Brodhead Rd., Suite 230
Bethlehem, PA 18017

Cape Girardeau County, S18, T30N, R14E

REVIEW SUMMARY

- Lone Star Industries, dba Buzzi Unicem USA has applied for authority to increase kiln operating rate due to oxygen injection into the kiln and calciner. Ancillary equipment throughputs will increase due to the change in operating rate.
- Hazardous Air Pollutant (HAP) emissions expected from cement manufacturing processes are lead, beryllium, mercury, fluorides, benzene and hydrogen chloride. Emissions of these HAPs are not expected to increase as a result of this project.
- Subpart OOO, *Standards of Performance for Nonmetallic Mineral Processing Plants*, of the NSPS applies to the equipment that has undergone modification. Subpart Y, *Standards of Performance for Coal Preparation Plants*, applies to the coal handling equipment that has undergone modification. *Modification* is defined as any physical change in, or change in the method of operation of, an existing facility which increases the amount of any air pollutant emitted into the atmosphere by that facility or which results in the emission of any air pollutant into the atmosphere not previously emitted.
- The MACT standard, 40 CFR Part 63, Subpart EEE, *National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors*, applies to the installation.
- All existing air pollution control equipment will continue to control emissions from the installation.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Emissions of each criteria pollutant are below de minimis levels based on actual-to-projected actual applicability test.

- This installation is located in Cape Girardeau County, an attainment area for all criteria air pollutants.
- This installation is on the List of Named Installations [10 CSR 10-6.020(3)(B), Table 2, Number 3, *Portland Cement Plants*].
- Ambient air quality modeling was not performed since potential emissions of the application are below de minimis levels.
- Emissions testing is required for the kiln system.
- Revision to the 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

Lone Star Industries, Inc. dba Buzzi Unicem USA – Cape Girardeau (Lone Star) owns and operates a cement manufacturing installation in Cape Girardeau County. This cement manufacturing plant is an existing major source of air emissions. This facility was issued a Part 70 Operating Permit (OP2001-029) on April 19, 2001. The applicant has submitted a renewal application for the Part 70 permit (Project No. 2005-10-052). The following construction permits have been issued to Lone Star from the Air Pollution Control Program.

Table 1: Previously Issued Construction Permits

Permit Number	Description
0483-009..011	Equipment modification
0691-010	Tires as fuel substitute
0392-001	Liquid hazardous waste
0693-009	Amend permit to identify filter pot cleaning
0496-007	Add three (3) clinker silos
0697-004	Replace crusher
1197-012	Installation of spray tower and baghouse and replacement of the raw mill fan, the clinker cooler fans and grade, belt KB-1200, belt R-3700 motor, raw material elevator KB-1600, and the raw mill separator
1197-012A	Amendment to Permit No. 1197-012
102000-016	Addition of a new quarry to supply raw material for the kiln
042002-002	Installation of a synthetic gypsum process at the existing Cape Girardeau cement plant
0496-007A	Amendment to Permit No. 0496-007
072003-007	Modification to the existing blended synthetic gypsum process
092004-007	Temporary Permit for possible usage of petroleum coke to replace a portion of the coal currently being combusted in cement kiln
062005-005	Temporary Permit to evaluate the introduction of chipped tire-derived fuel (TDF) into the calciner as a fuel
092004-007A	Extension of Temporary Permit 092004-007
092005-014	Combustion improvement
102005-018	Installation of a hopper, belt conveyor, and storage bin with a loadout spout to offload raw materials from barges to haul trucks
042006-002	Feeder system

PROJECT DESCRIPTION

On September 27, 2005, Lone Star received a temporary permit (Permit No. 092005-014) to test injection of oxygen into the combustion zone of the kiln and calciner. Lone Star did not actually begin that trial until April 2006, so an extension to the temporary permit was granted in August 2006 to allow the installation to finish the trial. It was believed that injection of oxygen into the kiln and calciner would result in an increase in kiln combustion efficiency. Results of the trial were promising; decreases in particulate matter, nitrogen oxide (NO_x) and sulfur oxide (SO_x) emission rates occurred, even while operating at a higher kiln feed rate. Other advantages cited by Lone Star include a reduction of specific fuel consumption, improvement in kiln stability and improved clinker quality. Therefore, Lone Star has proposed to make oxygen injection a normal part of their kiln operations.

Lone Star will be installing two (2) 13,000 gallon liquid oxygen storage tanks, a flow control module, supply piping from the storage tanks to the existing burner pipe and an oxygen injection lance. None of these pieces of equipment are considered emission sources; however, their installation will allow Lone Star to operate the kiln at a higher rate on an hourly basis, thereby increasing emissions. The feed rate to the kiln is expected to increase from 330 tons per hour (tph) to 361 tph, an increase of 9.39%; clinker production will increase to approximately 196 tph. Since production is expected to increase, all related operations at the installation, such as raw material and final product processing, are also expected to experience an increase.

This project is not considered to be a major modification, according to the actual-to-projected-actual-test per 40 CFR 52.21 (a)(2)(iv)(c):

“A significant emissions increase of a regulated NSR pollutant is projected to occur if the sum of the difference between the projected actual emissions and the baseline actual emissions for each existing emissions unit, equals or exceeds the significant amount for that pollutant.”

Baseline actual emissions for this project were taken as the 2-year average emissions from Lone Star's 2003 and 2004 Emissions Inventory Questionnaire submittals. Projected actual emissions were calculated based on a kiln feed rate of 361 tons per hour and an increase of 9.39% for all other processes. Since the significance threshold for no regulated NSR pollutant is exceeded for this modification, the project was reviewed under Section (5).

EMISSIONS/CONTROLS EVALUATION

Potential emissions for the project were calculated using several different methods. Particulate matter less than ten (10) microns in diameter (PM₁₀) emissions from the kiln system were calculated using results from stack tests conducted on May 23, 2006 for Subpart EEE compliance. The particulate matter (PM) emission rate was determined to be 0.0778 pounds per ton (lb/ton) of kiln feed during the testing. For this analysis, it was assumed that all PM is PM₁₀. The increase in PM₁₀ emissions resulting from increased raw material and final product processing was assumed to be 9.39% greater than the 2-year average emissions from 2003/2004. Alternate fuels emissions should not be affected by the proposed change, so no increases from those processes were

included in the calculations.

Emission rates for NO_x (0.8932 lb/ton kiln feed) and SO_x (0.1647 lb/ton kiln feed) from the kiln were taken from the kiln's continuous emissions monitoring systems (CEMS). A special condition is included in this permit requiring Lone Star to conduct stack testing after installation of the oxygen injection system to verify that the emission rates determined from the CEMS are valid. There is no other equipment that emits NO_x or SO_x that is expected to have experience a change due to this project.

Organic compounds found in the raw materials are the primary source of VOC emissions from the kiln system. For purposes of this review, it was assumed that VOC emissions would increase by the same 9.39% as the increase in kiln feed rate. There is no distinction in the 2003/2004 actual emissions data used in the analysis to specify what portion of VOC emissions are due to alternative fuel usage and what portion to the organic compounds found in the raw materials. A testing condition is included in the special conditions. Results of the testing must show that the VOC significant threshold is not exceeded when utilizing oxygen injection.

CO emissions are expected to decrease substantially with the use of oxygen injection. Lone Star has provided CO process monitor data from the first stage of the preheater tower and the bypass duct. The data compared the CO emissions before and during the oxygen injection trial. The CEMS results showed that CO emissions decreased around 63% on a parts per million basis, even at the higher feed rate after oxygen injection. Stack testing is not required for this pollutant, based on the information already provided.

HAP emissions are not expected to increase, or may actually decrease due to improved destruction efficiencies related to more efficient combustion. According to the applicant, Lone Star is not increasing the feedrate limits established by Subpart EEE for mercury, low volatile metals, semi-volatile metals (including lead), or chlorine/chloride. Should the applicant revise those feedrates in the future, New Source Review applicability should be evaluated.

Potential emissions of the application represent the projected actual emissions of the existing equipment, assuming continuous operation (8760 hours per year) and a maximum kiln feed rate of 361 tons per hour. The following table provides an emissions summary for this project.

Table 2: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	2-Year Average Actual Emissions (2003/2004 EIQ)	Projected Actual/Potential Emissions After Modification	Net Emissions Increase
PM ₁₀	15.0	Major	379.23	378.93	-0.30
SO _x	40.0	Major	1407.19	260.80	-1,146.39
NO _x	40.0	Major	1694.03	1,412.49	-281.54
VOC	40.0	Major	39.98	43.73	3.75
CO	100.0	Major	9862.64	N/D	Decrease
HAPs	10.0/25.0	Major	26.70	26.70	0

*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 each criteria pollutant are below de minimis levels.

APPLICABLE REQUIREMENTS

Lone Star Industries, 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 April 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 – *New Source Performance Standards (NSPS) for Nonmetallic Mineral Processing Plants*, 40 CFR Part 60, Subpart OOO
- *New Source Performance Regulations*, 10 CSR 10-6.070 – *New Source Performance Standards (NSPS) for Standards of Performance for Coal Preparation Plants*, 40 CFR Part 60, Subpart Y
- *Maximum Achievable Control Technology (MACT) Regulations*, 10 CSR 10-6.075, *National Emission Standards from Hazardous Waste Combustors*, 40 CFR Part 63, Subpart EEE

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.

Lina Klein, P.E.
Environmental Engineer

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated August 3, 2006, received August 7, 2006, designating Buzzi Unicem USA as the owner and operator of the installation.
- Southeast Regional Office Site Survey, dated August 29, 2006.

Mr. W. Steven Leus, Jr.
Plant Manager
Lone Star Industries, dba Buzzi Unicem USA
P.O. Box 520
Cape Girardeau, MO 63702

RE: New Source Review Permit - Project Number: 2006-08-032

Dear Mr. Leus:

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 revised 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 me at (573) 751-4817, or you may write to me at the Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, Missouri 65102. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Kendall B. Hale
New Source Review Unit Chief

KBH:lk1

Enclosures

c: Southeast Regional Office
PAMS File:2006-08-032

Permit Number: