MISSOURI
DEPARTMENT OF
NATURAL RESOURCES
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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: 07 2017 - 014

Project Number: 2017-03-023
Installation Number: 031-0021

Parent Company:	Buzzi Unicem USA
Parent Company Address:	100 Brodhead Road, Bethlehem, PA 18017-8989
Installation Name:	Lone Star Industries, Inc. dba Buzzi Unicem USA – Cape Girardeau Plant
Installation Address:	2524 South Sprigg Street, Cape Girardeau, MO 63701
Location Information:	Cape Girardeau County, S18, T30N, R14E

Application for Authority to Construct was made for:

Replacement of the baghouse and stack associated with the kiln and modification of ductwork at the top of the preheater tower. 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.

Prepared by
Chia-Wei Young
New Source Review Unit

Director or Designee
Department of Natural Resources

JUL 24 2017

Effective Date

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 Enforcement and Compliance Section of 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 Enforcement and Compliance Section of the Department's Air Pollution Control Program of the anticipated date of startup of this (these) air contaminant sources(s). The information must be made available within 30 days of actual startup. Also, you must notify the Department's regional office responsible for the area within which you are located within 15 days after the actual startup of this (these) air contaminant source(s).

A copy of the permit application and this permit and permit review shall be kept at the installation address and shall be made available to Department's 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 sources(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 using the contact information below.

Contact Information:
Missouri Department of Natural Resources
Air Pollution Control Program
P.O. Box 176
Jefferson City, MO 65102-0176
(573) 751-4817

The regional office information can be found at the following website:
http://dnr.mo.gov/regions/

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." Special Conditions 8.B. and 8.C. taken verbatim from Permit No. 122005-005 and 122005-005A.

Buzzi Unicem USA – Cape Girardeau Plant
Cape Girardeau County, S18, T30N, R14E

1. Projected Actual Emissions to Baseline Actual Emissions Analysis Requirements
   A. Prior to beginning actual construction of this project, Buzzi Unicem USA – Cape Girardeau Plant shall document and maintain a record of the following:
      1) A description of the project
      2) Identification of the emission units whose emissions of a regulated NSR pollutant (i.e. $PM_{2.5}$, PM_{10}, PM, NO_X, SO_X, VOC, and CO) could be affected by this project.
      3) A description of the applicability test used to determine that the project is not a major modification for any regulated NSR pollutant, including the baseline actual emissions (BAE), the projected actual emissions (PAE), the amount of emissions that may be excluded, an explanation describing why such amount was excluded, and any netting analysis if applicable. The BAE, PAE, and the amount of emissions that may be excluded shall be determined based on definitions given in 40 CFR 52.21(b)(41).

   B. Buzzi Unicem USA – Cape Girardeau Plant shall record the emissions performance of any regulated NSR pollutant that could increase as a result of this project and calculate the annual emissions of all regulated NSR pollutants, in tons per year on a calendar year basis, for a period of ten (10) years after the installation of the new kiln baghouse and replacement of the baghouse stack.

   C. Buzzi Unicem USA – Cape Girardeau Plant shall submit a report to the New Source Review Unit of the Missouri Air Pollution Control Program by May 1st after the end of each year during which records must be generated under Special Condition 1.B., setting out the annual emissions during the calendar year that preceded submission of the report.

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

D. Buzzi Unicem USA – Cape Girardeau Plant shall make the information required in Special Conditions 1.A and 1.B. available for review upon request by Missouri Department of Natural Resources personnel.

2. Determination of Maximum Clinker Production from the Kiln (KP-2)

A. Within one year after completing the construction and modifications involved in this project, Buzzi Unicem USA – Cape Girardeau Plant shall submit a report to the New Source Review Unit of the Missouri Air Pollution Control Program detailing the determination of the maximum annual clinker production rate. The report may be deemed confidential upon request by the installation. The report shall include, at a minimum, the monthly clinker production used to determine the annual maximum production rate, an analysis of expected kiln downtime, and an explanation of any operational restrictions that may affect the production rate on a longer term basis.

B. After the submission of the report required in Special Condition 1.A., if Buzzi Unicem USA – Cape Girardeau Plant ever produces more clinker during a calendar year than those indicated in the report, it shall submit a revised report described in Special Condition 2.A detailing the revised maximum annual clinker production. This report may be deemed confidential upon request by the installation.

3. Control Requirements - Baghouses

A. Buzzi Unicem USA - Cape Girardeau Plant shall control particulate matter emissions from equipment listed in Appendix A using baghouses as specified in the permit application.

B. The emission units listed in Appendix A shall be constructed and maintained such that no visible emissions are allowed to occur from these sources except through the gasses existing from the baghouses.

C. The baghouses shall be equipped with a gauge or meter that indicates the pressure drop across the control device. The gauges or meters shall be located such that the Department of Natural Resources' personnel may easily observe them or shall be tied into the plant control room where the real time pressure drop data can be viewed. The pressure drop shall be maintained within the values identified by the manufacture's specifications. If the pressure drop deviates from the range specified by the manufacturer, Buzz Unicem USA – Cape Girardeau Plant shall perform corrective actions to bring the pressure drop back into the acceptable range. Any corrective actions shall be documented in the log required in Special Condition 10.E.

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

D. An appropriate quantity of replacement filters shall be kept on hand or at the bag suppliers so that the bags may be readily available when needed to ensure compliance with all applicable requirements. Replacement filters shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).

E. Buzzi Unicem USA – Cape Girardeau Plant shall maintain an operating and maintenance log for each baghouse, which shall include the following:
1) Incidents of malfunction(s) including the date(s) and duration of the event, the probable cause, any corrective actions taken and the impact on emissions due to the malfunction,
2) Any maintenance activities conducted on the unit, such as parts replacement, replacement of equipment, etc., and
3) A record of regular inspection schedule, the date and results of all inspections including any actions or maintenance activities that result from that inspection.

4. Control Device – Water Spray
A. Buzzi Unicem USA – Cape Girardeau Plant shall control particulate emissions from the following equipment using water sprays or other dust suppression agents as specified in the permit application.

Table 1: Equipment to be Controlled by Water Spray or Dust Suppression Agents

Emission Point No.	Unit Description
CH-6	Screen (W-9701)
KP-1	Raw Material Transfer to Mill Feeders (R-3801)
KP-1A	Transfer Belts (R-3803, R-3700)
KP-7A	Truck Loading
KP-9	CKD Landfill
RM-18	Hammermill Crusher (W-4800)
RM-19	Transfer Belts (W-4900, W-5000)
RM-27	Transfer Belt (W-3800)

5. Haul Road Control - Paving
A. Buzzi Unicem USA – Cape Girardeau Plant shall maintain as paved, the following haul road segments with asphalt, concrete, or other materials approved by the Missouri Air Pollution Control Program.

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

Table 2: Paved Haul Road List

Road Segment No.	Haul Road ID	Description	Distance (VMT)
11	CH-2	Coal Haul Road	0.018
	KP-12A	Clinker Haul Road	
15	CH-2	Coal Haul Road	0.107
	KP-12A	Clinker Haul Road	
	KP-8A	Haul Road to CKD Landfill	
	KP-24	Internal Plant Clinker Hauling	
	RM-22	Haul Road to Raw Material Storage Piles	
16	KP-8A	Haul Road to CKD Landfill	0.042
	KP-12A	Clinker Haul Road	
	KP-24	Internal Plant Clinker Hauling	
	TH-2	Solid Fuel/Slag Haul Road	
17	KP-12A	Clinker Haul Road	0.029
	KP-24	Internal Plant Clinker Hauling	
18	KP-8A	Haul Road to CKD Landfill	0.016
19	CH-2	Coal Haul Road	0.027
	RM-22	Haul Road to Raw Material Storage Piles	
	TH-2	Solid Fuel/Slag Haul Road	
20	CH-2	Coal Haul Road	0.115
	AF-1	Alternate Fuels Haul Road	
	RM-22	Haul Road to Raw Material Storage Piles	
	TH-2	Solid Fuel/Slag Haul Road	
21	AF-1	Alternate Fuels Haul Road	0.092
22	TH-2	Solid Fuel/Slag Haul Road	0.032
23	TH-2	Solid Fuel/Slag Haul Road	0.016
24	AF-1	Alternate Fuels Haul Road	0.066
25	AF-1	Alternate Fuels Haul Road	0.028
	CH-2	Coal Haul Road	
	RM-22	Haul Road to Raw Material Storage Piles	
	TH-2	Solid Fuel/Slag Haul Road	
27	RM-22	Haul Road to Raw Material Storage Piles	0.040
	TH-2	Solid Fuel/Slag Haul Road	
29	TH-2	Solid Fuel/Slag Haul Road	0.154
30	RM-22	Haul Road to Raw Material Storage Piles	0.101

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

33	TH-2	Solid Fuel/Slag Haul Road	0.011
34	TH-2	Solid Fuel/Slag Haul Road	0.027
35	KP-8A	Haul Road to CKD Landfill	0.022
	KP-12A	Clinker Haul Road	
	KP-24	Internal Plant Clinker Hauling	
36	RM-22	Haul Road to Raw Material Storage Piles	0.024
38	TH-2	Solid Fuel/Slag Haul Road	0.016

B. Maintenance and repair of the road surface shall be conducted as necessary to ensure that the physical integrity of the pavement is adequate to achieve control of fugitive emissions from these areas while the plant is operating.

C. Buzzi Unicem USA – Cape Girardeau Plant shall periodically water, wash, or otherwise clean all of the paved portions of the haul roads as necessary to achieve control of fugitive emissions from these areas while the plant is operating.

6. Haul Road – Undocumented Watering

A. Buzzi Unicem USA – Cape Girardeau Plant shall control fugitive emissions from the following unpaved haul roads at the installation by applying water whenever conditions exist that would allow visible emissions from these sources to leave the property.

Table 3: Unpaved Haul Road List

Road Segment No.	Haul Road ID	Description	Distance (VMT)
1	RM-4	Quarry Haul Road	0.650
2	RM-22	Haul Road to Raw Material Storage Piles	0.108
	CH-2	Coal Haul Road	
	TH-2	Solid Fuel/Slag Haul Road	
3	KP-24	Internal Plant Clinker Hauling	0.046
4	RM-22	Haul Road to Raw Material Storage Piles	0.400
	CH-2	Coal Haul Road	
	TH-2	Solid Fuel/Slag Haul Road	
	KP-24	Internal Plant Clinker Hauling	

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

5	RM-22	Haul Road to Raw Material Storage Piles	0.134
	CH-2	Coal Haul Road	
	KP-8A	Haul Road to CKD Landfill	
	KP-12A	Clinker Haul Road	
6	RM-22	Haul Road to Raw Material Storage Piles	0.034
	TH-2	Solid Fuel/Slag Haul Road	
7	RM-22	Haul Road to Raw Material Storage Piles	0.085
	CH-2	Coal Haul Road	
	KP-8A	Haul Road to CKD Landfill	
	KP-12A	Clinker Haul Road	
	KP-24	Internal Plant Clinker Hauling	
8	RM-22	Haul Road to Raw Material Storage Piles	0.179
	TH-2	Solid Fuel/Slag Haul Road	
	KP-8A	Haul Road to CKD Landfill	
	KP-12A	Clinker Haul Road	
9	RM-22	Haul Road to Raw Material Storage Piles	0.124
	TH-2	Solid Fuel/Slag Haul Road	
	KP-12A	Clinker Haul Road	
10	KP-8A	Haul Road to CKD Landfill	0.249
12	CH-2	Coal Haul Road	0.061
13	CH-2	Coal Haul Road	0.064
14	KP-12A	Clinker Haul Road	0.074
26	RM-22	Haul Road to Raw Material Storage Piles	0.051
	TH-2	Solid Fuel/Slag Haul Road	
28	KP-12A	Clinker Haul Road	0.037
31	RM-22	Haul Road to Raw Material Storage Piles	0.049
32	RM-22	Haul Road to Raw Material Storage Piles	0.053
37	RM-22	Haul Road to Raw Material Storage Piles	0.044

B. Watering may be suspended when the ground is frozen, during periods of freezing conditions when watering would be inadvisable for traffic safety reasons, or when there will be no traffic on the roads.

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

7. Enclosure Control
Buzzi Unicem USA – Cape Girardeau Plant shall control fugitive emissions from the clinker storage piles (KP-14B), the diaspore/tripoli storage pile (RM-20) by maintaining the existing three-sided enclosure with a roof.

8. Record Keeping and Reporting Requirements
   A. Buzzi Unicem USA – Cape Girardeau Plant shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request.

   B. Buzzi Unicem USA – Cape Girardeau Plant shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 10 days after the end of the month during which any record required by this permit shows an exceedance of a limitation imposed by this permit.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (5) REVIEW
Project Number: 2017-03-023
Installation ID Number: 031-0021
Permit Number: 07 2017 - 014

Installation Address:
Buzzi Unicem USA – Cape Girardeau Plant
2524 South Sprigg Street
Cape Girardeau, MO 63701

Parent Company:
River Cement Company

100 Brodhead Road, Suite 230
Bethlehem, PA 18017-8989

Cape Girardeau Plant, S18, T30N, R14E

REVIEW SUMMARY

- Buzzi Unicem USA – Cape Girardeau Plant has applied for authority to replace the baghouse and stack associated with the kiln (KP-2) and modify the ductwork at the top of the preheater tower.

- The application was deemed complete on March 6, 2017.

- HAP emissions are expected from the proposed equipment. HAPs of concern from this process are hydrogen chloride, lead, and mercury. The HAP emitting units at the installation are subject to the requirements of a MACT standard.

- 40 CFR 60, Subpart OOO, *Standards of Performance for Nonmetallic Mineral Processing Plants*, and 40 CFR 60 Subpart F, *Standards of Performance for Portland Cement Plants*, of the NSPS applies to the installation.

- 40 CFR 63, Subpart EEE, *National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors,* applies to some of the equipment at the installation.

- Baghouses, water sprays, and enclosures are being used to control the particulate emissions from the equipment in this permit.

- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required.*

- This installation is located in Cape Girardeau County, an attainment area for all criteria pollutants. This installation is on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation is classified as item number 3. Portland Cement Plants. The installation's major source level is 100 tons per year

and fugitive emissions are counted toward major source applicability.

- Ambient air quality modeling was not performed for this project.
- A Part 70 Operating Permit application is required for this installation within one year after completion of the installation of the new kiln baghouse and stack (KP-2)
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Buzzi Unicem currently operates a Portland cement manufacturing installation in Cape Girardeau, Missouri that performs quarrying and crushing of raw materials, and processing of these materials into Portland cement via a kiln system (KP-2) The installation consist of equipment to prepare raw material into pyro-process kiln feed (Raw Grinding), process kiln feed into clinker (Burning), prepare raw fuel for combustion (Fuel Grinding), and process clinker into cement (Finish Grinding).

The installation is considered an existing major source of air pollutants for New Source Review (NSR) purposes and a Part 70 source for Operating Permit purposes. The following NSR permits and amendments have been issued to River Cement Company from the Air Pollution Control Program.

Table 4: New Source Review Permits and Amendments

Permit Number	Description
0278-EPA	Installation of a new Portland cement plant (Issued under Marquette Company)
0483-009	Installation of clinker loading system
0691-010	Installation of feed system
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
102000-016	Addition of a new quarry to supply raw material for the kiln
042002-002	Installation of a synthetic gypsum process
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 the cement kiln

062005-005	Temporary permit to evaluate the introduction of chipped tire-derived fuel (TDF) into the calciner as 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
112006-012	Oxygen injection resulting in increased kiln operating rate
0691-010A	Use of alternative fuel
042010-013	Use of on-spec used oil as fuel in the cement kiln
0392-001A	Increase in amount of liquid hazardous waste fed to the kiln
082010-002	Temporary permit to burn liquid fuel in the precalciner
072011-008	Temporary crusher
022012-004	Temporary permit to burn liquid hazardous waste in the calciner
022012-004A	Amendment of Permit 022012-004 to add nonhazardous liquid waste
0496-007B	Modify dust collection system for the clinker handling process

PROJECT DESCRIPTION

The existing kiln main baghouse at the installation has reached the end of its useful life and requires replacing for the kiln system to continue to operate effectively. The new main baghouse and stack will have a slightly modified design from the existing main baghouse and stack. No new emission units are proposed with the current project. This modification will replace the baghouse and stack associated with the kiln and modify ductwork at the top of the preheater tower. The facility is required, within one year after the start of the operation of the new kiln baghouse and the kiln stack replacement, to submit a report to the New Source Review Unit of the Missouri Air Pollution Control Program detailing the maximum annual production rate of the plant. If, after the submission of the report, the plant produces more annual clinker than the capacity indicated in the report, the installation shall submit a new report to the New Source Review Unit of the Missouri Air Pollution Control Program regarding the new maximum production capacity for the kiln.

The existing main baghouse has two ID fans, the kiln KD fan and the raw mill ID fan. The kiln ID fan will continue to control airflow through the kiln and will remain unchanged by the proposed project. The existing raw mill KD fan will be modified to only control the air flow from the raw mill. Excess air from the kiln that does not need to go through the raw mill will be sent to the new main baghouse by a new cone valve. In the current design, the raw mill limits the air flow through the kiln as all airflow also has to pass through the raw mill. With the addition of the new cone valve, the plant can increase the air flow through the kiln, while only proportioning the necessary air to the

raw mill. Although the airflow will increase for the proposed project, the decrease in air flow through the raw mill will result in the overall airflow through the main baghouse decreasing from 420,000 acf/min to around 363,000 acf/min. A new baghouse ID fan will be added to control airflow through the main baghouse.

EMISSIONS/CONTROLS EVALUATION

Buzzi Unicem USA – Cape Girardeau Plant compared past actual emissions and future projected actual emissions to support that the emissions increase from this project are less than the respective *de minimis* levels so that this project does not quality as a PSD project. Buzzi Unicem USA – Cape Girardeau Plant stated that the results of the analysis indicate that there will be no significant increase in the emissions of any regulated NSR pollutants from the installation due to the addition of the baghouse and replacement of the kiln stack.

Although Buzzi Unicem USA – Cape Girardeau Plant asserted that PSD review is not required for this project, the Missouri Air Pollution Control Program did not make a determination regarding PSD applicability, and nothing in this permit should be construed as a concurrence with the PSD applicability analysis performed by Buzzi Unicem USA – Cape Girardeau Plant. This permit is issued in order to make the operation of the new kiln baghouse and other control devices/measures of affected emission units enforceable as a practical matter. The calculation procedures to determine the project emissions increases were submitted by the installation as part of its application and included in Appendix B. Special Condition 1 of this permit is based on 40 CFR 52.21 with modified wording to fit this permit.

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required.*

APPLICABLE REQUIREMENTS

Buzzi Unicem USA – Cape Girardeau Plant 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
    - Per 10 CSR 10-6.110(4)(B)2.A., a full EIQ is required annually
- *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 10-6.165

SPECIFIC REQUIREMENTS

- *New Source Performance Regulations*, 10 CSR 10-6.070
    - *Standards of Performance for Nonmetallic Mineral Processing Plants*, 40 CFR Part 60, Subpart OOO
    - *Standards of Performance for Portland Cement Plants,* 40 CFR Part 60, Subpart F
- *MACT Regulations*, 10 CSR 10-6.075
    - *National Emission Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry,* 40 CFR Part 63, Subpart LLL
- *Control of NO_X Emissions from Portland Cement Kilns,* 10 CSR 10-6.380
- *Control of Sulfur Dioxide Emissions*, 10 CSR 10-6.261

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated February 24, 2017, received March 6, 2017, designating Buzzi Unicem USA as the owner and operator of the installation.

Other documents relied upon during technical review.

- E-mail communications between Missouri Air Pollution Control Program and Buzzi Unicem USA – Cape Girardeau Plant.
- Baseline Actual Inventory 2007-2008 and Potential Emissions Inventory spreadsheets submitted by Buzzi Unicem USA – Cape Girardeau Plant.
- Drafts permits sent by Missouri Air Pollution Control Program to Buzzi Unicem USA – Cape Girardeau Plant and the installation's response comments to the drafts.
- EPA AP-42, Fifth Edition, "Compilation of Air Pollutant Emission Factors, Volume 1: stationary Point and Area Sources."

Appendix A: Equipment to be Controlled by Baghouses

Emission Point No.	Unit Description	Flowrate (acfm)
RM6A	Primary Crusher (A-1700)	20,000
RM6B	Primary Crusher Transfer Belts (A-1900, A-2000)	
RM29A	Limestone Storage Silos (W-4501)	7,500
RM29B	Diaspore Storage Silo (W-4502)	
RM29C	Tripoli Storage Silo (W-4503)	
RM29D	Mill Scale Storage Silo (W-4505)	
RM29E	Gypsum Storage Silo (W-4511)	
RM29F	Limestone Storage Silo (W-4512)	
RM30	Flyash Storage Silos (W-4505, W-4506)	2,500
RM31	Flyash Pfister Feeders	600
CH10A1	Kiln Coal Mill (C-1100)	37,000
CH10A	Precalciner Coal Mill (C-2500)	24,300
KP1B	Raw Mill Reject Return Belts (R-04360, R-04362, R-04364)	2,500
KP3A	Raw Blend Silos (B-0701, B-0702, B-0703, B-0704)	20,000
KP4A	Raw Blend Elevator (KB-1600)	5,000
KP4B	Air Slide (KB-1808)	1,500
KP4C	Kiln Feed Bin (KB-1700)	
KP7B	CKD Storage Silo (KB-3800)	2,500
KP7C	CKD Storage Silo (KB-3900)	3,000
KP10	Drag Conveyors (KC-0501, KC-0802)	10,000
KP11A	Bucket Elevator (KC-0601)	
KP11B	Bucket Elevator (KC-0602)	
KP15B	Transfer Belt (W-7900)	2,500
KP15A	Hopper Loading (W-9200)	2,800
KP15C	Transfer Belt (W-8200)	
KP16A	Transfer Belt (KC-1000)	2,500
KP16B	Diverter Box (KC-0603)	
KP16C	Clinker Bin (W-6601)	
KP17A, B, C	Storage Silos (W-4508, W-4509, W-4510)	5,500
KP18A	Three Transfer Belts (KC-2600, KC-2620, KC-2630)	6,750
KP18B	Three Clinker Storage Silos (KC-2901, KC-2902, KC-2903)	
KP19A	Transfer Belt (KC-3200)	5,650
KP19B	Bucket Elevator (KC-3400)	
KP20	Transfer Belt (KC-3600)	4,400
KP21	Bucket Elevator (KC-2550)	5,500

FM1	#5 Mill Drag Conveyor (F-12701)	5,000
FM1-1	#5 Mill Bucket Elevator (F-12702)	
FM1A	#4 Mill Drag Conveyor (F-8701)	5,000
FM2A	Finish Mill #4 (F-8900)	27,000
FM2	Finish Mill #5 (F-12900)	27,000
FM3A1	#5 Mill Separator (F-13500)	45,000
FM3B2	#5 Mill Air Slide/Distribution Box/Cement Cooler/Air Slid/Bin	
FM3A2	#4 Mill Separator (F-9500)	45,000
FM3B1	#4 Mill Air Slide/Distribution Box/Cement Cooler/Air Slid/Bin	
FM4A	Masonry Silos (37,42, 43)	5,500
FM4B	New Cement Silos (38, 39, 40, 41, 44, 45, 46)	10,000
FM5	Cement Transfer Belt (D-4100)	5,500
FM5A	Cement Transfer Belt (D-4200)	5,500
FM6	Old Cement Silos (21-36)	2,800
FM7, 7A	Transfer Belts (D-4800, D-4200)	5,500
		5,500
		6,500
FM8A	Distribution Box (D-6900)	14,000
FM8B	Elevator (TL-0400)	
FM8C	Air Slide (TL-500)	
FM9	River Cement Silos (47, 48)	2,500
FM9A	River Cement Silo (49)	2,500
FM10	Barge Loading (TL-800)	8,000
FM11	Cement Bins (Truck)	2,650
		4,150
		500
FM12	Truck/Rail Loading	3,200
		4,000
FM13	Plasticizer Bin	2,500
FM14	Hopper Barge Dust Collector	10,000

Appendix B: Project Emissions Analysis as Submitted by Buzzi Unicem USA – Cape Girardeau Plant (BUU).

NSR Applicability Analysis

BUU performed a NSR Applicability Analysis to determine if the proposed new main baghouse and stack and ductwork modifications qualifies as a major modification or a minor modification to an existing major source. The analysis was conducted in accordance with 40 CFR 52.21 et seq. Per 40 CFR 52.21(a)(2)(iv)(a), a project is a major modification "if it causes two types of emission increases – a significant emissions increase and a significant net emissions increase."

Per 40 CFR 52.21 (b)(40), a significant emission increase is defined as an increase in a regulated NSR pollutant above the emission rates listed in 40 CFR 52.21 (b)(23) (i.e., NSR *de minimus* emission levels, which have been adopted by MDNR under 10 CSR 10-6.020 Table (A)(1). Since the proposed modifications include only existing emission units, an actual-to-projected actual test was used to determine the significant emission increase from the proposed modifications.

Baseline Actual Emissions

Per 40 CFR 52.21, baseline actual emissions are the emissions generated during the highest 24-month period as determined by the Plant within the last 10 years. Emissions at a cement plant are generally directly linked to the quantity of clinker produced. In January 2017, the highest 24-month clinker production period within the last 10 years at the Plant was determined to be January 2007 through December 2008. A Baseline Actual Emissions (BAE) inventory was developed based on the annual average throughputs for each emission unit during the highest 24-month period and presented to MDNR at the January 11, 2017 meeting. MDNR agreed that use of this BAE inventory was appropriate. The emission calculation methodologies used to calculate emissions in the BAE inventory are discussed in Section 3.0.

Contemporaneous Emissions

No contemporaneous emission changes have occurred at the Plant during the last five years.

Projected Actual Emissions

The Projected Actual Emissions (PAE) inventory was developed by scaling up the 2015 emission inventory to correspond to a clinker production level of 1,425,000 stons/year. This PAE inventory was also presented to MDNR at the January 11, 2017 meeting and deemed to be an appropriate representation of future emissions at the Plant. The emission calculation methodologies used to calculate emissions in the PAE inventory are discussed in Section 3.0.

NSR Significant Emission Increase Analysis

The net change in emissions for the actual-to-projected actual test (i.e., BAE to PAE) is displayed in Table 1 below. As shown by Table 1, all net changes in NSR pollutants remain below their respective NSR *de minimus* emission levels. Therefore, no significant emission increase is determined to occur from the proposed new main baghouse and stack and ductwork modifications and the project should be correctly classified as a de minimis modification. In addition, since all NSR pollutants remain below their respective NSR *de minimus* emission levels, no analysis of greenhouse gas emissions was required.

In order to demonstrate that the project does not result in a significant increase in emissions, the Plant is proposing to track their actual annual emissions for the first five full years after the new main baghouse and stack are installed (i.e., 2019 through 2023). The Plant will provide documentation to MDNR at the end of the five year period demonstrating that their actual annual emissions did not exceed their projected actual emissions as shown below.

Table 5 – NSR Significant Emission Increase Analysis

NSR REGULATED POLLUTANT	PROJECTED ACTUAL ANNUAL EMISSIONS (TONS/YEAR)	2007-2008 BASELINE ANNUAL ACTUAL EMISSIONS (TONS/YEAR)	NET CHANGE IN FACILITY-WIDE ANNUAL EMISSIONS DUE TO MODIFICATION (TONS/YEAR)	CONTEMPORANEOUS EMISSION CHANGES (TONS/YEAR)	POST-PROJECT NET EMISSION INCREASE (TONS/YEAR)	NSR DE MINIMUS EMISSIONS LEVELS (TONS/YEAR)	EXCEEDS DE MINIMUS EMISSIONS AND REQUIRES NSR REVIEW? YES OR NO
PM (Filterable)	641	648	(7.2)	0.00	(7.2)	25	NO
PM_{10} (Total)	560	569	(8.5)	0.00	(8.5)	15	NO
$PM_{2.5}$ (Total)	293	294	(0.3)	0.00	(0.3)	10	NO
SO_2	862	838	24.4	0.0	24.4	40	NO
NO_x	1,218	1,194	24.1	0.0	24.1	40	NO
VOCS	259	271	(11.8)	0.0	(11.8)	40	NO
CO	9,339	9,271	68.2	0.0	68.2	100	NO
LEAD	0.01153	0.00977	0.0018	0.0	0.0018	0.6	NO
BERYLLIUM	0.00008	0.00027	(0.0002)	0.00	(0.0002)	0.0004	NO
MERCURY	0.12759	0.13470	(0.0071)	0.00	(0.0071)	0.1	NO
FLUORIDES	0.64125	0.6158	0.0255	0.00	0.0255	3	NO

Emissions Calculations Methodology

Kiln

Provided below is a summary by pollutant of the methodology used for calculating emissions in both the BAE and PAE inventories for KP-2, the kiln system, which includes the in-line raw mill and clinker cooler.

NO_x

For the BAE inventory, NO_x emissions from the kiln system were estimated using stack test results. At the time of the 2007/2008 BAE there had been two stack tests conducted for NO_x. These tests resulted in the following emissions factors:

1992 stack test	2.516 lb/ton clinker
2007 stack test	1.744 lb/ton clinker

The 1992 test was done at a low waste fuels burn rate. Since this is not consistent with later years, and it is well known and accepted that burning waste fuels lowers NO_x emissions, the emissions factor from the March 2007 stack test of 1.744 lb/ton clinker was used to estimate NO_x emissions from the kiln system for the BAE inventory, since it is more representative of Plant operations for the 2007/2008 period.

On September 15, 2016, the Plant signed a Consent Decree with EPA which included agreeing to comply with new NO_x emission limits by the 120th kiln operating day after February 28, 2017. These new NO_x emission limits are:

For all waste on days:	1.5 lb/ton clinker
For all waste off days:	2.9 lb/ton clinker

These new NO_x emission limits were used to estimate future emissions of the kiln system within the PAE inventory.

SO_2

For the period leading up to the 2007/2008 BAE inventory, there had only been two stack tests conducted for SO_2. The stack test results are as follows:

1992 stack test	2.13 lb/ton clinker
2007 stack test	0.0195 lb/ton clinker

The 2007 stack test provided results in ppm that are substantially less than those typically experienced at the Plant. The SO_2 in the emissions is driven by the sulfur content of the raw materials, which can vary widely depending upon what level and area of the quarry the stone is being quarried from. While the 2007 test may represent the emissions during that short period of time, it does not appear to be representative of typical emissions from the facility. In addition, both stack tests were performed when the raw mill was running, and do not account for the higher emissions during raw mill off periods. Process CEMS (not certified) for 24-hour raw mill on and 8-hour raw mill off from April 2011 indicate that, with the lime injection (which the Plant started use of full time in 1999) during raw mill off, the raw mill off emissions are about 2.4 times raw mill on.

Therefore, for the 2007/2008 BAE inventory BUU utilized the 1992 stack test data for raw mill on, 2.4 times the stack test data for raw mill off emissions, and actual hours at each condition to calculate SO_2 emissions. In addition to the adjustment for the raw mill off condition, there are two other factors that impact SO_2 emissions. These are the sulfur content of the kiln feed and the use of alternative fuels. BUU has also adjusted the SO_2 emission factor from the 1992 test to account for the variations in the kiln feed sulfur content and to adjust the emission factor by the percentage of coal used for fuel

during the baseline years. This is consistent with the methodology used by BUU for Project No. 2012-08-045. The resulting adjusted emissions factors are:

2007 SO_2 emission factor	1.3132 lb/ton clinker
2008 SO_2 emission factor	1.1285 lb/ton clinker

An average of these SO_2 emission factors of 1.221 lb/ton clinker was used to calculate SO_2 emissions for the 2007/2008 BAE inventory.

The September 15, 2016 Consent Decree signed by the Plant also included limits for SO_2 while using hazardous waste fuel (HWF) and without use of HWF. However, SO_2 is more influenced by raw mill status than HWF status, so a time weighted average SO_2 emission factor for mill on/off is more appropriate for calculating projected actual SO_2 emissions. The most recent stack test results from 2012 through 2016 were reviewed and resulted in the following emission factors:

Raw Mill On, Raw Mill Off

2012 stack test	1.458 lb/ton clinker, 2.907 lb/ton clinker
2013 stack test	0.674 lb/ton clinker, 1.350 lb/ton clinker
2014 stack test	0.218 lb/ton clinker, 1.270 lb/ton clinker
2015 stack test	0.190 lb/ ton clinker, 1.274 lb/ton clinker
2016 stack test	1.597 lb/ton clinker, 2.796 lb/ton clinker
Overall Average	**0.828 lb/ton clinker, 1.919 lb/ton clinker**

However, these emission factors represent only a brief periods of operation and do not account for the variability in SO2 emissions due to kiln feed sulfur content and fuel usage. Therefore, for the PAE inventory a representative SO_2 emission factor (time weighted for raw mill on and off) of 1.21 lb/ton clinker was calculated and is used to estimate future SO_2 emissions from the kiln system. This calculated emission factor is based on the past stack test above and Plant operating data, but accounts for variability in the process and allows for operational flexibility.

VOC

For the BAE inventory, VOC emissions from the kiln system were estimated using an average of representative stack test results. VOC emissions can vary considerably due to the organic content of the raw materials and fuel used, so at a minimum an average of two stack tests should be used to estimate emissions in order to account for this variability. At the time of the 2007/2008 BAE there had been three stack tests conducted for VOC, these tests were conducted in the years 1992, 1995, and 2007. The next stack test for VOC was conducted in 2011. The 1992 and 1995 stack tests were not representative of normal operations during the baseline years, and therefore, were not utilized for determining baseline emissions. No major changes to plant operations occurred between 2007 and 2011 so the 2011 stack test is considered to be representative of normal operation during the 2007-2008 baseline period. An average of the 2007 and 2011 VOC stack test results was utilized in order to account for the

expected variability in VOC emissions during the baseline years. The results from the 2007 and 2011 stack tests are:

2007 stack test	0.282 lb/ton clinker
2011 stack test	0.477 lb/ton clinker
Overall Average	**0.380 lb/ton clinker**

An overall average of 0.380 lb/ton clinker was used to calculate VOC emissions for the 2007/2008 BAE inventory.

For the PAE Inventory, VOC emissions from the kiln system were estimated using an average of the most recent stack tests since the baseline period. These stack tests resulted in the following emission factors and overall average emission factor:

2007 stack test	0.282 lb/ton clinker
2011 stack test	0.477 lb/ton clinker
2012 stack test	0.490 lb/ton clinker
2013 stack test	0.305 lb/ton clinker
2014 stack test	0.244 lb/ton clinker
2015 stack test	0.138 lb/ton clinker
2016 stack test	0.522 lb/ton clinker
Overall Average	**0.351 lb/ton clinker**

CO

For the BAE inventory, CO emissions from the kiln system were estimated using an average of representative stack test results. CO emissions can vary considerably due to the carbon and organic content of the raw materials and fuel used, so at a minimum an average of two stack tests should be used to estimate emissions in order to account for this variability. At the time of the 2007/2008 BAE there had been three stack tests conducted for CO, these tests were conducted in the years 1992, 1995, and 2007. The next stack test for CO was conducted in 2011. The 1992 and 1995 stack tests were not representative of normal operations during the baseline years, and therefore, were not utilized for determining baseline emissions. No major changes to plant operations occurred between 2007 and 2011 so the 2011 stack test is considered to be representative of normal operation during the 2007-2008 baseline period. An average of the 2007 and 2011 CO stack test results was utilized in order to account for the expected variability in CO emissions during the baseline years. The results from the 2007 and 2011 stack tests are:

2007 stack test	12.53 lb/ton clinker
2011 stack test	14.57 lb/ton clinker
Overall Average	**13.55 lb/ton clinker**

An overall average of 13.55 lb/ton clinker was used to calculate CO emissions for the 2007/2008 BAE inventory.

For the PAE Inventory, CO emissions from the kiln system were estimated using an average of the most recent stack tests since the baseline period. These stack tests resulted in the following emission factors and overall average emission factor:

2007 stack test	12.53 lb/ton clinker
2011 stack test	14.57 lb/ton clinker
2012 stack test	13.34 lb/ton clinker
2013 stack test	8.78 lb/ton clinker
2014 stack test	13.90 lb/ton clinker
2015 stack test	12.67 lb/ton clinker
2016 stack test	15.96 lb/ton clinker
Overall Average	**13.11 lb/ton clinker**

PM/PM_{10}/$PM_{2.5}$

For both the BAE and PAE inventories, particulate matter (PM) emissions are calculated as filterable only and PM_{10} and $PM_{2.5}$ emissions are calculated as the total of both filterable and condensable particulate emissions.

For the BAE inventory, PM filterable emissions were calculated using the average emission factor from the May 2006 stack test results of 0.143 lb/ton clinker. PM_{10} and $PM_{2.5}$ filterable emissions were calculated using Plant-specific size particulate factors determined during a 2002 stack test of PM_{10} filterable being 71.75% of PM filterable and $PM_{2.5}$ filterable being 30% of PM filterable. Condensable particulate emissions were estimated based on the August 2002 stack test (EPA Dilution Method only) emission factors for raw mill on and raw mill off adjusted based on the raw mill run time for the 2007/2008 BAE inventory. This resulted in a PM condensable emission factor of 0.24 lb/ton clinker. Condensable particulate emissions were assumed to be less than 2.5 microns, so the same emission factor was used for PM_{10} condensable and $PM_{2.5}$ condensable.

For the PAE inventory, PM filterable emissions were calculated using the average emission factor from the July 2012 stack test results of 0.123 lb/ton clinker. PM_{10} and $PM_{2.5}$ filterable emissions were calculated using Plant-specific size particulate factors determined during a 2012 stack test of PM_{10} filterable being 68.5% of PM filterable and $PM_{2.5}$ filterable being 30.5% of PM filterable. Condensable particulate emissions were estimated based on the August 2002 stack test (EPA Dilution Method only) emission factors for raw mill on and raw mill off adjusted based on the raw mill run time for the PAE inventory. This resulted in a PM condensable emission factor of 0.24 lb/ton clinker. Condensable particulate emissions were assumed to be less than 2.5 microns, so the same emission factor was used for PM_{10} condensable and $PM_{2.5}$ condensable.

Mercury

For the BAE inventory, mercury emissions from the kiln were calculated using an average of 1992 to 1999 stack test emission factors in gr/dscf multiplied by the 2007 and 2008 annual airflow from the kiln stack. These emission rates were then divided by

the annual clinker production and averaged over the two years to produce a final mercury emission factor of 1.969E-4 lb/ton clinker.

For the PAE inventory, mercury emissions from the kiln were calculated using an average of 1992 to 2012 stack test emission factors in gr/dscf multiplied by the annual airflow from the kiln stack for the last five years. These emission rates were then divided by the annual clinker production for each year and averaged over the five year period to produce an average mercury emission factor of 1.791E-4 lb/ton clinker.

Lead and Beryllium

For the BAE inventory, lead and beryllium emissions from the kiln were calculated using the emission factors derived from the 1995 stack test of 1.43E-5 lb/ton clinker for lead and 4.00E-7 lb/ton clinker for beryllium.

For the PAE inventory, lead and beryllium emissions from the kiln were calculated using the emission factors derived from the 2012 stack test of 1.60E-5 lb/ton clinker for lead and 1.12E-7 lb/ton clinker for beryllium.

Fluorides

For both the BAE and PAE inventories, fluoride emissions were calculated using the kiln emission factor from AP-42 Section 11.6 Table 11.6-9 for fluorides of 0.0009 lb/ton clinker.

Non-Kiln Sources

The following provides a description of the emission methodology utilized for all non-kiln emission units in both the BAE and PAE inventories. Methodologies for all pollutants are listed by emission unit type.

Emission Units Equipped with a Baghouse

In the BAE and PAE inventories, those emission units equipped with a baghouse utilized a 0.02 gr/acf particulate concentration along with each baghouse's flowrate, hours of operation, and throughput to calculate a source-specific controlled PM_{10} emission factor in lb/ton clinker. PM and $PM_{2.5}$ emissions were calculated assuming PM_{10} is 85% of PM and $PM_{2.5}$ is 30% of PM per AP-42 Appendix B2 Category 4 for Portland Cement Manufacturing.

Haul Roads

Emissions from haul roads were calculated using AP-42 Section 13.2.2 (November 2006) for unpaved haul roads and AP-42 Section 13.2.1 (January 2011) for paved haul roads. The haul roads at the Plant were divided into segments and for each segment

specific PM, PM_{10}, and $PM_{2.5}$ emission factors in lb/vehicle miles traveled (VMT) were calculated based on the weight of the haul trucks traveling on the segment and the percent of traffic they represented. Then the VMT on each segment was calculated based on the length of each segment and the number of trips each truck makes and used to estimate emissions from each segment.

For unpaved roads a control efficiency of 50% for undocumented watering of the haul roads was incorporated into all unpaved road emission calculations. For paved roads, a silt loading of 6 g/m^2 was used for calculating emissions. This silt loading is based on applying a 50% control to account for sweeping of the paved road to the 12 g/m^2 silt loading listed for concrete batch plants in AP-42 Table 13.2.1-3.

Storage Piles

Two types of storage pile emission factors were calculated: a wind erosion emission factor and an activity emission factor. The wind erosion emission factor was calculated using the wind erosion emission factor equation from the MDNR EIQ Manual and wind erosion particulate size multipliers of 1.7 for PM, 0.85 for PM_{10}, and 0.13 for $PM_{2.5}$. The wind erosion emission factor was calculated in lbs/acre for each storage pile.

The activity emission factor has two components: the vehicle activity component and the load-in/load-out component. The vehicle activity component was calculated for PM_{10} using the equation provided in the MDNR EIQ Manual. Then the PM vehicle activity component was calculated by dividing the PM_{10} equation by 0.3 and the $PM_{2.5}$ vehicle activity component was calculated by multiplying the PM_{10} equation by 0.15. The load-in/load-out component for each pile was calculated using the equation from AP-42 Section 13.2.4 and the associated particulate size multipliers for PM, PM_{10}, and $PM_{2.5}$ provided in this section of AP-42. The load-in/load-out component was also multiplied by 2 to account for the transfer of material to and from the storage piles, except for storage piles RM-14 and RM-20. For storage piles RM-14 and RM-20, loadout operations are via underground enclosed feeders that do not generate fugitive emissions. Therefore, their load-in/load-out component is only multiplied by 1 to account for the transfer of material to the piles.

In addition, a 75% control efficiency was applied to both the wind erosion and activity emissions calculations for storage piles KP-14B and RM-20 as these storage piles are each located within an enclosure consisting of three full walls and a roof.

Fugitive Material Handling Emission Units

All fugitive material handling emission units were calculated using equipment specific emission factors from AP-42 or EPA's WebFIRE database of emission factors based on SCC code. Emission units that are equipped with permanent water spray systems either had a 70% control efficiency applied to their emission calculations to account for the wet suppression of material or used a controlled emission factor that includes wet suppression control.

Periodic wetting of material was accounted for by applying a 50% control efficiency to emission calculations. Covered conveyors and partially enclosed sources also had a 50% control efficiency applied to their emission calculations to account for the enclosures. Several emission units are located within a completely enclosed building with no vent to the atmosphere and therefore have a 99% control efficiency applied to their emission calculations.

Non-Kiln Combustion Emission Units

There are four other types of non-kiln combustion emission units located at the Plant: an emergency generator, two process air heaters, space heaters, and a propane tank heater. All emissions from these combustion sources are calculated based on emission factors from EPA's WebFIRE database for the following SCC codes:

SCC 1-05-001-05 for diesel combustion from the space heaters
SCC 2-01-001-02 for diesel combustion from the emergency generators
SCC 1-02-010-02 for propane combustion from the propane tank heater
SCC 1-02-005-01 for diesel combustion from the process air heaters

Storage Tanks and Miscellaneous VOC Emission Units

VOC emissions from storage tanks were calculated using the equations in AP-42 Section 7.1 for organic liquid storage tanks. All other miscellaneous emission unit VOC emissions were calculated using emission factors from EPA's WebFIRE database for appropriate SCC codes.

APPENDIX C

Abbreviations and Acronyms

% ..... percent
°F ..... degrees Fahrenheit
acfm ..... actual cubic feet per minute
BACT..... Best Available Control Technology
BMPs..... Best Management Practices
Btu..... British thermal unit
CAM ..... Compliance Assurance Monitoring
CAS ..... Chemical Abstracts Service
CEMS ..... Continuous Emission Monitor System
CFR ..... Code of Federal Regulations
CO ..... carbon monoxide
CO_2..... carbon dioxide
CO_2e..... carbon dioxide equivalent
COMS..... Continuous Opacity Monitoring System
CSR..... Code of State Regulations
dscf..... dry standard cubic feet
EIQ ..... Emission Inventory Questionnaire
EP..... Emission Point
EPA ..... Environmental Protection Agency
EU..... Emission Unit
fps ..... feet per second
ft..... feet
GACT ..... Generally Available Control Technology
GHG ..... Greenhouse Gas
gpm..... gallons per minute
gr..... grains
GWP..... Global Warming Potential
HAP..... Hazardous Air Pollutant
hr..... hour
hp..... horsepower
lb ..... pound
lbs/hr..... pounds per hour
MACT ..... Maximum Achievable Control Technology
$\mu g/m^3$..... micrograms per cubic meter
m/s..... meters per second
Mgal..... 1,000 gallons
MW..... megawatt
MHDR..... maximum hourly design rate
MMBtu ... Million British thermal units
MMCF..... million cubic feet
MSDS..... Material Safety Data Sheet
NAAQS .. National Ambient Air Quality Standards
NESHAPs National Emissions Standards for Hazardous Air Pollutants
NO_x..... nitrogen oxides
NSPS..... New Source Performance Standards
NSR..... New Source Review
PM..... particulate matter
$PM_{2.5}$..... particulate matter less than 2.5 microns in aerodynamic diameter
PM_{10}..... particulate matter less than 10 microns in aerodynamic diameter
ppm..... parts per million
PSD..... Prevention of Significant Deterioration
PTE ..... potential to emit
RACT ..... Reasonable Available Control Technology
RAL..... Risk Assessment Level
SCC..... Source Classification Code
scfm..... standard cubic feet per minute
SDS..... Safety Data Sheet
SIC ..... Standard Industrial Classification
SIP..... State Implementation Plan
SMAL ..... Screening Model Action Levels
SO_x..... sulfur oxides
SO_2..... sulfur dioxide
tph..... tons per hour
tpy..... tons per year
VMT..... vehicle miles traveled
VOC..... Volatile Organic Compound

Missouri Department of dnr.mo.gov
NATURAL RESOURCES
Eric R. Greitens, Governor Carol S. Comer, Director

JUL 24 2017

Mr. Adam Swercheck
Buzzi Unicem USA – Cape Girardeau Plant
100 Brodhead Road
Bethlehem, PA 18017-8989

RE: New Source Review Permit - Project Number: 2017-03-023

Dear Mr. Swercheck:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. 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.

This permit may include requirements with which you may not be familiar. If you would like the department to meet with you to discuss how to understand and satisfy the requirements contained in this permit, an appointment referred to as a Compliance Assistance Visit (CAV) can be set up with you. To request a CAV, please contact your local regional office or fill out an online request. The regional office contact information can be found at the following website: http://dnr.mo.gov/regions/. The online CAV request can be found at http://dnr.mo.gov/cav/compliance.htm.

If you were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to Sections 621.250 and 643.075.6 RSMo. To appeal, you must file a petition with the administrative hearing commission within thirty 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 administrative hearing commission, whose contact information is: Administrative Hearing Commission, United States Post Office Building, 131 West High Street, Third Floor, P.O. Box 1557, Jefferson City, Missouri 65102, phone: 573-751-2422, fax: 573-751-5018, website: www.oa.mo.gov/ahc.

If you have any questions regarding this permit, please do not hesitate to contact Chia-Wei Young, at the Department of Natural Resources' 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 for

Susan Heckenkamp
New Source Review Unit Chief

SH:cyj

Enclosures

c: Southeast Regional Office
PAMS File: 2017-03-023

Permit Number: 072017-014