



Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
Telephone: (850) 488-0114 FAX: (850) 922-6979

Colleen M. Castille
Secretary

November 3, 2006

Electronically sent – Received Receipt requested.

Mr. Michael A. Gonzales, Plant Manager
CEMEX Cement, Inc.
Post Office Box 6
Brooksville, Florida 34605-006

Re: DEP File No. 0530010-026-AC
Indirect Firing System/SNCR
Brooksville Plant – Kilns 1 and 2

Dear Mr. Gonzales:

Enclosed is one copy of the Draft Air Construction Permit to install indirect firing systems and selective non-catalytic reduction (ammonia injection) on Kilns 1 and 2 for the Brooksville Cement Plant on U.S. Highway 98, Brooksville, Hernando County. The Department's Intent to Issue Air Construction Permit, the Technical Evaluation, and the "Public Notice of Intent to Issue Air Construction Permit" are also included.

The "Public Notice" must be published one time only as soon as possible in a newspaper of general circulation in the area affected, pursuant to the requirements of Chapter 50, Florida Statutes. Proof of publication, such as a newspaper affidavit, must be provided to the Department's Bureau of Air Regulation office within seven days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in denial of the permit.

Please submit any written comments you wish to have considered concerning the Department's proposed action to A.A. Linero, Program Administrator, at the letterhead address. If you have any questions regarding this matter, please contact Cindy Mulkey at (850)921-8968 or Mr. Linero at (850)921-9523.

Sincerely,

Trina Vielhauer, Chief
Bureau of Air Regulation

TLV/aal/cm

Enclosures

Florida Department of Environmental Protection

Memorandum

TO: Trina Vielhauer
THROUGH: Al Linero *AL*
FROM: Cindy Mulkey *CEM*
DATE: November 2, 2006
SUBJECT: CEMEX Cement, Inc. - Brooksville
Indirect Firing Systems, new burners, and SNCR on Kilns 1 & 2
DEP File No. 0530010-026-AC

Attached is the Intent to Issue package for the installation of indirect firing systems, including (after the fact) burner replacements, on Kilns 1 and 2 at the existing CEMEX Cement Plant in Brooksville. We included in this action their unprocessed request for (after the fact) installation of selective non-catalytic reduction (SNCR) systems on both kilns.

The new indirect firing system makes it possible to use less moist, cool air from the coal mill as primary air in the main kiln burner and allows greater use of hot secondary air from the kiln hood/clinker cooler. The new burner design is an integral part of the indirect firing system and is consistent with the principles of a "Low NO_x" kiln burner.

In principle the net overall effect of the indirect firing system and new burners should be less fuel consumption. The burner can provide greater combustion control. We would expect the same or lower kiln emissions of all pollutants, if all other factors are equal. There will be a small increase in PM/PM₁₀ due to six new emission points for baghouses related to pulverized coal/air conveyance and separation.

The SNCR systems (already installed) provide CEMEX with the ability to comply with their present NO_x limits (and lower) following their installation of semi-direct firing systems with new kiln burners (accomplished without permits).

The applicant submitted information for the indirect firing project showing there will not be significant emission increases on the basis of "past actual to future actual" emissions. However, the applicant had already submitted an earlier request for the pre-installed SNCR and semi-direct firing projects based on the "past actual to future potential" emissions test for PSD applicability. That submittal indicated it is necessary to reduce the NO_x emission limits to avoid PSD and a BACT determination. Because they installed the systems when the previous rules were applicable, we drafted this permit with a NO_x limitation of 1.21 lb/ton of preheater feed (~2.0 lb/ton clinker) based on the previous PSD rules.

Because SO₂ emissions are minimal from cement kilns in Florida, very little particulate matter can be formed by reaction with excess NH₃ emissions (slip). Although there is no reason to inject as much NH₃ as it takes to react with all NO_x, the Department will limit the maximum NH₃ injection rate to that level, at a molar ratio of 1.0 as a further precaution to ensure minimal particulate formation. According to the applicant, for a reduction from 4.0 to 2.0 lb/ton of clinker, the required molar ratio is in the range of 0.6-0.7.

We may need to set BACT or PSD avoidance limitations on other pollutants upon completion of tire or petcoke usage trials.

We determined that the indirect firing project does not trigger PSD on the basis of base-line actual to future actual emissions information provided by CEMEX.

We recommend your approval of the attached Intent to Issue.

AAL/cm

Attachments

Adams, Patty

From: Harvey, Mary
Sent: Friday, November 03, 2006 3:34 PM
To: 'michaelanthony.gonzales@cemexusa.com'; 'charles.walz@cemexusa.com'; 'amarjits.gill@cemexusa.com'; Nasca, Mara; 'fbergen@kooglerassociates.com'; 'sfernandez@ohfc.com'; 'Little.James@epamail.epa.gov'
Cc: Mulkey, Cindy; Adams, Patty; Gibson, Victoria
Subject: Permit Facility #0530010-026-AC-D - CEMEX Cement, Inc.
Attachments: 0530010.026.AC.D_pdf[1].zip

Dear Sir/Madam:

Please send a "reply" message verifying receipt of the attached document(s); this may be done by selecting "Reply" on the menu bar of your e-mail software and then selecting "Send". We must receive verification of receipt and your reply will preclude subsequent e-mail transmissions to verify receipt of the document(s).

The document(s) may require immediate action within a specified time frame. Please open and review the document(s) as soon as possible.

The document is in Adobe Portable Document Format (pdf). Adobe Acrobat Reader can be downloaded for free at the following internet site: <http://www.adobe.com/products/acrobat/readstep.html>.

The Bureau of Air Regulation is issuing electronic documents for permits, notices and other correspondence in lieu of hard copies through the United States Postal System, to provide greater service to the applicant and the engineering community. Please advise this office of any changes to your e-mail address or that of the Engineer-of-Record.

Thank you,

DEP, Bureau of Air Regulation

Adams, Patty

From: Harvey, Mary
Sent: Monday, November 06, 2006 8:58 AM
To: Adams, Patty
Subject: FW: Permit Facility #0530010-026-AC-D - CEMEX Cement, Inc.

From: Segundo J. Fernandez [<mailto:sfernandez@ohfc.com>]
Sent: Friday, November 03, 2006 3:55 PM
To: Harvey, Mary
Subject: Read: Permit Facility #0530010-026-AC-D - CEMEX Cement, Inc.

Your message

To: sfernandez@ohfc.com
Subject:

was read on 11/3/2006 3:55 PM.

Adams, Patty

From: Harvey, Mary
Sent: Monday, November 06, 2006 8:57 AM
To: Adams, Patty
Subject: FW: Permit Facility #0530010-026-AC-D - CEMEX Cement, Inc.

From: charles.walz@cemexusa.com [mailto:charles.walz@cemexusa.com]
Sent: Friday, November 03, 2006 4:16 PM
To: Harvey, Mary
Subject: Re: Permit Facility #0530010-026-AC-D - CEMEX Cement, Inc.

Yes I have received these documents.

Thanks.

Charles Walz
Environmental Manager
CEMEX Brooksville Cement Plant
352-799-2011
Charles.Walz@CEMEXUSA.COM

11/28/2006

Adams, Patty

From: Harvey, Mary
Sent: Monday, November 06, 2006 8:56 AM
To: Adams, Patty
Subject: FW: Permit Facility #0530010-026-AC-D - CEMEX Cement, Inc.

-----Original Message-----

From: michaelanthony.gonzales@cemexusa.com [mailto:michaelanthony.gonzales@cemexusa.com]
Sent: Friday, November 03, 2006 5:15 PM
To: Harvey, Mary
Subject: Permit Facility #0530010-026-AC-D - CEMEX Cement, Inc.

Return Receipt

Your Permit Facility #0530010-026-AC-D - CEMEX Cement, Inc.
document
:

was michaelanthony.gonzales@cemexusa.com
received
by:

at: 11/03/2006 05:14:35 PM EST

Adams, Patty

From: Harvey, Mary
Sent: Monday, November 06, 2006 8:56 AM
To: Adams, Patty
Subject: FW: Permit Facility #0530010-026-AC-D - CEMEX Cement, Inc.

-----Original Message-----

From: ivonee.delrio@cemexusa.com [mailto:ivonee.delrio@cemexusa.com]
Sent: Friday, November 03, 2006 4:51 PM
To: Harvey, Mary
Subject: Permit Facility #0530010-026-AC-D - CEMEX Cement, Inc.

Return Receipt

Your Permit Facility #0530010-026-AC-D - CEMEX Cement, Inc.
document
:

was ivonee.delrio@cemexusa.com
received
by:

at: 11/03/2006 03:50:42 PM

Adams, Patty

From: Harvey, Mary
Sent: Monday, November 06, 2006 8:55 AM
To: Adams, Patty
Subject: FW: Permit Facility #0530010-026-AC-D - CEMEX Cement, Inc.

From: Nasca, Mara
Sent: Friday, November 03, 2006 9:17 PM
To: Harvey, Mary
Subject: Read: Permit Facility #0530010-026-AC-D - CEMEX Cement, Inc.

Your message

To: 'michaelanthony.gonzales@cemexusa.com'; 'charles.walz@cemexusa.com'; 'amarjits.gill@cemexusa.com'; Nasca, Mara; 'fbergen@kooglerassociates.com'; 'sfernandez@ohfc.com'; 'Little.James@epamail.epa.gov'
Cc: Mulkey, Cindy; Adams, Patty; Gibson, Victoria
Subject: Permit Facility #0530010-026-AC-D - CEMEX Cement, Inc.
Sent: 11/3/2006 3:34 PM

was read on 11/3/2006 9:17 PM.

Adams, Patty

From: Harvey, Mary
Sent: Monday, November 06, 2006 2:10 PM
To: Adams, Patty
Subject: FW: Permit Facility #0530010-026-AC-D - CEMEX Cement, Inc.

From: Fawn Bergen [mailto:fbergen@kooglerassociates.com]
Sent: Monday, November 06, 2006 1:01 PM
To: Harvey, Mary
Subject: RE: Permit Facility #0530010-026-AC-D - CEMEX Cement, Inc.

I received the email.

Fawn W. Bergen, PE
Project Engineer
Koogler & Associates, Inc.
4014 NW 13th Street
Gainesville, FL 32609
(352)377-5822 x29
(352)377-7158 fax
fbergen@kooglerassociates.com

From: Harvey, Mary [mailto:Mary.Harvey@dep.state.fl.us]
Sent: Friday, November 03, 2006 3:34 PM
To: michaelanthony.gonzales@cemexusa.com; charles.walz@cemexusa.com; amarjits.gill@cemexusa.com; Nasca, Mara; fbergen@kooglerassociates.com; sfernandez@ohfc.com; Little.James@epamail.epa.gov
Cc: Mulkey, Cindy; Adams, Patty; Gibson, Victoria
Subject: Permit Facility #0530010-026-AC-D - CEMEX Cement, Inc.

Dear Sir/Madam:

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The document(s) may require immediate action within a specified time frame. Please open and review the document(s) as soon as possible.

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Thank you,

11/6/2006

In the Matter of an
Application for Permit by:

CEMEX Cement, Inc
Post Office Box 6
Brooksville, Florida 34605-0006

Authorized Representative:
Mr. Michael A. Gonzales, Plant Manager

DEP File No. 0530010-026-AC
Brooksville Cement Plant Kilns 1 and 2
Installation of Indirect Firing Systems
Selective Non-Catalytic Reduction System
Hernando County, Florida

INTENT TO ISSUE AIR CONSTRUCTION PERMIT

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit, copy of Draft Permit attached, for the proposed project as detailed in their applications and the attached Technical Evaluation for the reasons stated below.

The applicant, CEMEX Cement, Inc., applied on August 22, 2006 to the Department for a permit to install indirect firing systems on Kilns 1 and 2, and for after-the-fact authorization for burner replacements on Kilns 1 and 2 at the existing Brooksville Cement Plant northwest of Brooksville in Hernando County. Each of the indirect firing systems will include an additional coal mill baghouse, and a pulverized coal bin and pump with associated baghouses. The transition to the indirect firing systems may also involve replacement of, or modifications to, the burners currently in operation. An earlier application, received on October 14, 2005, included installation of selective non-catalytic reduction for both kilns.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-212. The above actions are not exempt from permitting procedures. The Department has determined that an Air Construction Permit is required.

The Department intends to issue this air construction permit based on the belief that reasonable assurances have been provided to indicate that operation of these emissions units will not adversely impact air quality, and the emissions units will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296 and 62-297, F.A.C.

Pursuant to Section 403.815, F.S., and Rule 62-110.106(7)(a)1., F.A.C., you (the applicant) are required to publish at your own expense the enclosed Public Notice of Intent to Issue Permit. The notice shall be published one time only in the legal advertisement section of a newspaper of general circulation in the area affected. Rule 62-110.106(7)(b), F.A.C., requires that the applicant cause the notice to be published as soon as possible after notification by the Department of its intended action. For the purpose of these rules, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. If you are uncertain that a newspaper meets these requirements, please contact the Department at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400 (Telephone: 850/488-0114; Fax 850/ 921-9533). You must provide proof of publication within seven days of publication, pursuant to Rule 62-110.106(5), F.A.C. No permitting action for which published notice is required shall be granted until proof of publication of notice is made by furnishing a uniform affidavit in substantially the form prescribed in section 50.051, F.S. to the office of the Department issuing the permit. Failure to publish the notice and provide proof of publication may result in the denial of the permit pursuant to Rules 62-110.106(9) & (11), F.A.C.

The Department will issue the final permit with the attached conditions unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed permit issuance action for a period of 14 (fourteen) days from the date of publication of the enclosed Public Notice of Intent to Issue Permit. Written comments should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above. Mediation is not available in this proceeding.

Executed in Tallahassee, Florida.



Trina L. Vielhauer, Chief
Bureau of Air Regulation

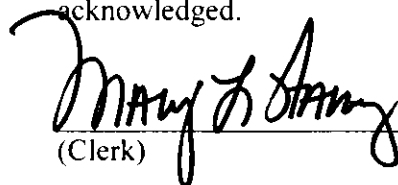
CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Intent to Issue Air Construction Permit (including the Public Notice, Technical Evaluation, and the Draft permit) and all copies were sent electronically (with Received Receipt) before the close of business on 11/3/06 to the persons listed:

Michael A. Gonzales, CEMEX (michaelanthony.gonzales@cemexusa.com)
Charles Walz, CEMEX (charles.walz@cemexusa.com)
Amarjits Gill, CEMEX (amarjits.gill@cemexusa.com)
Mara Nasca, DEP SWD (mara.nasca@dep.state.fl.us)
Fawn Bergen, P.E., K&A (fbergen@kooglerassociates.com)
Segundo J. Fernandez, Esq., OHF&C (sfernandez@ohfc.com)
Jim Little, EPA Region 4 (Little.James@epamail.epa.gov)

Clerk Stamp

FILING AND ACKNOWLEDGMENT
FILED, on this date, pursuant to §120.52,
Florida Statutes, with the designated
Department Clerk, receipt of which is hereby
acknowledged.



(Clerk)

11/3/06
(Date)

PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEP File No. 0530010-026-AC

CEMEX Cement, Inc.
Brooksville Cement Plant Kilns 1 and 2

Hernando County

The Department of Environmental Protection (Department) gives notice of its intent to issue an Air Construction Permit to CEMEX Cement, Inc. The permit authorizes the installation of indirect firing systems, including after-the-fact burner replacements on Kilns 1 and 2, and installation of selective non-catalytic reduction (SNCR) systems on Kilns 1 and 2. The applicant's name and address are CEMEX Cement, Inc, Brooksville Cement Plant, Post Office Box 6, Brooksville, Florida 34605-0006.

The existing facility consists of two dry process preheater kilns (Kilns 1 and 2). Both kilns were originally equipped with direct firing systems and mono-channel burners. The indirect firing system consists of the change-out to kiln burners that use a low amount of the cool, moist primary air from the coal mill to convey pulverized coal into the kiln firing zone. This allows greater use of hot secondary air from the clinker cooler and kiln hood. The result is greater energy efficiency, and in theory less pollution generation. The burners are typically of multi-channel design with greater flexibility in the manner by which the fuel and air are mixed and possible flame shapes and lengths. The transition to the indirect firing systems may also involve replacement of, or modifications to, the burners currently in operation.

For each kiln, the indirect firing system will also require the installation of an additional coal mill baghouse, a pulverized coal bin with associated baghouse, and one pump with associated baghouse.

The SNCR system will be used to inject sufficient amounts of aqueous ammonia into the preheater, just above the kiln inlet, to meet a new limit of 1.21 pounds (lb) of nitrogen oxides (NO_x) per ton of preheater feed on each kiln. This equates to approximately 2.0 lb NO_x/ton of clinker. The current limits are 1.83 and 1.72 lb NO_x/ton preheater feed for Kilns 1 and 2 respectively. The use of SNCR for NO_x control has been tested and successfully demonstrated at other cement plants in Florida.

Emissions of particulate matter from the new baghouses are expected to be less than 17 tons per year, which is below the significant emission rate that would require PSD review. No significant increases in any other criteria pollutant emissions are expected from the installation of the indirect firing system. Emissions of nitrogen oxides (NO_x) will actually decrease due to the SNCR systems if not due to the indirect firing systems. Because there are no significant increases in emissions of criteria pollutants, a PSD review is not required.

The Department will issue the Final Permit, in accordance with the conditions of the Draft Permit, unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments concerning the proposed permit issuance action for a period of 14 (fourteen) days from the date of publication of this Public Notice of Intent to Issue Permit. Written comments or requests for public meetings should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400 or the e-mail address provided below. Any written comments filed shall be made available for public inspection. If comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to Sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below. Mediation is not available in this proceeding.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must

contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen (14) days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within fourteen days of publication of the public notice or within fourteen (14) days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C. Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

A complete project file is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Protection
Bureau of Air Regulation
111 S. Magnolia Drive, Suite 4
Tallahassee, Florida, 32301
Telephone: 850/488-0114
Fax: 850/922-6979

Department of Environmental Protection
Southwest District Office
13051 N. Telecom Parkway
Temple Terrace, Florida 33637-0926
Telephone: 813/744-6100
Fax: 813/744-6084

The complete project file includes the application, technical evaluation, Draft Permit, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact Program Administrator, South Permitting Section, Bureau of Air Regulation at 850/921-8968 or call 850/488-0114 for additional information. The application, key correspondence, draft permit and technical evaluation can be accessed at: www.dep.state.fl.us/Air/permitting/construction/cemex.htm

PERMITTEE:

CEMEX Cement, Inc.
Post Office Box 6
Brooksville, Florida 34605-0006

Authorized Representative:
Michael A. Gonzales, Plant Manager

DEP File No. 0530010-026-AC
Brooksville Cement Plant Kilns 1 and 2
SNCR and Indirect Firing Systems
Hernando County, Florida
Expiration date: June 30, 2007

PROJECT AND LOCATION

This permit authorizes installation of indirect firing systems, including after-the-fact authorization for burner replacements on Kilns 1 and 2, and installation of selective non-catalytic reduction systems on Kilns 1 and 2 at CEMEX Cement's Brooksville portland cement plant. For each kiln, the indirect firing system will also require the installation of an additional coal mill baghouse, a pulverized coal bin with associated baghouse, and a pump with associated baghouse. The transition to the indirect firing systems may involve replacement of, or modifications to, the burners currently in operation. The existing plant is located on Highway 98, northwest of Brooksville, in Hernando County, Florida.

STATEMENT OF BASIS

This permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.). The permittee is authorized to perform the proposed work in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department of Environmental Protection (Department). This permit supplements all other air construction and operation permits for the affected emissions units and does not alter any requirements from such previously issued air permits.

The attached Appendices are made a part of this permit:

Appendix GC	Construction Permit General Conditions
Appendix SC	Standard Conditions

(DRAFT)

Joseph Kahn, Director
Division of Air Resource Management

SECTION I. GENERAL INFORMATION

FACILITY DESCRIPTION

The existing facility consists of two Polysius GEPOL preheater kilns (Kilns 1 and 2), two clinker coolers and associated raw mills, finish mills, cement and clinker handling equipment, coal handling equipment, silos, and air pollution control devices. The nominal capacity of each kiln is 780,000 ton per year of clinker. The plant is located on Highway 98, northwest of Brooksville in Hernando County, Florida.

PROJECT DESCRIPTION

The projects under this permit include installation of indirect firing systems and selective non-catalytic reduction (SNCR) systems on Kilns 1 and 2. The indirect firing system project includes previous replacement of the older generation kiln burners with multi-channel burners, and the cyclones, fans, and fuel injectors associated with the indirect firing systems on Kilns 1 and 2. Modification to, or replacement of, the burners currently in operation may be necessary for completion of the indirect firing system. This project also authorizes the installation of an additional coal mill baghouse, a pulverized coal bin with associated baghouse, and one FK pump with associated baghouse all of which are needed to change to the indirect firing system on each kiln.

The SNCR project utilizes injection of ammonia solutions near the lowest part of the preheater. The equipment consists of a storage tank, piping, pumps, compressed air and one or more injectors.

EMISSIONS UNITS

This permit addresses the following emissions units:

EU ID	Emissions Unit Description
003	Cement Kiln No. 1
014	Cement Kiln No. 2
XXX	Coal Grinding and Transferring

REGULATORY CLASSIFICATION

Title I, Section 111, Clean Air Act (CAA): This facility is subject to certain Standards of Performance for New Stationary Sources. They are adopted and incorporated by reference in Rule 62-204.800, F.A.C. These include:

- 40 CFR 60, Subpart A - General Provisions.
- 40 CFR 60, Subpart F - Standards of Performance for Portland Cement Plants. Certain requirements from Subpart F are replaced by requirements from 40 CFR 63, Subpart LLL listed below.
- 40 CFR 60, Subpart Y - Standards of Performance for Coal Preparation Plants.
- 40 CFR 60, Subpart OOO - New Source Performance Standards For Nonmetallic Mineral Processing Plants.

Title I, Section 112 CAA: The facility has the potential to emit 10 tons per year or more of any one hazardous air pollutant (HAP) or 25 tons per year or more of any combination of HAPs. This facility is subject to the Major Source provisions of:

- 40 CFR 63 Subparts A - National Emission Standards for Hazardous Air Pollutants – General Provisions.
- 40 CFR, Subpart LLL - National Emission Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry.

SECTION I. GENERAL INFORMATION

Title I, Part C (PSD): The facility is located in an area designated as “attainment”, “maintenance”, or “unclassifiable” for each pollutant subject to a National Ambient Air Quality Standard. The facility is considered a “portland cement plant”, which is one of the 28 Prevention of Significant Deterioration (PSD) source categories with the lower PSD applicability threshold of 100 tons per year. Potential emissions of at least one regulated pollutant exceed 100 tons per year. Therefore, the facility is classified as a PSD-major source of air pollution with respect to Rule 62-212.400, F.A.C., Prevention of Significant Deterioration.

Title IV, CAA: The facility does not operate any units subject to the Acid Rain provisions of the Clean Air Act.

Title V, CAA: The facility is a Title V or “Major Source” of air pollution because the potential emissions of at least one regulated pollutant exceed 100 tons per year or because it is a major source of HAPS. Regulated pollutants include pollutants such as carbon monoxide (CO), nitrogen oxides (NO_x), particulate matter (PM/PM₁₀), sulfur dioxide (SO₂), and volatile organic compounds (VOC).

State Rules: The cement plant is subject to state Rule 62-296.407, F.A.C. (Portland Cement Plants).

PERMITTING AUTHORITY

All documents related to applications for permits to construct, operate or modify an emissions unit shall be submitted to the Bureau of Air Regulation of the Florida Department of Environmental Protection (DEP) at 2600 Blair Stone Road (MS #5505), Tallahassee, Florida 32399-2400. Copies of all such documents shall also be submitted to the Compliance Authority.

COMPLIANCE AUTHORITY

All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the Department of Environmental Protection Southwest District, 13051 N. Telecom Parkway, Temple Terrace, Florida 33637-3767.

RELEVANT DOCUMENTS

The documents listed below are not a part of this permit; however, this information is specifically related to the permitting action and is on file with the Department.

- Application for installation of SNCR systems received October 14, 2005.
- Application for installation of indirect firing systems and kiln burner replacement received August 22, 2006.
- Application revision received September 5, 2006.
- Additional details received September 15, 2006.
- Department's Technical Evaluation and Preliminary Determination issued November 3, 2006.
- Department's Final Determination issued concurrently with this Final Permit.

SECTION II. ADMINISTRATIVE REQUIREMENTS

1. General Conditions: The permittee shall operate under the attached General Conditions listed in Appendix GC of this permit. General Conditions are binding and enforceable pursuant to Chapter 403 of the Florida Statutes. [Rule 62-4.160, F.A.C.]
2. Applicable Regulations, Forms and Application Procedures: Unless otherwise indicated in this permit, the construction and operation of the subject emissions unit shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403 of the Florida Statutes (F.S.); Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.); and the Title 40, Parts 51, 52, 60, and 63 of the Code of Federal Regulations (CFR), adopted by reference in Rule 62-204.800, F.A.C. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C. and follow the application procedures in Chapter 62-4, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]
3. Construction and Expiration: Authorization to construct shall expire if construction is not commenced within 18 months after receipt of the permit, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time. The Department may extend the 18-month period upon a satisfactory showing that an extension is justified. [Rules 62-4.070(4), 62-4.080, and 62-210.300(1), F.A.C.]
4. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]
5. Source Obligation:
 - a. At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by virtue of a relaxation in any enforceable limitation which was established after August 7, 1980, on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then the requirements of subsections 62-212.400(4) through (12), F.A.C., shall apply to the source or modification as though construction had not yet commenced on the source or modification.
 - b. At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by exceeding its projected actual emissions, then the requirements of subsections 62-212.400(4) through (12), F.A.C., shall apply to the source or modification as though construction had not yet commenced on the source or modification.
[Rule 62-212.400(12), F.A.C.]
6. Modifications: No emissions unit or facility subject to this permit shall be constructed or modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Chapters 62-210 and 62-212, F.A.C.]
7. Title V Permit: This permit authorizes construction or modification of the permitted emissions units and initial operation to determine compliance with Department rules. A Title V operation permit is required for regular operation of the permitted emissions units. The permittee shall apply for a Title V operation permit at least 90 days prior to expiration of this permit, but no later than 180 days after commencing operation. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the Compliance Authority. [Rules 62-4.030, 62-4.050, 62-4.220 and Chapter 62-213, F.A.C.]

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

A. Cement Kilns 1 and 2 (EU ID 003 and 014)

This section of the permit addresses the following existing emissions unit.

Emissions Unit 003 and 014 (Kilns 1 and 2)

Description: Dry preheater process kiln and clinker cooler systems employing the Polysius GEPOL preheater design.

Fuels: Each kiln is limited to a fuel heat input of 300 million British thermal units (MMBtu) per hour. Allowable fuels include: coal, Nos. 2, 4, 5, and 6 fuel oil, natural gas, and on-site generated non-hazardous waste used oil and grease. Kiln No. 1 is also permitted to fire whole tire derived fuel.

Capacity: Each kiln is limited to 150 tons of preheater feed per hour (rolling 30-day average), with a maximum of 165 tons in any one hour, and a maximum annual limit of 1,300,000 TPY.

Controls: A baghouse is used on each kiln for the control of PM emissions. Raw material properties, chemical reactions in the kiln, absorption into the clinker, and combustion controls minimize emissions of NO_x, SO₂, CO, and VOC. SNCR has been installed for NO_x control.

Monitors: Emissions of CO and NO_x are continuously monitored on both kilns.

Stack Parameters:

The stack for Kiln No. 1 has the following characteristics: stack height is 150 feet, exit diameter is 13 feet, exit temperature is 285 °F, and actual volumetric flow rate is approximately 315,000 acfm.

The stack for Kiln No. 2 has the following characteristics: stack height is 105 feet, exit diameter is 14 feet, exit temperature is 250 °F, and actual volumetric flow rate is approximately 315,000 acfm.

ADMINISTRATIVE REQUIREMENTS

1. Relation to Other Permits: The conditions of this permit, unless otherwise noted, are in addition to those of any other air construction or operation permits. [Rule 62-4.030, 62-4.210, and 62-210.300(1)(b), F.A.C.]

EQUIPMENT AND CONTROL TECHNOLOGY

2. NO_x Controls:
 - a) Low-NO_x Burners: This permit authorizes the previous installation of multi-channel, low-NO_x burners on kilns 1 and 2 including the associated fuel injection systems. The low-NO_x burners will create distinct combustion zones within the flame. An indirect firing system will be used to reduce the amount of primary air injected with the fuel used in the main kiln burner. This permit also authorizes the replacement of, or modification to, the currently installed burners if necessary for optimization of the indirect firing system. [Application; Rule 62-4.070(3), F.A.C.]
 - b) Selective Non-Catalytic Reduction (SNCR): This permit authorizes the installation of an SNCR system designed, constructed and capable of lowering NO_x emissions in the kiln exhaust to meet the NO_x emission limits of this permit on each kiln. The SNCR systems consists of an aqueous ammonia tank, pumps, piping, compressed air delivery, injectors, control systems, and other ancillary equipment. Aqueous ammonia solution will be injected at a location(s) in the preheater with an appropriate temperature profile to support the SNCR process. The systems shall be operated and maintained to continuously meet the required NO_x emissions limits. [Applicant Request; Rules 62-4.070, and 62-210.650, F.A.C.]

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

A. Cement Kilns 1 and 2 (EU ID 003 and 014)

PERFORMANCE REQUIREMENTS

3. **Process Rate Limitations:** The maximum process dry preheater feed rate for each kiln shall not exceed 165 tons per hour (one-hour maximum) and 150 tons per hour (rolling 30-operating day average). In addition to the short-term preheater feed rate limits, the dry preheater feed rate for each kiln shall not exceed 1,300,000 tons during any consecutive 12-month period. [Application; Rule 62-4.070(3), F.A.C.; construction permits AC27-186923, AC27-240349, AC-258571, and 0530010-003-AC]
4. **Ammonia Injection Rate:** The ammonia injection rate shall not exceed 133 pounds per hour (1-hour block as 100% ammonia) in order to minimize ammonia emissions (slip). The concentration of stored ammonia solutions shall be less than 20 percent (%) by weight. [Applicant Request; Rule 62-4.070, F.A.C.]

{Note: The maximum ammonia injection rate is approximately equivalent to an NH₃/NO_x molar ratio of 1.0 presuming baseline uncontrolled NO_x emissions of 4 lb/ton of clinker. The stored ammonia concentration limitation avoids the requirement to prepare a Risk Management Plan pursuant to Section 112r of the Clean Air Act for this activity.}

EMISSIONS AND TESTING REQUIREMENTS

5. **Emissions Standards:** Upon complete installation of the indirect firing system, but no later than June 30, 2007 emissions from each kiln shall not exceed the following emissions standards for NO_x. These limits replace any previous NO_x emission limits for Kilns 1 and 2.

Pollutant	Emission Limit	Averaging Time	Compliance Method	Basis
NO _x	1.21 lb/ton of dry preheater feed	30-day rolling	CEMS	Applicant Request/ PSD Avoidance
	181.5 lb/hr (as NO ₂)			

NO_x emissions from each kiln shall not exceed 1.21 lb/ton of dry preheater feed and 181.5 lb/hour on a rolling 30-operating day average as measured by the required CEMS. Mass emission rates for NO_x shall be calculated as NO₂.

{Note: In combination with the annual dry preheater feed rate limitation of 1,300,000 tons per year per kiln, the above emissions standard effectively limits annual potential NO_x emissions from each unit to 786.5 tons/year. The NO_x limit is equivalent to approximately 2.0 lb/ton of clinker.}

[Applicant Request; Rules 62-4.070(3), 62-212.400(12), F.A.C.]

6. **Special Compliance Tests:** When the Department, after investigation, has good reason (such as complaints, increased visible emissions or questionable maintenance of control equipment) to believe that any applicable emission standard contained in a Department rule or in a permit issued pursuant to those rules is being violated, it shall require the owner or operator of the emissions unit to conduct compliance tests which identify the nature and quantity of pollutant emissions from the emissions unit and to provide a report on the results of said tests to the Department. [Rule 62-297.310(7)(b), F.A.C.]
7. **Supplemental Dioxin/Furan and PM/PM10 Tests:** The owner or operator shall notify the Compliance Authority prior to initiating any significant change in the feed or fuel used in the most recent compliant performance test for dioxin/furan or PM/PM10. For purposes of this condition, a significant change includes but is not limited to the following: a physical or chemical change in the kiln feed material or fuel from that which was used in the most recent compliant performance test; the use of a raw material not previously used; a change in the percentage of a raw material employed in the mix design; a change in the Loss on Ignition ("LOI") of the fly ash; a change in the use of non-beneficiated fly ash or beneficiated fly ash; an increase in

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

A. Cement Kilns 1 and 2 (EU ID 003 and 014)

the levels of total chlorine/chloride or total hydrocarbons in kiln feed materials or fuels above those levels where compliance has been demonstrated through performance testing; changes in the exhaust gas cooling system including the addition, deletion or movement of dampers; and changes to the combustion system or its operation. Use of a particular feed mix, fuel, or cooling system configuration for which compliance with the D/F and PM emission limits has previously been demonstrated, shall not be considered a significant change. [Rule 62-4.070(3), F.A.C. and 40 CFR 63.1349]

EXCESS EMISSIONS

{Note: The following conditions apply only to the SIP-based emissions standards specified in condition 5 of this section. Rule 62-210-700, F.A.C. (Excess Emissions) cannot vary or supersede any federal provision of the NSPS or the NESHAP programs.}

8. Definitions:

- a. *Startup* is defined as the commencement of operation of any emissions unit which has shut down or ceased operation for a period of time sufficient to cause temperature, pressure, chemical or pollution control device imbalances, which result in excess emissions.
- b. *Shutdown* means the cessation of the operation of an emissions unit for any purpose.
- c. *Malfunction* means any unavoidable mechanical and/or electrical failure of air pollution control equipment or process equipment or of a process resulting in operation in an abnormal or unusual manner.

[Rule 62-210.200 (186, 263, and 279), F.A.C.]

9. Excess Emissions Prohibited: Excess emissions caused entirely or in part by poor maintenance, poor operation or any other equipment or process failure that may reasonably be prevented during startup, shutdown or malfunction shall be prohibited. All such preventable emissions shall be included in any compliance determinations based on CEMS data. [Rules 62-210.650, and 62-210.700(4), F.A.C.]
10. Allowable Data Exclusions: Each 30-day rolling average shall include all periods of operation (including startup, shutdown, and malfunction), but may exclude limited periods due to malfunctions of the SNCR system. "Malfunctions of the SNCR system" are defined as any unavoidable mechanical and/or electrical failure that prevents introduction of ammonia-based solutions into the kiln system. No more than 30 hours in any calendar month shall be excluded from the compliance determinations due to malfunctions of the SNCR system. This data may be excluded from the compliance demonstrations only in accordance with the above requirements, provided that best operational practices to minimize emissions are adhered to and the duration of excess emissions are minimized. As provided by the authority in Rule 62-210.700(5), F.A.C., this condition replaces the provisions in Rule 62-210.700(1), F.A.C.

The permittee shall notify the Compliance Authority within one working day of discovering any emissions in excess of a CEMS standard subject to the specified averaging period. Within one working day of occurrence, the owner or operator shall notify the Compliance Authority of any malfunction resulting in the exclusion of CEMS data. All such reasonably preventable emissions shall be included in any CEMS compliance determinations. All valid emissions data (including data collected during startup, shutdown and malfunction) shall be used to report emissions for the Annual Operating Report.

[Rules 62-210.200, and 62-210.700, F.A.C.]

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

A. Cement Kilns 1 and 2 (EU ID 003 and 014)

CONTINUOUS MONITORING REQUIREMENTS

11. **CEMS Systems:** The NO_x CEMS shall be operated and maintained to measure and record the emissions of NO_x in each kiln system exhaust stack in a manner sufficient to demonstrate continuous compliance with the emission limits specified in this permit. The CEMS shall express the results in 1-hr averages in units of pounds per ton of dry kiln feed, pounds per ton of clinker produced, pounds per hour, and ppmvd (parts per million dry volume).
- NO_x Monitors:** The NO_x monitors' span values shall be set appropriately, considering the expected range of emissions and corresponding emission standards.
 - Diluent Monitor:** An oxygen monitor shall be installed to measure oxygen concentration in each stack.
 - Continuous Flow Monitor:** A continuous flow monitor shall be installed in each stack to determine the stack exhaust flow rate to be used in determining mass emission rates. The flow monitors and NO_x monitors shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 6 as monitoring systems.
 - Moisture Correction:** The owner or operator is responsible for establishing an appropriate means for determining the moisture content of the flue gas in order to express monitoring results in units of the standards.

[Rules 62-4.070(3), and 62-297.520, F.A.C.]

12. **CEMS Data Requirements:** The NO_x CEMS shall be installed, calibrated, maintained, and operated in a manner sufficient to express results in units of pounds per ton of preheater feed, pounds per ton of clinker produced, and pounds per hour.
- Valid Hourly Averages:** Each CEMS shall be designed and operated to sample, analyze, and record data evenly spaced over the hour at a minimum of one measurement per minute. All valid measurements collected during an hour shall be used to calculate a 1-hour block average that begins at the top of each hour. Each 1-hour block average shall be computed using at least one data point in each fifteen-minute quadrant of an hour, where the unit combusted fuel (or produced clinker) during that quadrant of an hour. Notwithstanding this requirement, a 1-hour average shall be computed from at least two data points separated by a minimum of 15 minutes (where the unit operates for more than one quadrant of an hour). If less than two such data points are available, there is insufficient data and the 1-hour block average is not valid.
 - Hours during which there is no kiln feed and no fuel fired are not valid hours.
 - Hours during which the plant is firing fuel but producing no clinker are valid, but these hours are excluded from the production-normalized emission rate computation (pounds per ton of clinker). These hours are included in any pollutant mass emission rate computation (pounds per hour).
 - 30-day Rolling Averages:** Compliance with the emission limits for NO_x shall be based on a 30-day rolling average. Each 30-day rolling average shall be the arithmetic average of all valid hourly averages collected during the last 30 operating days. A new 30-day rolling average shall be recomputed after every day of operation for the new day and the preceding 29 operating days. For purposes of computing these emission limits, an operating day is any day that the kiln produces clinker or fires fuel.
 - Data Exclusion:** Except for monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments, each CEMS shall monitor and record emissions during all operations including episodes of startups, shutdowns, and malfunctions. Limited amounts of CEMS emissions data recorded during some of these episodes may be excluded from the corresponding compliance demonstration

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

A. Cement Kilns 1 and 2 (EU ID 003 and 014)

subject to the provisions of Condition 10 of this section. The permittee shall minimize the duration of data excluded for such episodes to the extent practicable.

- d. *Availability*: Monitor availability for each CEMS used to demonstrate compliance shall be 95% or greater in any calendar quarter. Monitor availability shall be reported in the quarterly excess emissions report. In the event 95% availability is not achieved, the permittee shall provide the Department with a report identifying the problems in achieving 95% availability and a plan of corrective actions that will be taken to achieve 95% availability. The permittee shall implement the reported corrective actions within the next calendar quarter. Failure to take corrective actions or continued failure to achieve the minimum monitor availability shall be violations of this permit, except as otherwise authorized by the Compliance Authority.

[Rules 62-4.070(3), F.A.C.]

13. Ammonia Injection: A monitoring system to continuously monitor and record the ammonia injection rate of the SNCR system (1-hour block averages) shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations. The injection rate of ammonia solution measured in terms of volumetric flow rate shall be converted to pounds per hour as 100% ammonia.

[Rules 62-4.070(3), F.A.C.]

REPORTING AND RECORD KEEPING REQUIREMENTS

14. Operational Records: To demonstrate compliance with the limitations specified in this permit, the owner or operator shall maintain the following records on site. All records shall be made available to the Department and Compliance Authority upon request.
- a. For each 1-hour block of operation, continuously monitor and record the dry preheater feed rate, and clinker production rate. Records shall also document the dry preheater feed rate and clinker production rates for each consecutive 12 month period.
- b. Estimates of NH₃/NO_x molar ratio and ammonia injection rate as 100% ammonia.

[Rules 62-4.070(3) and 62-212.400(BACT), F.A.C.]

15. Stack Test Reports: The owner or operator of an emissions unit for which a compliance test is required shall file a report with the Compliance Authority on the results of each such test. The required test report shall be filed with the Compliance Authority as soon as practical but no later than 45 days after the last sampling run of each test is completed. The test report shall provide sufficient detail on the emissions unit tested and the test procedures used to allow the Compliance Authority to determine if the test was properly conducted and the test results properly computed. At a minimum, the test report, other than for an EPA or DEP Method 9 test, shall provide the information specified in Rule 62-297.310(8), F.A.C. [Rule 62-297.310(8), F.A.C.]

16. Malfunction Notifications: If temporarily unable to comply with any condition of the permit due to breakdown of equipment (malfunction) or destruction by hazard of fire, wind or by other cause, the permittee shall immediately (within one working day) notify the Compliance Authority. Notification shall include pertinent information as to the cause of the problem, and what steps are being taken to correct the problem and to prevent its recurrence, and where applicable, the owner's intent toward reconstruction of destroyed facilities. Such notification does not release the permittee from any liability for failure to comply with Department rules. [Rules 62-210.700(6) and 62-4.130, F.A.C.]

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

A. Cement Kilns 1 and 2 (EU ID 003 and 014)

17. **SIP Quarterly Report:** Within 30 days following the end of each calendar quarter, the permittee shall submit a report to the Compliance Authority summarizing: equipment malfunctions resulting in excluded CEMS data and/or excess emissions; and the monitor availability of each CEMS. The report shall contain the information and follow the general format specified in 40 CFR 60.7(c).

[Rules 62-4.070(3), 62-4.130, 62-210.700(6), F.A.C., and 40 CFR 60.7]

18. **Monitoring for PSD Applicability:** The permittee shall monitor the emissions of CO, PM/PM₁₀, SO₂, and VOC from each kiln using the most reliable information available. The permittee shall calculate and maintain a record of the annual emissions, in tons per year on a calendar year basis, for a period of 5 years following resumption of regular operations after installation of the indirect firing systems. Emissions shall be computed in accordance with Rule 62-210.370, F.A.C. [Rule 62-212.300(1)(e), F.A.C.]

{Note: For reference, definitions of Baseline Actual Emissions, Projected Actual Emissions, Actual Emissions, and Net Emissions Increase are defined below as they appear in 62-210.200, F.A.C.}

Baseline Actual Emissions: The rate of emissions, in tons per year, of a PSD pollutant, as follows:

For an existing emissions unit (other than an electric utility steam generating unit), baseline actual emissions means the average rate, in tons per year, at which the emissions unit actually emitted the pollutant during any consecutive 24-month period selected by the owner or operator within the 10-year period immediately preceding the date a complete permit application is received by the Department, except that the 10-year period shall not include any period earlier than November 15, 1990.

1. The average rate shall include fugitive emissions to the extent quantifiable, and emissions associated with startups and shutdowns.
2. The average rate shall be adjusted downward to exclude any non-compliant emissions that occurred while the source was operating above an emission limitation that was legally enforceable during the consecutive 24-month period.
3. The average rate shall be adjusted downward to exclude any emissions that would have exceeded an emission limitation with which the major stationary source must currently comply, had such major stationary source been required to comply with such limitations during the consecutive 24-month period.
4. For a PSD pollutant, when a project involves multiple emissions units, only one consecutive 24-month period must be used to determine the baseline actual emissions for all the emissions units being changed. A different consecutive 24-month period can be used for each PSD pollutant.
5. The average rate shall not be based on any consecutive 24-month period for which there is inadequate information for determining annual emissions, in tons per year, and for adjusting this amount if required by subparagraphs 2 and 3 above.

Projected Actual Emissions: The maximum annual rate, in tons per year, at which an existing emissions unit is projected to emit a PSD pollutant in any one of the 5 years following the date the unit resumes regular operation after the project, or in any one of the 10 years following that date, if the project involves increasing the emissions unit's design capacity or its potential to emit that PSD pollutant and full utilization of the unit would result in a significant emissions increase or a significant net emissions increase at the major stationary source. One year is one 12-month period. In determining the projected actual emissions, the Department:

- (a) Shall consider all relevant information, including historical operational data, the company's own representations, the company's expected business activity and the company's highest projections of

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

A. Cement Kilns 1 and 2 (EU ID 003 and 014)

business activity, the company's filings with the State or Federal regulatory authorities, and compliance plans or orders, including consent orders; and

- (b) Shall include fugitive emissions to the extent quantifiable and emissions associated with startups and shutdowns; and
- (c) Shall exclude that portion of the unit's emissions following the project that an existing unit could have accommodated during the consecutive 24-month period used to establish the baseline actual emissions and that are also unrelated to the particular project including any increased utilization due to product demand growth; or
- (d) In lieu of using the method set out in paragraphs (a) through (c) above, may be directed by the owner or operator to use the emissions unit's potential to emit, in tons per year.

Actual Emissions: The actual rate of emission of a pollutant from an emissions unit as determined in accordance with the following provisions:

- (a) In general, actual emissions as of a particular date shall equal the average rate, in tons per year, at which the emissions unit actually emitted the pollutant during a consecutive 24-month period which precedes the particular date and which is representative of the normal operation of the emissions unit. The Department shall allow the use of a different time period upon a determination that it is more representative of the normal operation of the emissions unit. Actual emissions shall be calculated using the emissions unit's actual operating hours, production rates and types of materials processed, stored, or combusted during the selected time period.
- (b) The Department may presume that unit-specific allowable emissions for an emissions unit are equivalent to the actual emissions of the emissions unit provided that such unit-specific allowable emissions limits are federally enforceable.
- (c) For any emissions unit that has not begun normal operations on a particular date, actual emissions shall equal the potential emissions of the emissions unit on that date.

Net Emissions Increase: With respect to any PSD pollutant emitted by a major stationary source, the amount by which the sum of the following exceeds zero:

1. The increase in emissions from a particular physical change or change in the method of operation as calculated pursuant to paragraph 62-212.400(2)(a), F.A.C.; and
2. Any other increases and decreases in actual emissions at the major stationary source that are contemporaneous with the particular change and are creditable. Baseline actual emissions for calculating increases and decreases under this subparagraph 62-210.200(200)(a)2., F.A.C., shall be determined as provided in subsection 62-210.200(35), F.A.C., except that subparagraphs 62-210.200(35)(a)3. and (b)4., F.A.C., shall not apply.

19. PSD Applicability Report: For a period of 5 years following resumption of regular operations after installation of the indirect firing systems, the permittee shall report to the Department each unit's annual emissions of CO, PM/PM₁₀, SO₂, and VOC during the preceding calendar year. The report shall be submitted within 60 days after the end of each calendar year and shall contain the following information:
- a. The name, address and telephone number of the owner or operator of the major stationary source;
 - b. The annual emissions as calculated pursuant to subparagraph 62-212.300(1)(e)1., F.A.C.;
 - c. If the emissions differ from the preconstruction projection, an explanation as to why there is a difference; and
 - d. Any other information that the owner or operator wishes to include in the report.

[Rule 62-212.300(1)(e), F.A.C.]

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

B. Coal Grinding and Transferring

This section of the permit addresses the following emissions unit.

EU ID	Emissions Unit Description
XXX	Coal Grinding and Conveying

The following new emission points, controlled by fabric filter baghouses, will be added as part of the indirect firing systems:

Point ID	Emissions Point Description
PS-01	#1 Coal Mill Baghouse
PS-02	#2 Coal Mill Baghouse
PS-03	#1 FK Pump Baghouse
PS-04	#2 FK Pump Baghouse
PS-05	#1 Coal Mill Pulverized Fuel Bin
PS-06	#2 Coal Mill Pulverized Fuel Bin

APPLICABLE STANDARDS AND REGULATIONS

1. **NSPS Requirements:** This unit is subject to 40 CFR 60, Subpart A (Identification of General Provisions) and 40 CFR 60, Subpart Y (Standards of Performance for Coal Preparation Plants). The Department determines that the emissions performance requirements of this permit are as stringent as, or more stringent than the limits imposed by the applicable NSPS provisions. Some separate reporting and monitoring may be required by the individual subpart.

EQUIPMENT AND CONTROLS

2. **Indirect Firing System:** The permittee is authorized to install indirect firing systems for Kilns 1 and 2 (EU 003 and 014) to reduce the amount of primary air injected with the fuel used in the main kiln burner. The indirect firing system for each kiln includes one pulverized coal bin, one FK pump, and associated fans, filters, and conveying equipment. This system will be incorporated into the existing coal conveying, storage, and handling equipment. [Application; and 62-4.070(3), F.A.C.]
3. **Baghouse Controls:** Each new emissions point identified above for the new indirect firing systems shall be controlled by a baghouse system. Each required baghouse shall be designed, operated, and maintained to achieve a PM design specification of 0.01 grains per dry standard cubic feet (gr/dscf) and a PM₁₀ design specification of 0.007 gr/dscf. [Application; and Rule 62-4.070(3), F.A.C.]

PERFORMANCE REQUIREMENTS

4. **Hours of Operation:** The hours of operation for this emissions unit are not limited (8760 hours per year). [Rule 62-210.200(PTE); F.A.C.]

EMISSIONS AND TESTING REQUIREMENTS

5. **Particulate Matter Standards:** Particulate matter emissions from the coal mills (Point ID PS-01 and PS-02) shall not exceed 0.007 gr/dscf of exhaust as determined by EPA method 5. All PM emitted from the baghouse exhaust is assumed to be PM₁₀. These requirements do not waive or vary any applicable NESHAP monitoring or record keeping requirements. [Rule 62-4.070(3), F.A.C.]

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

B. Coal Grinding and Transferring

- 6. Visible Emissions Standards: Visible emissions from each baghouse shall not exceed 10% opacity as determined by EPA Method 9. [Rule 62-4.070(3), F.A.C.]
- 7. Testing Requirements: Emission points PS-01 and PS-02 shall be stack tested to demonstrate initial compliance with the applicable emission standards for PM/PM₁₀ and visible emissions. All other emission points shall be tested for visible emissions only. The initial tests shall be conducted within 60 days following installation of the indirect firing system. Thereafter, compliance with the visible emission limits shall be demonstrated during each federal fiscal year (October 1st to September 30th) for all emission points listed above (PS-01 through PS-06). [Rule 62-297.310(7)(a), F.A.C.]
- 8. Special Compliance Tests: When the Department, after investigation, has good reason (such as complaints, increased visible emissions or questionable maintenance of control equipment) to believe that any applicable emission standard contained in a Department rule or in a permit issued pursuant to those rules is being violated, it shall require the owner or operator of the emissions unit to conduct compliance tests which identify the nature and quantity of pollutant emissions from the emissions unit and to provide a report on the results of said tests to the Department. [Rule 62-297.310(7)(b), F.A.C.]
- 9. Test Methods: Any required tests shall be performed in accordance with the following reference methods and the applicable requirements of Appendix C of this permit, and the applicable NSPS provisions.

Method	Description of Method and Comments
1 - 4	Determination of Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content. Methods shall be performed as necessary to support other methods.
5	Determination Particulate Matter from Stationary Sources
9	Visual Determination of the Opacity of Emissions from Stationary Sources

REPORTING AND RECORD KEEPING

- 10. Baghouse O&M Plan: For each baghouse the permittee shall prepare an operation and maintenance (O&M) plan to address proper operation, parametric monitoring, and a schedule for conducting periodic inspections and preventive maintenance. Baghouse inspections and maintenance activities shall be recorded in a written log. The O&M plan shall be submitted to the Compliance Authority prior to the initial compliance tests for this unit. [Rule 62-4.070(3)]
- 11. Test Reports: For each test conducted, the permittee shall file a test report including the information specified in Rule 62-297.310(8), F.A.C. with the compliance authority no later than 45 days after the last run of each test is completed. [Rules 62-297.310(8), F.A.C.]

SECTION IV. APPENDIX GC

GENERAL CONDITIONS

The permittee shall comply with the following general conditions from Rule 62-4.160, F.A.C.

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.
2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey and vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.
4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.
6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.
7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:
 - a. Have access to and copy and records that must be kept under the conditions of the permit;
 - b. Inspect the facility, equipment, practices, or operations regulated or required under this permit, and,
 - c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:
 - a. A description of and cause of non-compliance; and
 - b. The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida

SECTION IV. APPENDIX GC

GENERAL CONDITIONS

Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.
11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.
12. This permit or a copy thereof shall be kept at the work site of the permitted activity.
13. This permit also constitutes:
 - a. Determination of Best Available Control Technology ();
 - b. Determination of Prevention of Significant Deterioration ();
 - c. Compliance with National Emission Standards for Hazardous Air Pollutants (); and
 - d. Compliance with New Source Performance Standards ().
14. The permittee shall comply with the following:
 - a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
 - b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application or this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
 - c. Records of monitoring information shall include:
 - 1) The date, exact place, and time of sampling or measurements;
 - 2) The person responsible for performing the sampling or measurements;
 - 3) The dates analyses were performed;
 - 4) The person responsible for performing the analyses;
 - 5) The analytical techniques or methods used; and
 - 6) The results of such analyses.
15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

SECTION IV. APPENDIX SC

STANDARD CONDITIONS

Unless otherwise specified in the permit, the following conditions apply to all emissions units and activities at this facility.

EMISSIONS AND CONTROLS

1. Plant Operation - Problems: If temporarily unable to comply with any of the conditions of the permit due to breakdown of equipment or destruction by fire, wind or other cause, the permittee shall notify each Compliance Authority as soon as possible, but at least within one working day, excluding weekends and holidays. The notification shall include: pertinent information as to the cause of the problem; steps being taken to correct the problem and prevent future recurrence; and, where applicable, the owner's intent toward reconstruction of destroyed facilities. Such notification does not release the permittee from any liability for failure to comply with the conditions of this permit or the regulations. [Rule 62-4.130, F.A.C.]
2. Circumvention: The permittee shall not circumvent the air pollution control equipment or allow the emission of air pollutants without this equipment operating properly. [Rule 62-210.650, F.A.C.]
3. Excess Emissions Allowed: Excess emissions resulting from startup, shutdown or malfunction of any emissions unit shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration. [Rule 62-210.700(1), F.A.C.]
4. Excess Emissions Prohibited: Excess emissions caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure that may reasonably be prevented during startup, shutdown or malfunction shall be prohibited. [Rule 62-210.700(4), F.A.C.]
5. Excess Emissions - Notification: In case of excess emissions resulting from malfunctions, the permittee shall notify the Department or the appropriate Local Program in accordance with Rule 62-4.130, F.A.C. A full written report on the malfunctions shall be submitted in a quarterly report, if requested by the Department. [Rule 62-210.700(6), F.A.C.]
6. VOC or OS Emissions: No person shall store, pump, handle, process, load, unload or use in any process or installation, volatile organic compounds or organic solvents without applying known and existing vapor emission control devices or systems deemed necessary and ordered by the Department. [Rule 62-296.320(1), F.A.C.]
7. Objectionable Odor Prohibited: No person shall cause, suffer, allow or permit the discharge of air pollutants, which cause or contribute to an objectionable odor. An "objectionable odor" means any odor present in the outdoor atmosphere which by itself or in combination with other odors, is or may be harmful or injurious to human health or welfare, which unreasonably interferes with the comfortable use and enjoyment of life or property, or which creates a nuisance. [Rules 62-296.320(2) and 62-210.200(203), F.A.C.]
8. General Visible Emissions: No person shall cause, let, permit, suffer or allow to be discharged into the atmosphere the emissions of air pollutants from any activity equal to or greater than 20 percent opacity. [Rule 62-296.320(4)(b)1, F.A.C.]
9. Unconfined Particulate Emissions: During the construction period, unconfined particulate matter emissions shall be minimized by dust suppressing techniques such as covering and/or application of water or chemicals to the affected areas, as necessary. [Rule 62-296.320(4)(c), F.A.C.]

TESTING REQUIREMENTS

10. Required Number of Test Runs: For mass emission limitations, a compliance test shall consist of three complete and separate determinations of the total air pollutant emission rate through the test section of the stack or duct and three complete and separate determinations of any applicable process variables corresponding to the three distinct time periods during which the stack emission rate was measured; provided, however, that three complete and separate determinations shall not be required if the process variables are not subject to variation during a compliance test, or if three determinations are not necessary in order to calculate the unit's emission rate. The three required test runs shall be completed within one consecutive five-day period. In the event that a sample is lost or one of the three runs must be discontinued because of circumstances beyond the control of the owner or operator, and a valid third run cannot be obtained within the five-day period allowed for the test, the Secretary or his or her designee may accept the results of two complete runs as proof of compliance, provided that the arithmetic mean of the two complete runs is at least 20% below the allowable emission limiting standard. [Rule 62-297.310(1), F.A.C.]

SECTION IV. APPENDIX SC

STANDARD CONDITIONS

11. Operating Rate During Testing: Testing of emissions shall be conducted with the emissions unit operating at permitted capacity. Permitted capacity is defined as 90 to 100 percent of the maximum operation rate allowed by the permit. If it is impractical to test at permitted capacity, an emissions unit may be tested at less than the maximum permitted capacity; in this case, subsequent emissions unit operation is limited to 110 percent of the test rate until a new test is conducted. Once the unit is so limited, operation at higher capacities is allowed for no more than 15 consecutive days for the purpose of additional compliance testing to regain the authority to operate at the permitted capacity. [Rule 62-297.310(2), F.A.C.]
12. Calculation of Emission Rate: For each emissions performance test, the indicated emission rate or concentration shall be the arithmetic average of the emission rate or concentration determined by each of the three separate test runs unless otherwise specified in a particular test method or applicable rule. [Rule 62-297.310(3), F.A.C.]
13. Test Procedures: Tests shall be conducted in accordance with all applicable requirements of Chapter 62-297, F.A.C.
 - a. Required Sampling Time. Unless otherwise specified in the applicable rule, the required sampling time for each test run shall be no less than one hour and no greater than four hours, and the sampling time at each sampling point shall be of equal intervals of at least two minutes. The minimum observation period for a visible emissions compliance test shall be thirty (30) minutes. The observation period shall include the period during which the highest opacity can reasonably be expected to occur.
 - b. Minimum Sample Volume. Unless otherwise specified in the applicable rule or test method, the minimum sample volume per run shall be 25 dry standard cubic feet.
 - c. Calibration of Sampling Equipment. Calibration of the sampling train equipment shall be conducted in accordance with the schedule shown in Table 297.310-1, F.A.C.[Rule 62-297.310(4), F.A.C.]
14. Determination of Process Variables
 - a. Required Equipment. The owner or operator of an emissions unit for which compliance tests are required shall install, operate, and maintain equipment or instruments necessary to determine process variables, such as process weight input or heat input, when such data are needed in conjunction with emissions data to determine the compliance of the emissions unit with applicable emission limiting standards.
 - b. Accuracy of Equipment. Equipment or instruments used to directly or indirectly determine process variables, including devices such as belt scales, weight hoppers, flow meters, and tank scales, shall be calibrated and adjusted to indicate the true value of the parameter being measured with sufficient accuracy to allow the applicable process variable to be determined within 10% of its true value.[Rule 62-297.310(5), F.A.C.]
15. Sampling Facilities: The permittee shall install permanent stack sampling ports and provide sampling facilities that meet the requirements of Rule 62-297.310(6), F.A.C.
16. Special Compliance Tests: When the Department, after investigation, has good reason (such as complaints, increased visible emissions or questionable maintenance of control equipment) to believe that any applicable emission standard contained in a Department rule or in a permit issued pursuant to those rules is being violated, it shall require the owner or operator of the emissions unit to conduct compliance tests which identify the nature and quantity of pollutant emissions from the emissions unit and to provide a report on the results of said tests to the Department. [Rule 62-297.310(7)(b), F.A.C.]
17. Test Reports: The owner or operator of an emissions unit for which a compliance test is required shall file a report with the Department on the results of each such test. The required test report shall be filed with the Department as soon as practical but no later than 45 days after the last sampling run of each test is completed. The test report shall provide sufficient detail on the emissions unit tested and the test procedures used to allow the Department to determine if the test was properly conducted and the test results properly computed. As a minimum, the test report, other than for an EPA or DEP Method 9 test, shall provide the following information:
 - 1) The type, location, and designation of the emissions unit tested.

SECTION IV. APPENDIX SC

STANDARD CONDITIONS

- 2) The facility at which the emissions unit is located.
- 3) The owner or operator of the emissions unit.
- 4) The normal type and amount of fuels used and materials processed, and the types and amounts of fuels used and material processed during each test run.
- 5) The means, raw data and computations used to determine the amount of fuels used and materials processed, if necessary to determine compliance with an applicable emission limiting standard.
- 6) The type of air pollution control devices installed on the emissions unit, their general condition, their normal operating parameters (pressure drops, total operating current and GPM scrubber water), and their operating parameters during each test run.
- 7) A sketch of the duct within 8 stack diameters upstream and 2 stack diameters downstream of the sampling ports, including the distance to any upstream and downstream bends or other flow disturbances.
- 8) The date, starting time and duration of each sampling run.
- 9) The test procedures used, including any alternative procedures authorized pursuant to Rule 62-297.620, F.A.C. Where optional procedures are authorized in this chapter, indicate which option was used.
- 10) The number of points sampled and configuration and location of the sampling plane.
- 11) For each sampling point for each run, the dry gas meter reading, velocity head, pressure drop across the stack, temperatures, average meter temperatures and sample time per point.
- 12) The type, manufacturer and configuration of the sampling equipment used.
- 13) Data related to the required calibration of the test equipment.
- 14) Data on the identification, processing and weights of all filters used.
- 15) Data on the types and amounts of any chemical solutions used.
- 16) Data on the amount of pollutant collected from each sampling probe, the filters, and the impingers, are reported separately for the compliance test.
- 17) The names of individuals who furnished the process variable data, conducted the test, analyzed the samples and prepared the report.
- 18) All measured and calculated data required to be determined by each applicable test procedure for each run.
- 19) The detailed calculations for one run that relate the collected data to the calculated emission rate.
- 20) The applicable emission standard, and the resulting maximum allowable emission rate for the emissions unit, plus the test result in the same form and unit of measure.
- 21) A certification that, to the knowledge of the owner or his authorized agent, all data submitted are true and correct. When a compliance test is conducted for the Department or its agent, the person who conducts the test shall provide the certification with respect to the test procedures used. The owner or his authorized agent shall certify that all data required and provided to the person conducting the test are true and correct to his knowledge.

[Rule 62-297.310(8), F.A.C.]

RECORDS AND REPORTS

18. Records Retention: All measurements, records, and other data required by this permit shall be documented in a permanent, legible format and retained for at least five (5) years following the date on which such measurements, records, or data are recorded. Records shall be made available to the Department upon request. [Rules 62-4.160(14) and 62-213.440(1)(b)2, F.A.C.]
19. Annual Operating Report: The permittee shall submit an annual report that summarizes the actual operating rates and emissions from this facility. Annual operating reports shall be submitted to the Compliance Authority by March 1st of each year. [Rule 62-210.370(2), F.A.C.]

TECHNICAL EVALUATION

CEMEX Cement, Inc.
Brooksville Cement Plant

Indirect Firing System, Burner Replacement
and Selective Non-Catalytic Reduction (SNCR)

Kilns 1 and 2

Hernando County

DEP File No. 0530010-026-AC



Department of Environmental Protection
Division of Air Resource Management
Bureau of Air Regulation

November 3, 2006

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

I. APPLICATION INFORMATION

A. APPLICANT

CEMEX Cement, Inc.
Brooksville Plant
16301 Ponce de Leon Blvd.
Brooksville, Florida 34601

Authorized Representative

Michael A. Gonzales, Plant Manager
Post Office Box 6
Brooksville, Florida 34605-0006

B. PROCESSING SCHEDULE

- Received application for installation of selective non-catalytic reduction (SNCR) system October 14, 2005.
- Received application for installation of indirect firing system and kiln burner replacement August 22, 2006.
- Received application revision September 5, 2006.
- Received additional details on September 15, 2006.
- Department's Intent to Issue and Public Notice Package dated November 3, 2006.

C. FACILITY LOCATION

The CEMEX Brooksville Cement Plant is located on Highway 98, northwest of Brooksville in Hernando County.

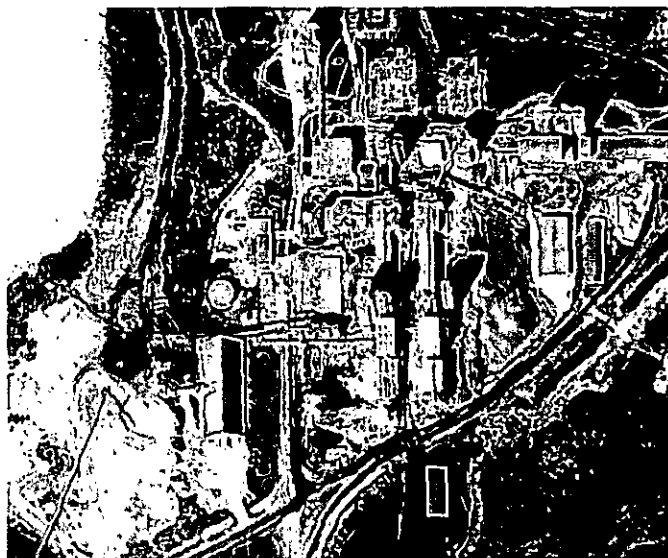
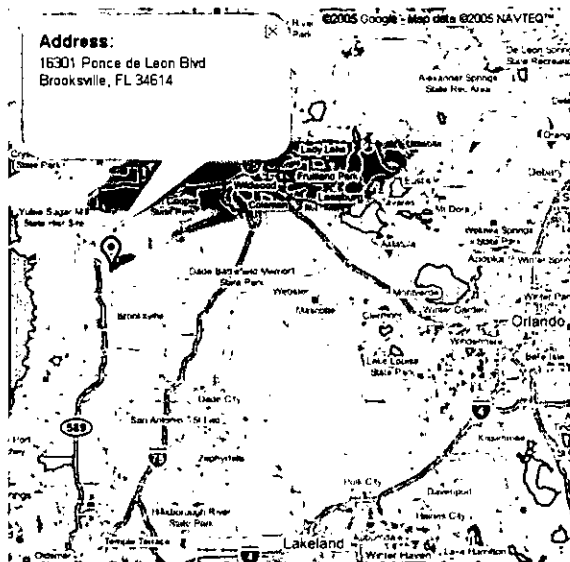


Figure 1. Location of the CEMEX Brooksville Cement Plant in Hernando County & Aerial Photo.

D. FACILITY CLASSIFICATION CODE (SIC)

Major Group No. 32, Clay, Glass, and Concrete Products
Industry Group No. 324 Cement, Hydraulic

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

E. REGULATORY CATEGORIES

The following regulatory classifications apply to the subject facility:

Title I, Section 111, Clean Air Act (CAA): This facility is subject to certain Standards of Performance for New Stationary Sources. They are adopted and incorporated by reference in Rule 62-204.800, F.A.C. These include:

- 40 CFR 60, Subpart A - General Provisions.
- 40 CFR 60, Subpart F - Standards of Performance for Portland Cement Plants. Certain requirements from Subpart F are replaced by requirements from 40 CFR 63, Subpart LLL listed below.
- 40 CFR 60, Subpart Y - Standards of Performance for Coal Preparation Plants.
- 40 CFR 60, Subpart OOO - New Source Performance Standards For Nonmetallic Mineral Processing Plants.

Title I, Section 112 CAA: The facility has the potential to emit 10 tons per year or more of any one hazardous air pollutant (HAP) or 25 tons per year or more of any combination of HAPs. This facility is subject to the Major Source provisions of:

- 40 CFR 63 Subparts A - National Emission Standards for Hazardous Air Pollutants – General Provisions.
- 40 CFR, Subpart LLL - National Emission Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry.

Title I, Part C: The facility is located in an area designated as “attainment”, “maintenance”, or “unclassifiable” for each pollutant subject to a National Ambient Air Quality Standard. The facility is considered a “portland cement plant”, which is one of the 28 Prevention of Significant Deterioration (PSD) source categories with the lower PSD applicability threshold of 100 tons per year. Potential emissions of at least one regulated pollutant exceed 100 tons per year. Therefore, the facility is classified as a PSD-major source of air pollution with respect to Rule 62-212.400, F.A.C., Prevention of Significant Deterioration.

Title IV, CAA: The facility does not operate any units subject to the Acid Rain provisions of the Clean Air Act.

Title V, CAA: The facility is a Title V or “Major Source” of air pollution because the potential emissions of at least one regulated pollutant exceed 100 tons per year or because it is a major source of HAPS. Regulated pollutants include pollutants such as carbon monoxide (CO), nitrogen oxides (NO_x), particulate matter (PM/PM₁₀), sulfur dioxide (SO₂), and volatile organic compounds (VOC).

State Rules: The cement plant is subject to state Rule 62-296.407, F.A.C. (Portland Cement Plants).

F. FACILITY DESCRIPTION

The existing Brooksville portland cement plant consists of two Polysius GEPOL preheater kilns (Kilns 1 and 2). A picture of one of the kilns, with preheater tower, can be seen in Figure 2. Each kiln and clinker cooler combination is separately permitted with respect to preheater material feed rates and fuel heat input rates. Ancillary equipment at the plant includes raw mills, finish mills, cement and clinker handling equipment, coal handling equipment and silos, and particulate control/dust collection and recycling equipment.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

A single, large, fabric filter system (baghouse) is used to capture particulate matter from each kiln and from each clinker cooler (four total). Smaller baghouses are used to limit particulate emissions from other process emissions points. There are no other permitted add-on controls for any pollutants emitted from the cement kilns. However, selective non-catalytic reduction (SNCR) was recently installed on both kilns for NO_x control (permanent authorization is being addressed by this action). Raw material properties, chemical reactions in the kilns, absorption into the clinker, and combustion controls minimize emissions of NO_x, SO₂, CO, and VOC.



Figure 2. Polysius GEPOL Preheater Kiln at CEMEX Brooksville Plant

Current permits limit the production capacity by setting maximum preheater feed rates and emission limits in terms of mass of pollutant per mass of preheater feed. Both CEMEX Brooksville kilns are limited to 150 tons dry preheater feed per hour (30 day average) with a maximum of 165 tons preheater feed in any given hour.

Both kilns are permitted to burn a variety of fuels, including coal, No. 2 fuel oil, No. 4 fuel oil, No. 5 fuel oil, No. 6 fuel oil, natural gas, and on-site generated, non-hazardous waste used oil, grease, and rags. Kiln No. 1 is also permitted to fire whole tire derived fuel (TDF) at a rate up to 20 percent of the total heat input on a British thermal unit (Btu) basis, or 2.14 tons TDF per hour.

G. PROJECT BACKGROUND AND APPLICANT'S PROPOSAL

Project 018

Kilns 1 and 2 were originally equipped with direct firing systems and mono-channel burners. During the spring of 2005, semi-direct firing systems, including Pillard Rotflam® burners and associated cyclone, fans and fuel injectors, and SNCR systems were installed on both kilns. In October of 2005, CEMEX applied for an after-the-fact air construction permit (0530010-018-AC) for the installation of the burners associated with the semi-direct firing systems, and the installation of the SNCR systems. Several other miscellaneous changes were also requested with the same application.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

Project 026

In the fall of 2006, CEMEX applied for the installation of indirect firing systems. The indirect firing system now proposed by CEMEX may utilize the existing Pillard Rotoflam® burners, or as an alternative, the existing burners will be replaced with F.L. Smidth Duoflex® burners. The following new components for the indirect firing systems must also be installed for each kiln: one coal mill baghouse; one pulverized coal bin with baghouse; one FK pump with associated baghouse; and other associated fans, filters, and conveyance piping. The Department is also incorporating the previously installed SNCR systems (from 0530010-018-AC) into this project.

II. RULE APPLICABILITY

A. STATE REGULATIONS

The project is subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The Florida Statutes authorize the Department to establish rules and regulations regarding air quality as part of the Florida Administrative Code (F.A.C.). The state rules and regulations of the Florida Administrative Code applicable to this project include but are not limited to the following:

State Regulations Applicable to Portland Cement Plants.

Chapter 62-4	Permits.
Rule 62-204.220	Ambient Air Quality Protection
Rule 62-204.240	Ambient Air Quality Standards
Rule 62-204.260	Prevention of Significant Deterioration Increments
Rule 62-204.360	Designation of Prevention of Significant Deterioration Areas
Rule 62-204.800	Federal Regulations Adopted by Reference
Rule 62-210.300	Permits Required
Rule 62-210.350	Public Notice and Comments
Rule 62-210.370	Reports
Rule 62-210.550	Stack Height Policy
Rule 62-210.650	Circumvention
Rule 62-210.700	Excess Emissions
Rule 62-210.900	Forms and Instructions
Rule 62-212.300	General Preconstruction Review Requirements
Rule 62-212.400	Prevention of Significant Deterioration
Chapter 62-213	Operation Permits for Major Sources of Air Pollution
Rule 62-296.320	General Pollutant Emission Limiting Standards
Rule 62-297.310	General Test Requirements
Rule 62-297.401	Compliance Test Methods
Rule 62-297.570	Test Reports
Rule 62-297.520	EPA Continuous Monitor Performance Specifications
Rule 62-297.701	Portland Cement Plants

B. FEDERAL REGULATIONS

This project is also subject to certain applicable federal provisions regarding air quality as established by the EPA in the Code of Federal Regulations (CFR) and summarized below.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

Federal Regulations Applicable to Portland Cement Plants.

40 CFR 50	National Primary and Secondary Ambient Air Quality Standards
40 CFR 60, Subpart A	General Provisions
40 CFR 60, Subpart F	Standards of Performance for Portland Cement Plants
40 CFR 60, Subpart Y	Standards of Performance for Coal Preparation Plants
40 CFR 60, Subpart OOO	Standards of Performance for Nonmetallic Mineral Processing Plants
40 CFR 63, Subpart A	General Provisions
40 CFR 63, Subpart LLL	National Emissions Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry – Major Sources

Under the provisions of Subpart LLL (National Emission Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry), if a source plans to undertake a change in operations that may adversely affect compliance with an applicable D/F or PM standard, the source must notify the Administrator and conduct a performance test in accordance with the subpart.

The Department recognizes a change that would adversely affect compliance with an applicable D/F or PM standard as a “significant” change in operations. A significant change includes but is not limited to the following: a physical or chemical change in the kiln feed material or fuel from that which was used in the most recent compliant performance test; the use of a raw material not previously used; a change in the percentage of a raw material employed in the mix design; a change in the Loss on Ignition (“LOI”) of the fly ash; a change in the use of non-beneficiated fly ash or beneficiated fly ash; an increase in the levels of total chlorine/chloride or total hydrocarbons in kiln feed materials or fuels above those levels where compliance has been demonstrated through performance testing; changes in the exhaust gas cooling system including the addition, deletion or movement of dampers; and changes to the combustion system or its operation. Use of a particular feed mix, fuel, or cooling system configuration for which compliance with the D/F and PM emission limits has previously been demonstrated, shall not be considered a significant change.

PSD APPLICABILITY

The Department regulates major air pollution sources in accordance with Florida’s Prevention of Significant Deterioration (PSD) program, as described in Rule 62-212.400, F.A.C. A PSD review is only required in areas that are currently in attainment with the National Ambient Air Quality Standard (AAQS) for a given pollutant or areas designated as “unclassifiable” for the pollutant. A new facility is considered “major” with respect to PSD if the facility emits or has the potential to emit:

- 250 tons per year or more of any regulated air pollutant; or
- 100 tons per year or more of any regulated air pollutant and the facility belongs to one of the 28 Major Facility Categories; or
- 5 tons per year of lead.

For new PSD-major facilities and modifications to existing PSD-major sources, each regulated pollutant is reviewed for PSD applicability based on emissions thresholds known as the Significant Emission Rates (SERs) identified in Rule 62-210.200(243), F.A.C. Each pollutant exceeding the respective SER is considered “significant” and the applicant must employ the Best Available Control Technology (BACT) to minimize emissions, and evaluate the air quality impacts. Although a facility may be considered a “major stationary source” with respect to PSD because of only one regulated pollutant, it is required to implement BACT for each “PSD-significant” pollutant.

III. DEPARTMENT REVIEW

A. BURNER TECHNOLOGY AND KILN FIRING SYSTEMS

Direct Firing

In a direct firing system the coal is fed directly to the kiln through a mono-channel burner from the pulverizer, with no intermediate storage area. This means that all of the cool, moist air used to “sweep” the coal from the coal mill is introduced into the kiln with the fuel. In other words, the amount of primary air being fed into the combustion zone with the fuel is the amount of air needed to move coal through the conveyance system, not the amount of air needed for optimum flame production.¹ According to the application, the extra axial momentum caused by the additional primary air also leads to entrainment of secondary air, which theoretically causes greater thermal NO_x formation. The mono-channel burner is basically a single pipe through which the air and fuel are channeled for combustion. This configuration lacks any flame shaping flexibility, making adjustments for fuel type and quality impossible.²

Indirect Firing

An indirect firing system includes a buffer silo for intermediate storage of the pulverized coal, from which the “sweep” air has been separated before introduction into the kiln through the injector nozzle of the burner. A schematic of a Pillard indirect firing system with components identified are shown in the Figure below.

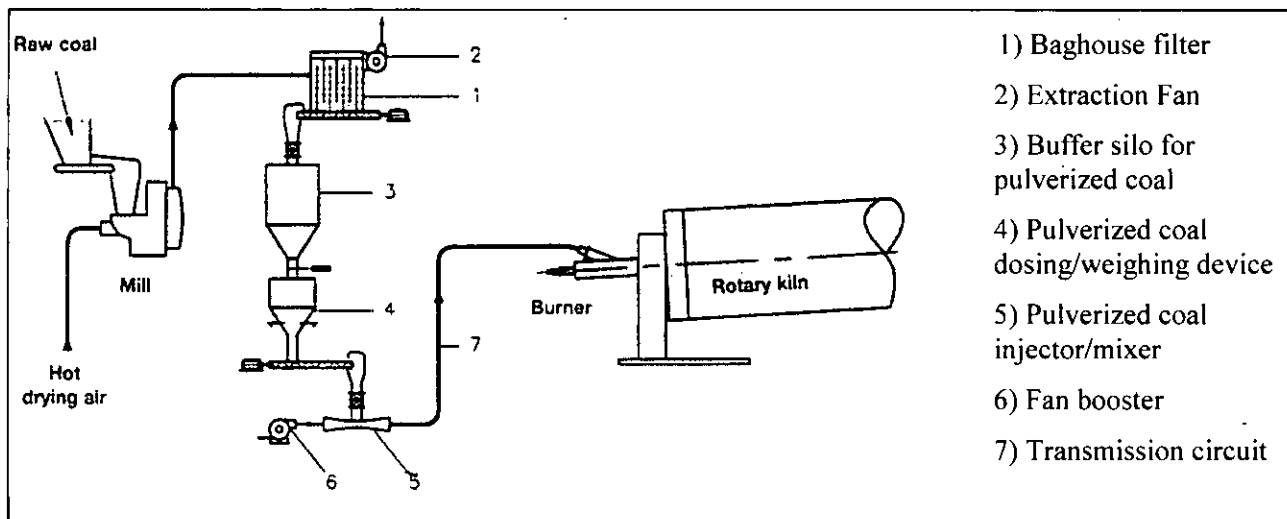
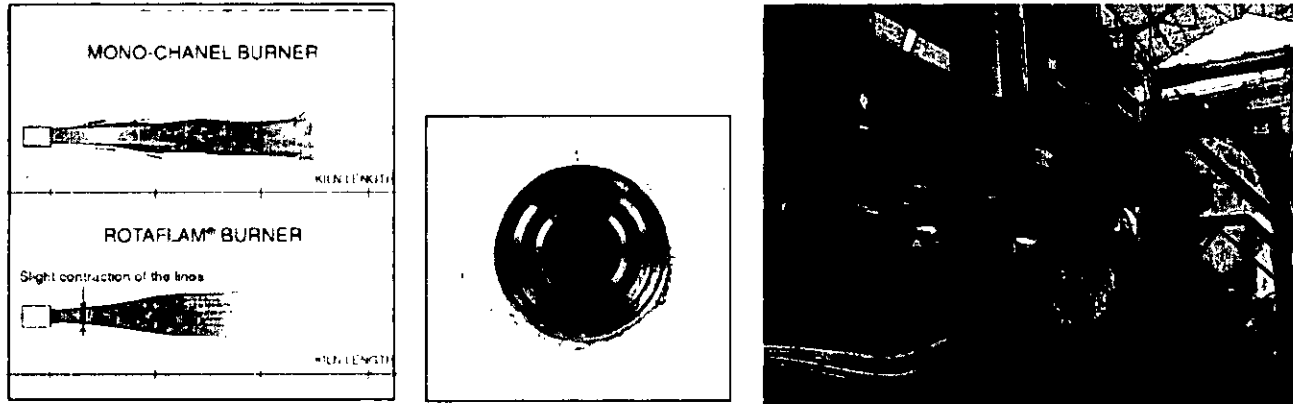


Figure 3. Components of Indirect Firing System³

The indirect system, utilizes a low amount of the cool, moist primary air from the coal mill to convey pulverized coal and a controlled amount of air into the kiln firing zone through a multi-channel burner. This allows greater use of hot secondary air from the clinker cooler and kiln hood. The result is more efficient energy use, and in theory less pollution generation. The multi-channel design offers greater flexibility in the manner in which the fuel and air are mixed, and in possible flame shapes and lengths (Refer to Figure 4. below). Such burners are often designated as Low NO_x burners depending on the way they are employed.

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Flame Shape Comparison
Figure 4 Pillard Rotoflam® Burner

Semi-Direct Firing

A semi-direct firing system offers some of the advantages of the direct firing system with less capital and maintenance costs, and without the potential risks related to the intermediate pulverized fuel storage.⁵ The semi-direct system must still utilize all of the “sweep” air from the coal mill. However, the air and coal are separated in a cyclone prior to introduction to the burner, so that the coal and air can be delivered to different channels of a multi-channel burner in a more controlled manner. The ability to utilize the multi-channel burner is a definite advantage, but because the “sweep” air is still exclusively used, the full benefits cannot be realized. None of the “sweep” air is being replaced with the warmer, dry air from the clinker cooler as with the indirect firing system, and all of the “sweep” air must be injected as either primary or secondary air.

The applicant, although committed to the change to indirect firing systems on Kilns 1 and 2, has not made the final decision as to the burner manufacturer. Regardless of the manufacturer, the technology and principles of operation are the same. CEMEX may either keep the currently installed Pillard Rotoflam® burners, or replace these with the F.L. Smidth Duoflex® burners pursuant to this permit.

Effect of Indirect Firing on Emissions

According to the applicant, the only increase in emissions as a result of the indirect firing system will be the increase in PM/PM₁₀ emissions resulting from the new coal handling components of the system. Emissions of NO_x may actually decrease. Particulate emissions from the new components will be controlled by fabric filter baghouses. The potential PM/PM₁₀ emissions for the indirect firing system are estimated by the applicant to be 16.82 and 11.77 tons per year (TPY) respectively. Emission rates and design details for the new baghouses are listed in the table below.

The applicant claims that increases in emissions of CO, SO₂, and VOCs are not likely to occur as a direct result of the installation of indirect firing systems. The Department agrees that, in general, emission increases should not occur as a result of such firing system conversions if all other factors remain equal.

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Table 1. Potential PM/PM₁₀ Emissions Resulting From Indirect Firing System

EU ID	Baghouse Location	Flow Rate (dscfm)	PM Emission Factor (grains/scf)	PM Emissions (TPY)	PM ₁₀ Emission Factor (grains/scf)	PM ₁₀ Emissions (TPY)
PS-01	#1 Coal Mill	21,200	0.01	7.63	0.007	5.34
PS-02	#2 Coal Mill	21,200	0.01	7.63	0.007	5.34
PS-03	#1 FK Pump	360	0.01	0.13	0.007	0.09
PS-04	#2 FK Pump	360	0.01	0.13	0.007	0.09
PS-05	#1 Coal Meal Bin	1,800	0.01	0.65	0.007	0.45
PS-06	#2 Coal Meal Bin	1,800	0.01	0.65	0.007	0.45
Total				16.82		11.76

Emissions of SO₂ and VOCs are largely controlled by raw material selection. An increase in CO emissions is more likely to occur as a result in a change at the exit end of the kiln resulting in insufficient amounts of excess air required for carbon burnout, or use of high loss on ignition (LOI) fly ash as a raw material. The Department does not necessarily agree that lower NO_x emissions will occur due to the new firing system, but concludes that NO_x emissions will decrease in consideration of the SNCR project as discussed below.

B. SELECTIVE NON-CATALYTIC REDUCTION

Applicant Request

CEMEX requested an after-the-fact air construction permit to install Selective Non-Catalytic Reduction (SNCR) systems on Kilns 1 and 2 to reduce NO_x emissions in conjunction with the change to indirect firing. In order to avoid PSD review under project 018, the applicant requested an emissions limit of 1.21 lb per ton of preheater feed (equivalent to approximately 2.0 lb/ton of clinker) on each kiln. Note that the State Rules in effect at the time this application was received relied on past actual to future potential emissions to determine PSD applicability. The application also includes a maximum annual preheater feed rate of 1,300,000 TPY.

The SNCR system consists of a storage tank, piping, pumps, injection nozzles, and a control system. The CEMEX systems have four injection nozzles on each kiln: three in the riser duct and one at the kiln inlet. According to the applicant, “there is sufficient ammonia delivery capability using only the single kiln inlet injector to stay within the requested NO_x emission limit of 2.0 lb/ton of clinker”. The following diagram illustrates the typical equipment needed for permanent ammonia (NH₃) solution storage and piping at a power plant. Cement plant requirements are similar.

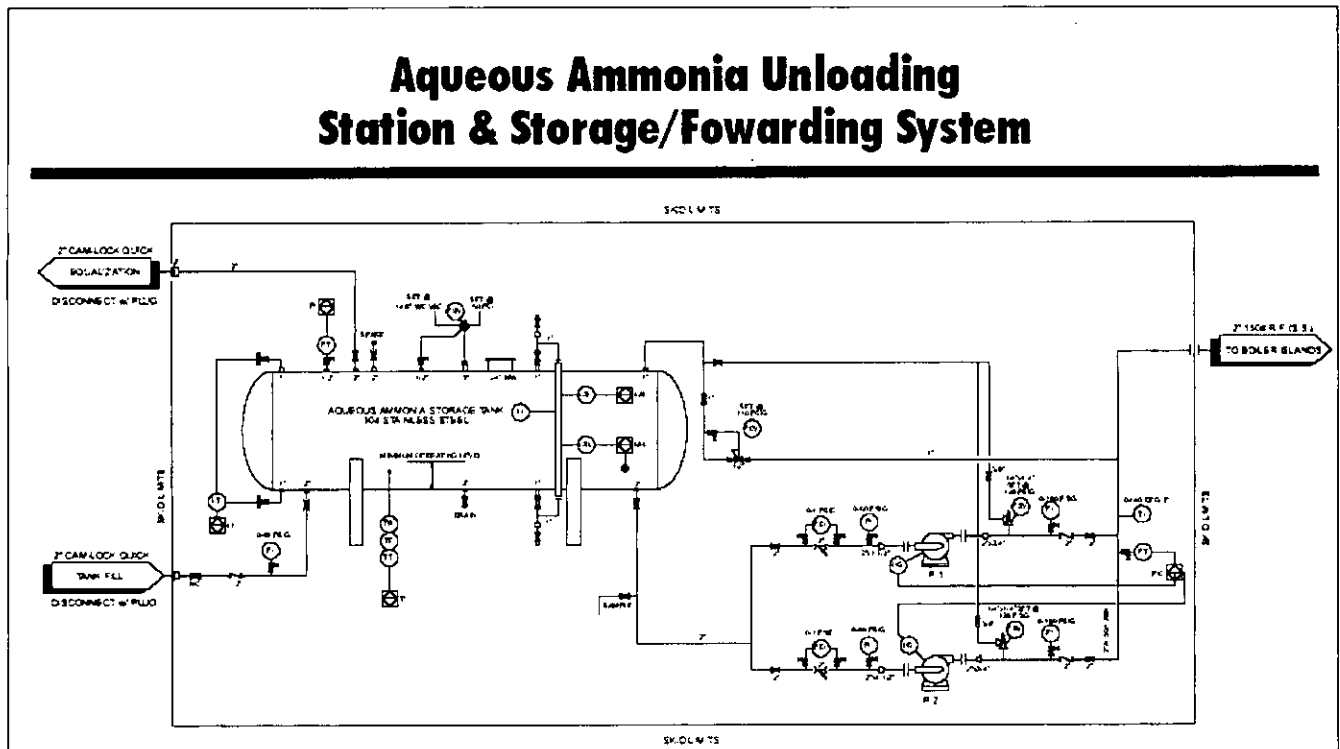


Figure 5. Diagram of Typical SNCR Ammonia Storage and Piping/Pumping System

CEMEX Preheater/Kiln Configuration and NO_x Formation

CEMEX kilns 1 and 2 are of the preheater design in which all of the fuel is typically fired in the kiln burner at the exit end of the kiln. Similar to other designs, the raw meal is continuously weighed on feed scales and introduced at the top of the preheater tower. As it falls through the preheater it is contacted and progressively heated by exhaust gases from the kiln. The calcined materials make their way down the kiln where they are further heated and transformed into nodules of clinker.

The graph below shows the gas and material temperature profiles throughout pyroprocessing. Raw materials flow from left to right while exhaust gases flow counter currently. Very high material temperatures and even greater gas temperatures must be attained within an oxidizing environment to transform the calcined material to clinker. Because of this, there is a high potential for thermal NO_x formation (even with the use of low NO_x burners and indirect firing systems).

The NO_x-containing exhaust gas leaving the sintering portion of the kiln is characterized by excess air and high temperature. Calcination of limestone occurs at approximately 900 degrees Celsius (°C) and liberates carbon dioxide to produce lime according to the following endothermic reaction:



In preheater kilns, like the ones at CEMEX, all calcination of the limestone takes place somewhere between the lower end of the preheater tower and just inside the kiln entrance. The calcination reaction rapidly cools the kiln exhaust gas and tends to limit the temperature of exhaust gases in and around the kiln entrance to temperatures less than 900 °C.

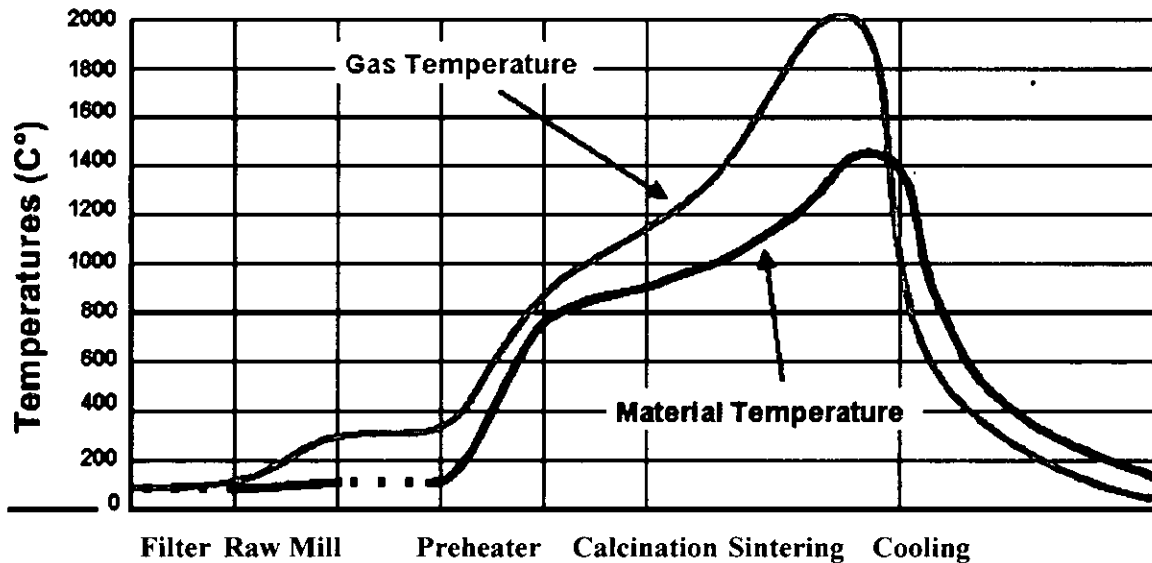


Figure 6. Kiln Exhaust Gas and Materials Pyroprocessing Thermal Profiles

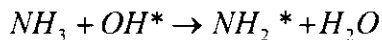
With other kiln designs, such as staged combustion utilizing a calciner (SCC), much of the fuel can be combusted in the calciner at the lower “calcination” temperature atmosphere so there is less potential for thermal NO_x formation in the kiln. In addition, fuel, air, and raw materials can be sequenced within the calciner in such a manner that some of the thermal NO_x coming from the kiln is actually destroyed, and fuel NO_x formation within the calciner can be limited.

In the preheater design, because all of the fuel is introduced at the kiln burner, there is no opportunity for lowering thermal NO_x production through staged combustion, and pre-calcination of the raw materials.

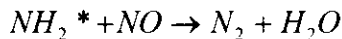
Mechanisms of Selective Non-Catalytic Reduction (SNCR)

Selective non-catalytic reduction can be utilized to destroy NO_x within the preheater tower. NH₃ in the form of ammonia water or urea is injected at a point in the process characterized by a suitable temperature window between 850 and 1050 °C depending on residence time, turbulence, oxygen content, and a number of other factors specific to the given gas stream. Note that the “calcination” temperature discussed above neatly falls within this temperature window. SNCR destroys NO_x by a two-step process as follows:

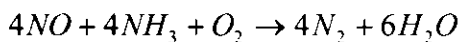
Equation 2. Ammonia reacts with available hydroxyl radicals to form amine radicals and water per the following theoretical equation:



Equation 3. Amine radicals combine with nitrogen oxides to form nitrogen and water.



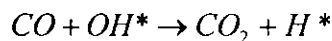
Equation 4. The two steps are typically expressed as a single “global reaction”.



The simplified equation does not convey the kinetics. But it suggests that, theoretically, SNCR will function best in an oxidizing atmosphere.

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Equation 5. In a reducing atmosphere, CO competes with ammonia for available OH radicals.



The necessary temperature window for a preheater design kiln exists between the lower part of the preheater and just before the sintering zone. In selecting a level (or levels) for ammonia injection there must be some optimization of temperature and oxygen. For this type of kiln, it is practicable to inject reagent only into the riser duct/lower preheater.

SNCR Experience in Florida

There has been a lot of experience with SNCR at European cement plants. In recent years, there have been numerous tests and some permanent installations of SNCR at cement kilns in North America.

In November 2004, tests were conducted at the Suwannee American Cement preheater/calculator to assess the viability of SNCR. The following figure shows some of the equipment and test points for the test program designed by Polysius. Not shown is the metering system or the additional continuous emission monitoring equipment. Suwannee American Cement received a permit for permanent authorization of SNCR for this kiln in March 2005.



Figure 7. Aqueous Ammonia Supply Truck, Compressed Air, One of Four Ports, an Injector

In the fall of 2004 the Department authorized tests to assess the viability of SNCR in controlling NO_x emissions produced in the preheater/calculator kiln at Florida Rock Industries in Newberry, Florida. These tests were conducted by Polysius during the period December 6-11, 2004. The summary report is available at: www.dep.state.fl.us/Air/permitting/construction/flrock.htm

The Department reviewed the report and summarized the performance of the SNCR system in the graphs shown in the figure below. The graph on the left hand side represents the performance of the SNCR system while burning tires and maintaining mildly reducing or mildly oxidizing conditions in the calciner.

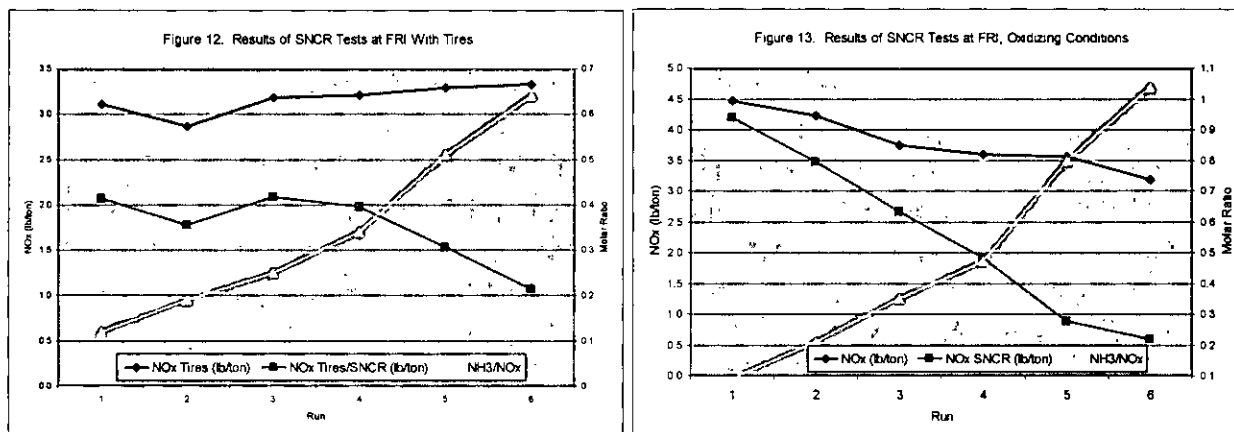


Figure 8. NO_x Emissions (middle lines) vs. Molar Ratio (lower lines) during Testing at FRI.

The Department issued a final permit for a permanent SNCR installation at the existing Florida Rock Kiln No. 1 in October 2006.

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In 2005, CEMEX and F.L. Smidth also successfully tested SNCR systems at the Balcones preheater kiln in New Braunfels, Texas. CEMEX installed the SNCR systems at the Brooksville, Florida kilns in early 2005 for which the present approval has been requested.

All of the tests and permanent installation data suggest that emissions less than 2.0 lb NO_x/ton clinker can be achieved at existing kilns with molar ratios substantially less than unity. The key point is that the target emission rate can be met with relatively low NH₃ usage. This insures minimal CO increase or NH₃ slip.

C. PSD APPLICABILITY FOR THE PROJECT

The proposed indirect firing system includes the installation of six new baghouses and a resulting overall increase in emissions of particulate matter. Included in the current information submitted by the applicant are calculations of base-line actual emissions of CO, NO_x, PM/PM₁₀, SO₂, and VOC for each kiln based on a representative 2-year production period, and an emission factor derived from the average of 5 annual stack tests. An applicability analysis, comparing baseline actual to projected actual emissions, was carried out by the applicant based on a 10 percent future demand increase. The applicant proposes that future actual emissions will not reach significant levels, therefore will not trigger PSD review for any pollutant as a result of the indirect firing systems.

Table 2 below represents the Department's comparison of baseline actual emissions from Kilns 1 and 2, to projected actual emissions from the indirect firing project (including emissions from the existing kilns and the new coal conveying emissions points) for CO, PM/PM₁₀, SO₂, and VOC.

Table 2. Department's Comparison of Baseline Actual to Projected Actual Emissions.

Pollutant	Kiln	Potential to Emit (TPY) ^a	Baseline Actual Emissions ^b	Project Projected Actual Emissions	Project Increases/Decreases	PSD Significant Emission Rate	Trigger PSD? (Yes/No)
CO	Kiln No. 1	788.0	597	597.0	0.0		
	Kiln No. 2	788.0	591.3	591.3	0.0		
	Total	1576.0	1188.3	1188.3	0.0	100.0	No
PM	Kiln No. 1	118.0	33	33.0	0.0		
	Kiln No. 2	118.0	17.4	17.4	0.0		
	Coal Mills	16.8		16.8	16.8		
	Total	252.8	50.4	67.2	16.8	25.0	No
PM ₁₀	Kiln No. 1	118.0	33	33.0	0.0		
	Kiln No. 2	118.0	17.4	17.4	0.0		
	Coal Mills	11.8		11.8	11.8		
	Total	247.8	50.4	62.2	11.8	15.0	No
SO ₂	Kiln No. 1	66.0	5	5.0	0.0		
	Kiln No. 2	66.0	4.8	4.8	0.0		
	Total	132.0	9.8	9.8	0.0	40.0	No
VOC	Kiln No. 1	59.0	43.4	0.0	0.0		
	Kiln No. 2	59.0	49	0.0	0.0		
	Total	118.0	92.4	92.4	0.0	40.0	No

a Based on current permitted emission limits and/or maximum preheater feed rate.

b Based on emission factors derived from average of five annual stack tests, and preheater feed rates from 1999 and 2000.

According to CEMEX's previous application (including after-the-fact installation of SNCR and a semi-direct firing system) the acceptance of a lower NO_x emissions limit of 1.21 lb/ton of preheater feed, and a maximum preheater feed rate of 1,300,000 TPY on both kilns would result in emissions increases below

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the significant emissions rate that would trigger PSD. The SNCR and semi-direct projects were submitted (and actually completed) prior to the effective date of the New Source Review Reform rules. Therefore the comparison of past actual to future potential emissions is appropriate for determining PSD applicability for this pollutant. As seen in the table below, past actual emissions were compared to future potential emissions for NO_x (as presented in the previous application) using the requested limits of 1.21 lbs per ton of preheater feed associated with installation of the SNCR system, and the proposed maximum annual preheater feed rate limit. Based on these comparisons and the proposed emission limits, the Department agrees that the project is not subject to PSD preconstruction review for NO_x.

Table 3. Department's Comparison of Past Actual to Potential Emissions.

Pollutant	Kiln	Potential to Emit (TPY) ^a	Past Actual Emissions ^b	Future Potential Emissions	Project Increases/Decreases	PSD Significant Emission Rate	Trigger PSD? (Yes/No)
NO _x	Kiln No. 1	1202.0	715	786.5	71.5		
	Kiln No. 2	1130.0	819.5	786.5	-33.0		
	Total	2332.0	1534.5	1573	38.5	40.0	No

D. CONCLUSIONS

A burner change-out required for semi-firing has already been accomplished. The increased emissions of NO_x have been mitigated by an SNCR system, and PSD has been avoided. The burner change-outs and the SNCR installations systems are being approved in this permitting action together with the further conversion of the semi-direct firing system to an indirect firing system.

Indirect Firing Project

The indirect firing system conversion was assessed under the new definition of Projected Actual Emissions given in 62-210.200 as "The maximum annual rate, in tons per year, at which an existing emissions unit is projected to emit a PSD pollutant in any one of the five years following the date the unit resumes regular operation after the project,..." and ten years following the project under certain circumstances.

When the Department issues a construction permit which avoids the requirements of PSD review based on projected actual emissions, the permittee will be required to monitor and report annual emissions for a five or ten year period, depending on the circumstances. If the projected actual emissions are exceeded, the PSD requirements apply as if construction of the modification had never commenced.

Because the indirect firing system is considered a change in the method of operation, and PSD (non) applicability for CO, PM/PM₁₀, SO₂, and VOC has been based on projected actual emissions, the permit will require specific monitoring of future actual emissions for comparison to baseline actual emissions for a period of five years for those pollutants. Specific PM/PM₁₀ limits, baghouse design criteria based on potential emissions calculations submitted by the applicant, and operation and maintenance plans for each baghouse will also be requirements of the permit.

Prior Installation of Semi-Direct Firing System & SNCR

The Department has concluded that the pre-installed SNCR system on Kilns 1 and 2 will not cause a significant increase in NO_x emissions if operated in accordance with the attached conditions. Therefore, the projects will not trigger PSD or require a BACT determination.

The final permit will include the requested limits of 1.21 pounds of NO_x per ton of preheater feed for both kilns. A maximum annual preheater feed rate of 1,300,000 TPY for each kiln will also be added. The recently certified NO_x CEMS will become the required method of compliance.

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Because SO₂ emissions are minimal from cement kilns in Florida, very little particulate matter can be formed by reaction with excess NH₃ emissions (slip). Although there is no reason to inject as much NH₃ as it takes to react with all NO_x, the Department will limit the maximum NH₃ injection rate to that level, at a molar ratio of 1.0. This equates to approximately 139 pounds per hour of ammonia (as 100% ammonia) assuming pretreatment emissions of 4.0 lb/ton of clinker. According to the applicant, for a reduction from 4.0 to 2.0 lb/ton of clinker, the required molar ratio is in the range of 0.6-0.7. The actual ammonia delivered to the plant will be a 19 percent aqueous ammonia solution according to the application.

E. ADDITIONAL COMMENTS

The Department's determination is strictly limited to this specific case and should not be used as a precedent for other cases, or lead to unintended consequences construed from the language contained in this determination. Ultimately, it is the Department that interprets its own regulations and opinions.

REFERENCES

¹ Letter, National Lime Association, Comments on VISTAS' Draft Regional Haze Modeling Protocol, October 21, 2005.

² Leaflet, Pillard Combustion Equipment & Control Systems, "Directflam® Systems Semi-direct Fired Rotaflam® low NO_x Kiln Burner, 9903G Rev.1

³ Bulletin, Pillard Thermique & Automatique, "Conversion of Coal-Fired Rotary Kiln From Direct to Indirect Mode", 9507 G.

⁴ Leaflet, Pillard Combustion Equipment & Control Systems, "Directflam® Systems Semi-direct Fired Rotaflam® low NO_x Kiln Burner, 9903G Rev.1

⁵ Leaflet, Pillard Combustion Equipment & Control Systems, "Directflam® Systems Semi-direct Fired Rotaflam® low NO_x Kiln Burner, 9903G Rev.1