Prevention of Significant Air Quality Deterioration Review

Final Determination

December 2009

Facility Name: CEMEX Southeast, LLC
City: Clinchfield
County: Houston
AIRS Number: 04-13-153-00003
Application Number: 17550
Date Application Received: July 16, 2007

State of Georgia
Department of Natural Resources
Environmental Protection Division
Air Protection Branch

James Capp – Chief, Air Protection Branch

Stationary Source Permitting Program

Eric Cornwell
Hamid Yavari
Wei-Wei Qiu

Planning & Support Program

James Boylan
Peter Courtney
Rosendo Majano

BACKGROUND

On July 17, 2007, CEMEX Southeast, LLC (hereafter "CEMEX") submitted an application for an air quality permit to construct and operate a new Portland cement production line designated as Kiln No. 6 at its existing Portland cement manufacturing facility/plant located at 2720 Highway 341 South in Clinchfield, Houston County, Georgia. The proposed new Portland cement production line/Kiln No. 6 will consist mainly of the following process equipment or operation[1]:

- A relocated primary crusher, a new secondary crusher, and associated conveying systems;
- A new raw mill and associated equipment;
- A new preheater/calciner kiln (Kiln No. 6) system equipped with a baghouse on the main stack;
- A new finish mill equipped with a high efficiency separator and associated equipment;
- New clinker and cement silos and handling equipment;
- New clay and iron ore storage and handling;
- New gypsum handling;
- New coal and petroleum coke mill and associated equipment;
- A selective non-catalytic reduction (SNCR) system controlling NO_x emissions from the new Kiln No. 6;
- A continuous emissions monitoring system (CEMS) measuring emissions of carbon monoxide (CO), nitrogen oxides (NO_x), sulfur dioxide (SO_2), and total hydrocarbons (THC) from the new Kiln No. 6;
- An opacity monitor continuously measuring the visible emissions from the new Kiln No. 6/Raw Mill/Clinker Cooler main stack; and
- A continuous temperature monitor measuring temperature at inlet to the kiln/raw mill/cooler baghouse.

In addition to the new equipment, some existing silos will be retrofitted with baghouses and utilized either exclusively or partially in the operation of the Kiln No. 6.

On December 22, 2008, the Division issued a Preliminary Determination stating that the modifications described in Application No. 17550 should be approved. The Preliminary Determination contained a draft Air Quality Permit for the construction and operation of the modified equipment.

The Division requested that CEMEX place a public notice in a newspaper of general circulation in the area of the existing facility notifying the public of the proposed construction and providing the opportunity for written public comment. Such public notice was placed in *The Houston Home Journal* (legal organ for Houston County) on January 21, 2009. The public comment period expired on February 20, 2009.

During the comment period, comments were received from CEMEX and the general public. There were no comments received from the U.S. EPA region IV.

A copy of the final permit is included in Appendix A. A copy of written comments received during the public comment period is provided in Appendix B.

[1] Georgia Air Quality Application No. 17550, revised on June 19, 2008.

CEMEX's COMMENTS

Comments were received from Mr. John B. Koogler of Koogler & Associates, Inc. on behalf of CEMEX, by hand delivery on February 18, 2009. On August 11, 2009, Koogler & Associates, Inc. submitted on behalf of CEMEX additional information supporting some of the initial comments (Attachment 2). The original comments are reproduced one by one below followed by EPD's responses and also enclosed as Attachment 1. The supporting information is outlined beneath to the relevant comments and also enclosed as Attachment 2.

Comment 1 (on Subpart/Table 3.1.1):
CEMEX questioned the description of the emission unit No. 6031 as "Kiln No. 6 Gypsum Silo Zynt." in Section 3.1.1.

EPD Response:
The emission unit description is correct. No change has been made to the Permit as a result of the comment.

Comment 2 (on Condition 3.2.12):
CEMEX requests approval to use off-specification used oil as a supplement fuel.

EPD Response:
Burning "off-specification used oil" as kiln fuel is not authorized due to its high levels of contaminants such as arsenic, heavy metals, lead, total halogens and uncertainty in HAP contents. No change has been made to the Permit as a result of the comment.

Comment 3 (on Condition 3.2.12)**:**
See comment 2 above.

EPD Response:
See EPD response to Comment 2.

Comment 4 (on Condition 3.2.12)**:**
A used oil rate of 30,000,000 gallons per year is requested to be consistent with the annual heat input requirement of the pyroprocessing system. The permit limit of 1,522, 800 gallons limits used oil use to 400 hours/year.

Outline of the supplement information supporting this comment (See Attachment 2 for details):
Two reports were found addressing the System Removal Efficiency of lead (Pb) in dry process Portland cement plants fired with coal. One report indicated that the Pb removal efficiency was 98.0% while the other was 99.4%. Therefore, CEMEX could burn 30,000,000 gallons per year of used oil without exceeding the PSD significant emission rate for Pb of 0.6 tons (assuming the used oil contains no more than 100 ppm Pb by weight).

EPD Response:
Used oil is any petroleum-derived or synthetic oil that, as a result of use or management, is contaminated. Used oil includes, but is not limited to, engine, turbine and gear lubricants; hydraulic fluid, including transmission fluid; metalworking fluid, including cutting, grinding, machining, rolling, stamping, quenching and coat oils; and insulating fluid or coolant.

Used oil is divided into three categories: on-specification used oil; off-specification used oil, and hazardous waste. Each category is determined by contaminants and/or their levels in the oil. Anyone marketing and burning used oil in each category must comply with applicable Federal and/or state regulations.

As a result of combustion of used oil, metal contaminants including Pb are emitted into the atmosphere primarily as constitutes of particulate matter (PM).

In the two reports, Pb removal efficiencies were for coal burning. Therefore, directly applying the PM removal efficiencies for coal burning to oil burning may not be appropriate because these two burning processes produce different particle size distributions. The PM removal efficiency for oil burning should be lower than that for coal burning because PM/particles generated by oil combustion are much more finer than those by coal combustion. For this reason, EPD will allow 3,000,000 gallons of used oil for Kiln No. 6 which is in range with the two similar cement kilns in Florida, one located at CEMEX Cement Company's Brooksville Plant and the other at Sumter Cement Company LLC's Center Hill Plant, both having an annual used oil usage limit of 3,000,000 gallons. Condition 3.2.12 has been revised to allow 3,000,000 gallons of used oil instead of 1,522,800 gallons.

Comment 5 (on Condition 3.2.13)**:**
The NH_3/NO_x molar ratio cannot be determined during normal plant operations as the "NO_x" value used in this ratio is the uncontrolled NO_x emission rate. With SNCR operating, the only NOx emission rate monitored is the controlled NO_x emission rate. It is suggested that an ammonia injection rate based on an uncontrolled NO_x emission rate of 3.0 lb NO_x/ton of clinker and a clinker production rate of 160.4 tph be established as a guideline limit for NH_3 injection. This NH_3 injection rate would be expressed as gallons per minute of 19% aqua ammonia, or equivalent. The resulting limit would be 2.0 gpm of 19% aqua ammonia.

Outline of additional comment regarding this comment (See Attachment 2 for details):
It was not reasonably possible to determine the NH_3/NO_x molar ratio on an on-going basis as the ratio is based on an uncontrolled rate. When SNCR is employed, there is no way of knowing what the uncontrolled NO_x emissions is and hence, no way of calculating the molar ratio.

Having a permit condition limiting this ratio was unnecessary, as CEMEX would optimize the aqua ammonia injection rate for economic reasons. Since the kiln stack would use a COMS to demonstrate compliance with an opacity standard, the monitoring of opacity would further assure the optimization of ammonia injection, thus minimizing the potential for ammonia slip and form of a visible plume.

As an alternative approach to limit the NH_3/NO_x ratio, CEMEX suggested eliminating the requirements to maintain the ratio at or below 1.0, and instead, requiring the use of an ammonia monitor in the kiln stack to monitor the ammonia slip. CEMEX proposes to limit the ammonia slip to 25 ppm (v/v) above baseline; where baseline was defined as the stack gas ammonia concentration when SNCR was not employed. CEMEX would monitor and record the aqua ammonia injection rate, as required by the permit.

EPD Response:
Maintaining appropriate NH_3/NO_x ratio is important to prevent or reduce excessive ammonia emissions ("ammonia slip"), excessive ammonium sulfate emissions (when the sulfur contents in raw materials are relatively high), and excessive CO emissions (ammonia competes with CO for available hydroxyl radicals, resulting in CO emission increases).

On the other hand, in a preheater/precalciner kiln, fuel combustion occurs at two locations and each follows a separate mechanism in the formation of NO_x, i.e., thermal NO_x dominates in the kiln burning zone and fuel NO_x dominates in the precalciner. For this reason, the effects of process operation on final NO_x levels are complex and do not necessarily conform to conventional understanding of combustion as defined through steam generating boilers.

Because the NO_x emissions from CEMEX's cement kiln could be influenced by many factors (for example, adding whole or shredded spent tires at the middle of kiln would reduce the formation of NO_x), Condition 3.3.6 allows an "initial startup/shakedown" period for CEMEX to optimize the operation of the Kiln No. 6 and associated control systems. The NH_3/NO_x molar ratio required for compliance with the NO_x emission limit should be one of operating parameters to be determined during the "initial startup/shakedown" period, and it may have a range or several values depending on the operating status of the No. 6 kiln, such as the NO_x and CO levels in the flue gas (both will be continuously monitored to minimize emissions and optimize fuel combustion) or whether spent tires is used as fuel. Therefore, presetting the ammonia injection rate at 1.0 based on an assumed uncontrolled NO_x emission level may not represent the appropriate ammonia usage rate for the source, and therefore is inappropriate.

A BACT Review prepared by the State of Florida for a cement kiln[2] cited a report prepared by Koogler & Associates summarizing tests conducted at the Florida Rock Industries Cement Plant in Newberry, Florida. The report indicated that an NH_3/NO_x molar ratio of slightly greater than 0.5 was sufficient to reduced kiln NO_x emissions from approximately 3.6 to 1.8 lbs/ton of clinker. According to the data collected from cement kilns at CEMEX's Victorville Plant and at Titan Pennsuco Florida, the maximum/pre-controlled 30-day rolling average of NO_x emissions were 3.0 and 2.25 lbs/ton of clinker. This indicates that the NH_3/NO_x molar ratio limit of 1.0 should be sufficient for CEMEX to comply with the BACT NO_x emission limit of 1.95 lbs/ton of clinker established by this permit.

To optimize the operation of SNCR and the injection rate of ammonia, the pre-controlled NO_x should be determined either by using a multiple-sensor/channel NO_x CEMS capable of measuring the flue gas NO_x concentrations at the inlet and outlet of the SNCR during the same average period, or by using an additional NO_x analyzer. Once the appropriate NH_3 injection rate(s) is established based on the optimized operation of the Kiln No. 6 and associated control systems, this permit may be amended to incorporate the injection ratio(s) if necessary.

Because it is not a direct measurement of the NO_x concentration in the kiln flue gas, monitoring ammonia slip above ammonia baseline via ammonia monitors as proposed by CEMEX in this comment is by nature not as good as directly monitoring NO_x concentration in the kiln flue gas. The proposed approach would still need to continuously monitor the ammonia baseline and ammonia slip simultaneously, because the baseline could vary with raw materials being used at the time. On the other hand, defining ammonia slip as 25 ppm (v/v) above baseline seems too high since data from both U.S. and European cement plants indicated the ammonia slip could be as low as 1 to 2 ppm (v/v).

No change has been made to the Permit as a result of this comment.

---

[2] Florida Department of Environmental Protection, Division Of Air Resources Management, Bureau of Air Regulation, DEP File No. 0530010-029-AC (PSD-FL-384), pp. 15 – 25.

Comment 6 (on Condition 3.2.14)**:**
Baghouse C18A is the kiln baghouse and is equipped with COMS. Because of this, monitoring Pressure Drop is redundant and should not be required.

With other baghouses, CEMEX questions how a "range of pressure drops" is to be established during a standard three-run PM test. To develop a meaningful range of Pressure Drops, multiple PM tests will have to be conducted during each of the "most recent Division-approved performance test".

CEMEX proposes that for the finish mill (C027) and coal mill (C041), the VE monitoring required by Subpart LLL should suffice. The monitoring requirements of LLL (63.1350(e)) are:

(e) The owner or operator of a raw mill or finish mill shall monitor opacity by conducting daily visual emissions observations of the mill sweep and air separator PMCD of these affected sources in accordance with the procedures of Method 22 of appendix A to part 60 of this chapter. The Method 22 test shall be conducted while the affected source is operating at the representative performance conditions. The duration of the Method 22 test shall be 6 minutes. If visible emissions are observed during any Method 22 visible emissions test, the owner or operator must:

(1) Initiate, within one-hour, the corrective actions specified in the site specific operating and maintenance plan developed in accordance with paragraphs (a)(1) and (a)(2) of this section; and

(2) Within 24 hours of the end of the Method 22, conduct a follow-up Method 22 test of each stack from which visible emissions were observed during the previous Method 22 test. If visible emissions are observed during the follow-up Method 22 test from any stack from which visible emissions were observed during the previous Method 22 test, conduct a visual opacity test of each stack from which emissions were observed during the follow up Method 22 test in accordance with Method 9 of appendix A to part 60 of this chapter. The duration of the Method 9 test shall be 30 minutes.

EPD Response:
The PM and visible performance tests as required by the permit can only establish the relation between the visible and the PM emissions at the operating/ system set point including the average baghouse pressure drop used during the test. To ensure that the performance of the baghouse is maintained at the performance test level, the Permittee shall monitor and maintain the average baghouse pressure drop at the level established during the test, unless a PM CEMS or a baghouse leak detection system is in place.

When requesting some operational flexibility via a pressure drop range corresponding compliance with the PM emission limit, CEMEX can choose to determine the pressure drop range via performance testing. At minimum two sets of 3-run Method 5 testing at different pressure drops could establish the pressure drop range as long as the PM emissions at each pressure drop levels are in compliance with the emission limit respectively.

The finishing mill and coal mill share a baghouse-controlled stack and are considered one of the major PM and visible emission sources at the facility. The use of COMS at this stack as required by Condition 3.3.6 ensures compliance with the BACT visible emission limit. The proposed condition establishes an appropriate PSD requirement, which is necessary to ensure the proper operation of the baghouses and thus the compliance with the emission limits. No change has been made to the Permit as a result of the comment.

Comment 7 (on Condition 3.2.31)**:**
How is this recycle rate to be determined? The kiln dust blown back from the preheater is in a gas stream that enters the raw mill (when the raw mill operates). In the raw mill the dust is mixed with the raw materials and becomes an integral part of the raw meal.

When the raw mill is not operating, the dust goes directly to the kiln baghouse and then to the blend silo or preheater. Nowhere in either of these paths is there a mechanism for determining the mass of kiln dust.

EPD Response:
This is a requirement under 40 CFR Part 63, Subpart LLL and the MACT standard does not specify how to determine the recycle rate. But according to EPA (http://www.epa.gov/osw/nonhaz/industrial/special/ckd/index.htm):

"Cement kiln dust (CKD) is the fine-grained, solid, highly alkaline waste removed from cement kiln exhaust gas by air pollution control devices. Because much of the CKD is actually unreacted raw materials, large amounts of it can and are, recycled back into the production process. Some CKD is reused directly, while some requires treatment prior to reuse. CKD not returned to the production process is typically disposed in land-based disposal units (i.e., landfills, waste piles, or surface impoundments), although some is also sold for beneficial reuse."

The captured/recycled CKD could be estimated based on the control efficiency of the baghouse (usually is approximately 99% by weight) and the PM grain loading/concentration of baghouse exhaust gas stream. No change has been made to the Permit as a result of this comment.

Comment 8 (on Condition 3.2.31)**:**
CEMEX requests adding the following statement to Condition 3.2.31 "in case EPA revises the current MACT standard for mercury":

"Rule 63 CFR 1343(c)(5), the basis of this condition, is currently being reconsidered by EPA. If EPA revises this rule section as a result of the reconsideration, this condition will be modified to be consistent with the revised rule."

Outline of additional comment regarding this comment (See Attachment 2 for details):
CEMEX requested to add the same paragraph in the original comment also to Conditions 4.2.13 and 6.2.14.g.

EPD Response:
These conditions are established based on the requirements in the MACT standard for Portland cement plants currently in effective. If EPA modifies this specific MACT standard, EPD will amend the permit and the pertinent conditions will be revised. No change has been made to the Permit as a result of the comment.

Comment 9(on Condition 3.3.6)**:**
This statement is confusing. First, is has nothing to do with Averaging. Secondly, CEMEX is not aware of an EPA requirement to substitute M9 for the CEMS requirements, and if opacity is to be monitored, there is a requirement for COMS on the kiln stack. The requirement for a PM CEMS has been deferred until EPA undertakes rulemaking to reestablish that requirement.

Outline of additional comment regarding this comment (See Attachment 2 for details):
CEMEX requested to add the following into Condition 3.3.6:

"The requirement for a PM CEMS has been deferred by EPA until further rule-making. At such time EPA undertakes rule-making and adopts a rule requiring a PM CEMS as part of Subpart LLL (or an equivalent regulation), this condition will be modified to be consistent with the federal rule."

EPD Response:
Method 9 should have been Method 5. References to the PM CEMS have been removed from the table because paragraph c of this condition has the same requirement. The PM CEMS has to be used in replacement of Method 5 once EPA promulgates the procedural requirements for operating the PM CEMS. Condition 3.3.6 has been modified as:

3.3.6 Emissions from the Kiln No. 6 shall not exceed the following BACT emissions standards:

TABLE 3.3.6: BACT Emission Limits

Pollutant	Operation	Emission Limit	Compliance Method	Averaging Time
PM	Air Heater, Raw Mill, Preheater/Precalciner, Calciner, Kiln, and Clinker Cooler/Main Kiln Stack K218 downstream of Baghouse No. C18A; Control: Baghouse	0.153 lb PM/ton of clinker 24.5 lb/hr	Methods 5 and 202	Average of three 1-hour runs
PM_{10}		0.129 lb PM_{10}/ton of clinker	Methods 201 or 201A and 202	Per Methods 201 or 201A and 202
Visible		10% opacity	COMS	6-minute block average
PM/PM_{10}	Finish Mill	0.01 gr/dscf (0.0085 gr/dscf for PM_{10})	Methods 5 and 202	Average of three 1-hour runs
Visible		10% opacity	COMS	6-minute block average
PM/PM_{10}	All other point sources	0.01 gr/dscf (0.0085 gr/dscf for PM_{10})	Methods 5 and 202	Average of three 1-hour runs
Visible		10% opacity	Method 9	6-minute block average

Pollutant	Operation	Emission Limit	Compliance Method	Averaging Time
Fugitive	All fugitive sources excluding the quarry operations	10% opacity	Method 9	6-minute block average
Fugitive	Fugitive sources in the modified part of the quarry operations excluding enclosed process building and wet processing units	10% opacity	Method 9	6-minute block average
Fugitive	Fugitive emissions from enclosed buildings and wet process in the modified part of the quarry operations	No visible emissions	Method 9	6-minute block average
SO_2	Air Heater, Raw Mill, Preheater/Precalciner, Calciner, Kiln, and Clinker Cooler/Main Kiln Stack K218 downstream of Baghouse No. C18A; Control: Inherent dry scrubbing, raw material management, hydrated lime injection if necessary	1.0 lb/ton clinker 160.0 lb/hr	CEMS	30-day rolling average
NO_x	Air Heater, Raw Mill, Preheater/Precalciner, Calciner, Kiln, and Clinker Cooler/Main Kiln Stack K218 downstream of Baghouse No. C18A; Control: SCC, SNCR & Low NO_x burner control	1.95 lb/ton clinker 312.0 lb/hr	CEMS	30-day rolling average
NO_x (Initial Startup)	Air Heater, Raw Mill, Preheater/Precalciner, Calciner, Kiln, and Clinker Cooler/Main Kiln Stack K218 downstream of Baghouse No. C18A; Control: SCC, SNCR & Low NO_x burner control	3.0 lb/ton clinker 480.0 lb/hr	CEMS	30-day rolling average

Pollutant	Operation	Emission Limit	Compliance Method	Averaging Time
CO	Air Heater, Raw Mill, Preheater/Precalciner, Calciner, Kiln, and Clinker Cooler/Main Kiln Stack K218 downstream of Baghouse No. C18A; Control: Good equipment design & combustion process	2.9 lb/ton clinker 464 lb/hr	CEMS	30-day rolling average
VOC	Air Heater, Raw Mill, Preheater/Precalciner, Calciner, Kiln, and Clinker Cooler/Main Kiln Stack K218 downstream of Baghouse No. C18A; Control: Good equipment design and combustion processes	0.5 lb/ton clinker 80.0 lb/hr.	CEMS	30-day rolling average

a. Continuous monitoring data collected during periods of startup, shutdown, and malfunction may be excluded from the compliance demonstration in accordance with applicable requirements in Conditions 4.2.7, 4.2.9, 4.2.12, 4.2.19, 4.2.26, 5.2.15, 5.2.18, 5.2.21, 5.2.22 and/or 5.2.27.

The following applicable State rules or emission limits are subsumed by the applicable and more stringent BACT, NSPS or MACT emission limits:

- Georgia Air Quality Rule 391-3-1-.02(2)(b): *"Visible Emissions"*
- Georgia Air Quality Rule 391-3-1-.02(2)(e): *"Particulate Emission from Manufacturing Processes"*
- Georgia Rule 391-3-1-.02(2)(g): *"Sulfur Dioxide"*
- Georgia Air Quality Rule 391-3-1-.02(2)(n)2: *"Fugitive Dust"*

b. Method 201 or 201A in conjunction with Method 202 shall be used to demonstrate compliance with the PM_{10} emission limits during the performance testing. As an alternative to Method 201 or 201A, the Permittee may assume that 100% of the PM emissions from the baghouses as determined via Method 5 are PM_{10} in the emission compliance demonstration. When an actual PM emission rate based on Method 5 exceeds its corresponding PM_{10} emission limit, additional test will be required to demonstrate compliance with the PM_{10} emission limit.

c. A PM CEMS shall be used for the PM emissions from the in-line kiln/raw mill once U.S. EPA promulgates procedural requirements and deadline for the application of the PM CEMS under 40 CFR 63.1350(k).

d. For shakedown and optimization of the SNCR system for NOx emission control, during an "initial startup" period the NO_x emissions shall not exceed 3.0 lb/ton of clinker based on a 30-day rolling average. The "initial startup" period shall begin after initial certification of the NO_x CEMS and shall end when any of the following conditions are met:

i. The kiln system produces 75,000 tons of clinker or more in any 30-day rolling period;

ii. The kiln system produces 150,000 tons of clinker; or

iii. 365 calendar days elapse after the initial certification of the NO_x CEMS.

After the "initial startup" period ends, the NO_x emissions shall not exceed 1.95 lb/ton of clinker based on a 30-day rolling average.

e. The VOC emissions shall be measured by a THC CEMS, expressed as THC as propane and corrected to 7% oxygen on a dry basis.

Comment 10 (on Condition 3.3.6)**:**
There is no regulatory requirement for COMS on finish mills. CEMEX elects to follow the M22 monitoring protocol of Subpart LLL to provide assurance of compliance with the PM limits for this emission unit.

EPD Response:
The Division has the authority under NSR/PSD rules to establish such monitoring requirement deemed necessary to ensure compliance with the BACT visible emission limit for the finish mills. This requirement is in consistent with permits issued to other cement plants in the region. No change has been made to the Permit as a result of the comment.

Comment 11 (on Condition 3.3.6)**:**
This implies that a M5 pm emission test is required on all baghouse dust collectors (in addition to the kiln and finish mill). There are about 70 baghouses associated with the Kiln No. 6 system, and many don't have a stack and most do not have the access required for a M5 test. The cost for providing stack sampling facilities for each of these baghouses, plus the cost of conducting the tests would be far out of line with whatever benefit might be derived. CEMEX proposes that an initial 60-minute M9 test be required for all baghouses in this "All other point sources" category.

Outline of additional comment regarding this comment (See Attachment 2 for details):
CEMEX first reiterated basically the original comment, and then proposed to amend Conditions 3.3.6 and 4.2.25 on the assumption that the PM emission concentrations from "remaining other point sources" would be the same as those from the finish mill stack (Baghouse C027) and coal mill stack (Baghouse C041) provided that both sources were in compliance with the relevant PM emission limits.

EPD Response:
This permit requires all the baghouses subject to PM emission limits to be tested for PM/PM_{10} emissions per NSR/PSD rules. Because the Kiln No. 6 is still in planning stage and none of these control devices have been ordered, it is too early to discuss the testing feasibility of these sources. Once the Kiln No. 6 is

in operation, CEMEX should submit detailed descriptions of the nature of each of these PM emission sources and the configuration of associated PM control device(s).

Simply assuming different sources to have same PM emission concentrations seems not reasonable when the nature of the process and the particle size distribution of PM emissions from these sources could be different. No change has been made to the Permit as a result of the comment.

Comment 12 (on Condition 3.3.6)**:**
The VE limit for crushers in Subpart OOO is 15%.

EPD Response:
The visible emission limit of 10% opacity is a case-by-case BACT emission limit, which can be more stringent than the applicable NSPS limit. This emission limit is in consistent with permits issued to other cement plants. No change has been made to the Permit as a result of the comment.

Comment 13 (on Condition 3.3.6)**:**
CEMEX has discussed the SO_2 limit for the kiln at length with GEPD. Since those discussions began, EPA has proposed revised NSPS for cement kilns with a SO_2 limit of 1.33 lb/ton clinker. Obviously EPA has put considerable effort into the development of this standard and therefore finds it reasonable and acceptable. In view of this intervening development, CEMEX requests that GEPD consider a 30-day rolling average SO_2 limit of 1.33 lb/ton, with the annual average SO_2 limit of 703 tons/year per Condition 3.2.9.a. This annual limit is equivalent to 1.0 lb SO_2/ton clinker.

EPD Response:
The Division has determined that the case-by-case BACT for the SO_2 emissions from the Kiln No. 6 is 1.0 lb SO_2 per ton of clinker, the same as that established for a similar new cement plant in the area. A BACT limit has to be at least the same as but can be more stringent than a promulgated applicable NSPS limit. No change has been made to the Permit as a result of the comment.

Comment 14 (on Condition 3.3.9)**:**
This is not an appropriate rule citation for the kiln, and the coal mill (Stack K241) is not addressed at all in 40 CFR 63..

Outline of additional comment regarding this comment (See Attachment 2 for details):
CEMEX stated that it had no objection to the cited rules basis for the condition remaining in the permit, but did request that the condition be clarified to state that the coal mill stack (K241) would be subject only to the PM and opacity standards cited in Condition 3.3.9.

EPD Response:
The baghouse and the stack will serve the clinker cooler subject to 40 CFR 63, Subpart LLL and the coal/coke mill subject to 40 CFR 60, Subpart Y. Because the emission limits under Subpart LLL are more stringent than those under Subpart Y, the more stringent limits prevail per U.S. EPA[3]. This requirement is consistent with other cement plant permits in the region.

---

[3] E-mail dated October 16, 2007 from Art Hofmeister, Air Permits Section, Air Division EPA Region 4.

The coal mill stack (K241) will also be shared by the clinker cooler for exhausting process gases. Therefore, this stack will also be subject to all the applicable emission requirements and standards regulating the clinker cooler, including PM and opacity limits. No change has been made to the Permit as a result of the comment.

Comment 15 (on Condition 3.3.9)**:**
Add the following sentences into Condition 3.3.9(d) to take into consideration the potential revision of the rule basis of this condition by EPA:

"Rule 63 CFR 1343(c)(4), the basis of this condition, is currently being reconsidered by EPA. If EPA revises this rule section as a result of the reconsideration, this condition will be modified to be consistent with the revised rule".

EPD Response:
Since the total hydrocarbon (THC) limit is being reconsidered by EPA, the suggested changes have been made to the Permit as below:

3.3.9 On and after the initial startup of the Kiln No. 6, the Permittee shall not cause to be discharged respectively into the atmosphere from the main kiln exhaust stack No. K218 shared by the air heater, raw mill, preheater/precalciner, calciner, kiln, and clinker cooler, and from the coal mill stack No. K241 shared by the coal mill and the clinker cooler, any gases which:
[40 CFR 63.1343(b)]

a. Contain PM in excess of 0.05 kg/Mg (0.10 lb/ton) of dry feed to the kiln.

b. Exhibit opacity greater than 10%.

c. Contain D/F (dioxins/furans) in excess of (This limit only applies to the main kiln exhaust stack No. K218):

i. 0.20 ng/dscm (8.7×10^{-11} gr/dscf) (TEQ[4]); or

ii. 0.40 ng/dscm (1.7×10^{-10} gr/dscf) (TEQ) when the average of the performance test run average temperatures at the inlet to the PM control device is 204°C (400°F) or less.

d. Contain THC in excess of 20 ppmv as propane corrected to 7% oxygen based on dry basis and hourly block average (This limit only applies to the main kiln exhaust stack No. K218). As an alternative, the Permittee may demonstrate a 98% reduction of the THC emissions. Rule 63 CFR 1343(c)(4), the basis of this condition, is currently being reconsidered by EPA. If EPA revises this rule section as a result of the reconsideration, this condition will be modified to be consistent with the revised rule.

---

[4] TEQ means the international method of expressing toxicity equivalents for dioxins and furans as defined in U.S. EPA, Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-dioxins and -dibenzofurans (CDDs and CDFs) and 1989 Update, March 1989.

e. Contain mercury in excess of 41µg/dscm (This limit only applies to the main kiln exhaust stack No. K218). Rule 63 CFR 1343(c)(5), the basis of this condition, is currently being reconsidered by EPA. If EPA revises this rule section as a result of the reconsideration, this condition will be modified to be consistent with the revised rule.

Comment 16 (on Condition 3.3.9)**:**
Add the following sentences into Condition 3.3.9(e) to take into consideration the potential revision of the rule basis of this condition by EPA:

"Rule 63 CFR 1343(c)(5), the basis of this condition, is currently being reconsidered by EPA. If EPA revises this rule section as a result of the reconsideration, this condition will be modified to be consistent with the revised rule".

EPD Response:
Since the THC limit is being reconsidered by EPA, the suggested changes have been made to the Permit (see response to Comment 15).

Comment 17 (on Condition 4.2.13)**:**
Conditions 4.2.12 and 13 will be subject to change if EPA revises the THC and/or Hg NESHAP limits or compliance demonstration requirements. See Comments 8, 15 and 16.

EPD Response:
CEMEX did not request any specific changes to these conditions. No change has been made to the Permit as a result of the comment.

Comment 18 (on Condition 4.2.25)**:**
See Comment 11 at Condition 3.3.6

EPD Response:
See response to Comment 11.

Comment 19 (on Condition 5.2.25)**:**
The daily check of each of the approximately 70 baghouses associated with the No. 6 Kiln system is much more rigorous than required by Subpart LLL. This requirement, along with the daily monitoring requirements of Conditions 5.2.26, 5.2.30 and 6.2.29 will require each day, a full time technician to do nothing but satisfy the conditions of these four Conditions. Certainly for this Condition and Condition 5.2.26, monitoring requirements similar to those of Subpart LLL should suffice.

Outline of additional comment regarding this comment (See Attachment 2 for details):
CEMEX reiterated basically the original comment in August 11, 2009 submittal.

EPD Response:
The daily check of visible emissions is necessary to provide a reasonable assurance of compliance with applicable limits. The Division will accept COMS or bag leak detectors in lieu of the daily visible emission check if proposed by CEMEX. The same requirement is already in the current Title V permit

issued to CEMEX for the existing cement production facility. No change has been made to the Permit as a result of the comment.

Comment 20 (on Condition 5.2.26):
See Comment 19 above.

EPD Response:
See response to Comment 19.

Comment 21 (on Condition 5.2.28)**:**
Clinker production is calculated hourly as a function of the preheater feed rate, and long-term clinker production is reconciled from cement production. Clinker production cannot reliably be measured. Measuring clinker production with a belt scale was attempted at the Votorantim plant in north Florida but abandon after a short trial.

Outline of additional comment regarding this comment (See Attachment 2 for details):
CEMEX first reiterated basically the original comment about the impracticality of using a continuous weighing system for clinker, and then proposed to amend Conditions 5.2.28.f to adopt the current cement industry practice as to determine the hourly clinker production rate using the Loss On Ignition (LOI) factor over dry feed rate. CEMEX also suggested that the condition could be written to state that the LOI factor would be updated periodically according to the schedule CEMEX normally follows.

EPD Response:
Depending on the nature of the raw materials used and/or product specifications, the conversion ratio from dry feed to clinker, referred to as the Loss On Ignition (LOI) factor, could vary approximately between 1.5 to 1.9 tons of dry feed to 1.0 ton of clinker.

Recently U.S. EPA has started to use mass of product instead of mass of raw material or intermediate product in normalized emission limits. According to U.S EPA, the adoption of this new normalizing parameter *"will avoid rewarding a source for becoming less efficient (i.e., requiring more feed to produce a unit of product). A regulatory change that discourages facilities from operating less efficient kilns will be beneficial to air quality, and will avoid the situation described by EPA, in which inefficient kilns may require greater amounts of feed and emit more ton per year of pollution but nonetheless remain in compliance with emissions standards that are based on pounds (pollutant) per ton of dry feed"*.

EPA's concern could be explained by the following facts regarding to cement manufacturing:

(1) The amount of dry kiln feed required to produce a certain amount of clinker varies among cement kilns. This dry kiln feed to clinker conversion ratio is influenced by a variety of factors such as equipment design, production technology, machinery efficiency, type of raw materials and fuel being used, formulation of dry kiln feed, product specification, and process control.

(2) The amount of air pollutant emitted from the cement kilns, particularly those such as HCl, HF, SO_2 and VOC originated from thermo decomposition or oxidation of organic and inorganic compounds contained in dry kiln feed, are generally proportional to the amount of dry kiln feed and fuel being consumed.

The extra emissions from low efficiency kilns, i.e., kilns requires more dry kiln feed to produce same amount of clinker, may not be readily revealed by emission standards/limits based on the amounts of pollutants emitted for producing a unit quantity of clinker, e.g. pounds of pollutants emitted per ton of clinker produced. As recognized by EPA, inefficient kilns may use more dry kiln feed and fuel than high efficiency kilns to produce same amount of clinker, and therefore emit more pollutants per year than high efficiency kilns, but nonetheless could still remain in compliance with emissions standards expressed as pounds of pollutants emitted per ton of clinker produced.

To eliminate such inadequacy, level the playground with regard to emission performance among facilities/emission sources within same industries, and award facilities with high efficiency and/or low emissions, EPA has began to develop emission standards expressed as mass ratio between emissions and products. EPD agrees with U.S. EPA's initiation. In addition, this emission unit requirement is in consistent with other cement plant permits issued in the recent years in the region.

Condition 5.2.28.f does not preclude the use of LOIs and hourly dry feed input rates to determine the hourly clinker input rate, provided the continuous clinker weighing system is utilized and procedure has been clearly detailed and approved by EPD. The devices and/or systems used for the determination of the LOI, hourly dry feed rate and calculation of the hourly clinker output rate will be considered as continuous monitoring for compliance purposes.

EPD will amend the permit and revise condition(s) to establish specific procedures for calculating the clinker output rate via LOI and dry feed input rate once the Kiln No. 6 is operating and detailed procedures of measuring LOI and dry feed input rate are provide by CEMEX and approved by EPD. No change has been made to the Permit as a result of the comment at this time.

Comment 22 (on Condition 5.2.28)**:**
See Comment 5 at Condition 3.2.13 related to the NH_3/NO_x molar ratio.

EPD Response:
See response to Comment 5.

Comment 23 (on Condition 5.2.30)**:**
See Comment 19 at Condition 5.2.25. For this condition, observations of fugitive PM with a frequency similar to the frequency of VE observations required by Subpart LLL (63.1350(a)) should suffice.

EPD Response:
See response to Comment 19.

Comment 24 (on Condition 5.2.31)**:**
Will the O/M Plan required by Subpart LLL (63.1350(a)) satisfy this requirement (in Condition 5.2.31)?

EPD Response:
The answer is yes as long as both documents contain the same requirements.

Comment 25 (on Condition 6.1.8)**:**
See Comment 13 at Condition 3.3.6.

EPD Response:
See response to Comment 13.

Comment 26 (on Condition 6.1.8)**:**
See Comment 4 at Condition 3.2.12.f.

EPD Response:
See response to Comment 4.

Comment 27 (on Condition 6.1.8)**:**
See Comment 6, Paragraph 2 at Condition 3.2.14

EPD Response:
See response to Comment 6.

Comment 28 (on Condition 6.2.14)**:**
See Comment 7 at Condition 3.2.31.

EPD Response:
See response to Comment 7.

Comment 29 (on Condition 6.2.15)**:**
How is "each shipment" defined? If flyash from a single supplier, all generated under the same conditions is delivered in multiple trucks and over multiple days, certainly each truckload should not be considered a separate shipment.

CEMEX suggests the following language:

Each calendar quarter, the supplier shall furnish the plant with a certificate that includes the following information:

A. Name, address and telephone number of the supplier.

B. A statement from the supplier that the fly ash was generated from the combustion of coal, only.

C. That sorbents for mercury emission controls were not used.

Outline of additional comment regarding this comment (See Attachment 2 for details):
CEMEX first reiterated basically the original comment and extended the same comment to Condition 6.2.25. Then CEMEX made additional comments:

1. The requirements to obtain a certification for each fly ash deliver is overly burdensome because a cement plant has between one to five fly ash suppliers. Each supplier can easily submit CEMEX a quarterly certification stating that "all fly ash delivered to the CEMEX during the quarter was generated without using activated carbon or any other sorbent method of mercury emissions control.

2. CEMEX will require advanced notification from any fly ash supplier that intends to implement the mercury emission control that would increase the mercury content of the fly ash.

3. It is economically unfeasible to require testing of each fuel delivery.

EPD Response:
Keeping a fly ash supplier certification for each fly ash shipment is a NESHAP MACT requirement for cement plants per 40 CFR 60.1350(o) and 60.1355(f) of Subpart LLL. The MACT requirement does not define "shipment". EPD has determined that a shipment is the quantity of material listed on the invoice that a facility receives from a supplier. The invoice typically shows the total quantity of material delivered during a relatively short time period of one day or less.

Comment 30 (on Condition 6.2.25.a)**:**
See Comment 5 at Condition 3.2.13.

EPD Response:
See response to Comment 5.

Comment 31 (on Condition 6.2.25.b)**:**
How is "each delivery" defined? If coal from a single supplier, all from the same source is delivered in multiple trucks and over multiple days, certainly each truckload should not be considered a separate shipment. It is suggested that CEMEX be required to obtain from the fuel supplier a representative analysis of the fuel, and that the supplier be required by CEMEX to provide certification as to the deliveries for which that analysis applies.

EPD Response:
Please refer to EPD response to Comment 29.

Comment 32 (on Condition 6.2.28)**:**
Sampling each raw material daily is a very time-consuming task and it is not necessary. Sampling at two Florida cement plants in close proximity to one another has demonstrated this. One plant samples raw materials daily and the other samples once monthly. The mercury balances from these two plants have been very similar over a period of several years. It is proposed that CEMEX sample raw materials, flyash and fuels weekly and composite the samples monthly.

Outline of additional comment regarding this comment (See Attachment 2 for details):
CEMEX requested to add the suggested paragraph/"caveat" in Comment 8 into Condition 6.2.28 with regard to the demonstration of mercury emission limitation in the permit.

EPD Response:
This condition only requires daily sampling of limited materials including dry feed, fly ash and/or fuels feeding or firing in the kilns that could contain Hg, not each of the raw materials. The mercury content data from daily sampling will be used to demonstrate compliance with the SIP annul mercury emission limit in Condition 3.2.23. This record keeping requirement is similar to requirements for other cement plant permits issued in the recent years in the region.

If U.S. EPA amends the monitoring, recordkeeping and/or compliance demonstration procedures for kiln's mercury emissions in 40 CFR Part 63, Subpart LLL, EPD will review the revised procedures to determine the replacement requirements for this condition for determining compliance with the annual mercury emission limit. No change has been made to the Permit as a result of the comment.

Comment 33 (on Condition 6.2.29)**:**
The requirements of this condition are overly burdensome and serve no practical purpose. It should suffice to conduct fugitive emission observations as proposed in Condition 5.2.30.

EPD Response:
This condition is necessary to ensure that fugitive emissions from unpaved roads are controlled. Condition 5.2.30 requires daily operation and maintenance check of wet suppression equipment. No change has been made to the Permit as a result of the comment.

COMMENTS FROM CHAIRMAN OF HOUSTON COUNTY COMMISSIONERS

Comments were received from Mr. Ned M. Sanders, Chairman of Houston County Commissioners, by letter on February 6, 2009 (see Attachment B). Mr. Sanders did not make direct comments on the Permit itself. Instead, he has requested an assurance from EPD that the issuance of this Permit and the other permit previously issued to Houston American Cement Plant located in Perry, Houston County will not cause a violation of any applicable air quality standards in Houston County.

EPD Response:

The ambient air quality review/modeling conducted by EPD during the permitting of this facility (see Section 6.0 of Preliminary Determination) has concluded that the operations of these new sources as permitted will not cause any violation of air quality standards applicable to the area.

COMMENTS FROM A CONCERNED LOCAL CITIZEN

On January 29, 2009 EPD received a letter from Ms. Rebecca L Wood living in the City of Kathleen, Houston County, Georgia (see Attachment B). In the letter Ms. Wood expressed her strong opposition to "any addition air pollution" as the result of the operations of the two new cement manufacturing facilities in the area.

EPD Response:

EPD has placed specific emission limits on both this permit and the permit issued to Houston American Cement Plant to ensure compliance with the applicable Federal and state rules. Both permits also contain operating, maintenance, testing, monitoring, compliance determination and reporting requirements sufficient to ensure that the facilities are in compliance with all applicable rules and regulations.

In addition, ambient air quality review/modeling conducted by EPD during the permitting of this permit (see Section 6.0 of Preliminary Determination) has concluded the emissions from the operations of these new sources will not cause any violation of ambient air quality standards applicable to the area.

EPD will issue operating permits to the facilities upon evidence satisfactory to the Director of compliance with the provisions of the Air Quality Act and the rules and regulations.

EPD CHANGES

On April 28, 2009, US EPA amended 40 CFR Part 60, Subpart OOO – *" Standards of Performance for Nonmetallic Mineral Processing Plants"*. Conditions 3.3.12, 4.2.21, 4.2.22, 4.2.23 and 4.2.24 in the draft PSD permit/Part 70 permit amendment No. 3241-153-0003-V-04-2 have been updated in accordance with the amended NSPS standards. In addition, Condition 4.2.29 has been added to incorporate a quarterly monitoring requirement for the visible emissions from baghouse-controlled affected facility constructed, modified or reconstructed on or after April 22, 2008.

Condition 3.2.12 have been revised to increase the annual usage limit for "on-specification" used oil to 3,000,000 gallons based on CEMEX's comments.

APPENDIX A

AIR QUALITY PERMIT
No. 3241-153-0003-V-04-2

APPENDIX B

WRITTEN COMMENTS
RECEIVED DURING
COMMENT PERIOD

ATTACHMENT 1

ATTACHMENT 2