STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director

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MAR 26 2012

Mr. Michael Johnson
CEO and President
Continental Cement Company, LLC
14755 North Outer Forty Drive, Suite 514
Chesterfield, MO 63017

RE: New Source Review Permit Amendment - Permit Number: 072007-008D
Project Number: 2010-10-007; Installation Number: 173-0001

Dear Mr. Johnson:

The Air Pollution Control Program received your application to amend the permit (072007-008C) for your Portland cement manufacturing plant in Ralls County (S2, T56N, R4W). Enclosed with this letter is your amendment. The special conditions in this amendment supersede Special Conditions 11.A.1), 11.A.3), 11.A.4) and 11.A.6) in the previous permit (072007-008C) issued to the plant. All other special conditions in Permit 072007-008C remain in effect.

This amendment was issued in response to your request to re-evaluate the volatile organic compound (VOC) Best Available Control Technology (BACT) limits for your facility. The reasons for the re-evaluation and the new BACT analysis are given in the section titled "Review of Application for Permit Amendment," If you have any questions regarding this amendment, please do not hesitate to contact Chia-Wei Young at the department's Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102, or by telephone at (573) 751-4817. Thank you for your time and attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Kendall B. Hale

Kendall B. Hale
Permits Section Chief

KBH:cyk

Enclosures

c: Southwest Regional Office
PAMS File: 2011-07-006

SPECIAL CONDITIONS:

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

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

Continental Cement Company, LLC
Ralls County (S2, T56N, R4W)

1. Superseding Condition
   The conditions of this permit supersede special conditions 11.A.1), 11.A.3), 11.A.4), and 11.A.6) found in the previously issued construction permit no. 072007-008C issued by the Air Pollution Control Program. All other special conditions in construction permit no. 072007-008C remain in effect.

2. Standards of Performance for BACT for Volatile Organic Compounds (VOC) – Kiln/Coal Mill Preheater.
   A. Continental Cement Company, LLC shall use good combustion practices at all times for the new PH/PC Kiln system (KP-8) and the coal mill preheater (CG-25) in order to meet the BACT.

   B. Emissions from the main stack of the new PH/PC kiln system (stack ID number 318SK1) shall not exceed the following emission limits, depending on the limestone raw mix combination, based on a 30-day rolling average.
      1) When using 100% Burlington limestone, emissions shall not exceed 0.08 pounds of VOC per ton of clinker.
      2) When 0% < raw mix ≤ 20% Kimmswick limestone, emissions shall not exceed 0.13 pounds of VOC per ton of clinker.
      3) When 20% < raw mix ≤ 40% Kimmswick limestone, emissions shall not exceed 0.18 pounds of VOC per ton of clinker.
      4) When 40% < raw mix ≤ 60% Kimmswick limestone, emissions shall not exceed 0.23 pounds of VOC per ton of clinker.
      5) When 60% < raw mix ≤ 80% Kimmswick limestone, emissions shall not exceed 0.28 pounds of VOC per ton of clinker.
      6) When raw mix > 80% Kimmswick limestone, emissions shall not exceed 0.33 pounds of VOC per ton of clinker.

SPECIAL CONDITIONS:

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

C. To document the amount of each type of limestone utilized, Continental Cement Company, LLC shall record the mass of the limestone delivered to the process from each quarry area. The respective mass of Kimmswick and Burlington limestones placed into the process can be measured.

D. Continuous carbon monoxide (CO) emission monitors shall be used as a surrogate for VOC limitations compliance.

REVIEW OF APPLICATION FOR AMENDMENT
SECTION (8) REVIEW
Project Number: 2010-10-007
Installation ID Number: 173-0001
Permit Number: 072007-008D

Continental Cement Company, LLC
10107 Highway 79 South
Hannibal, MO 63401

Complete: October 14, 2010

Parent Company:
Continental Cement Company, LLC
14755 North Outer Forty Drive, Suite 514
Chesterfield, MO 63017

Ralls County (S2, T56N, R4W)

REVIEW SUMMARY

Continental Cement Company, LLC has applied for the re-evaluation of the Best Available Control Technology (BACT) analysis for volatile organic compound (VOC) emissions for its main kiln stack (318SK1). This review was conducted in accordance with Section (8) of Missouri State Rule 10 CSR 10-6.060, Construction Permits Required. The facility is required to apply for a modification to its Part 70 Operating Permit within one year after issuance of this permit.

REASON FOR RE-EVALUATION

In Permit no. 072007-008 and its subsequent amendments (no. 072007-008A, 072007-008B and 072007-008C), the BACT limits of VOC are as follows.

- When using 100% Burlington Limestone, emissions shall not exceed 0.03 pounds of VOC per ton of clinker (lbs/ton)
- When 0% < raw mix ≤ 20% Kimmswick limestone, emissions shall not exceed 0.05 lbs/ton.
- When 20% < raw mix ≤ 40% Kimmswick limestone, emissions shall not exceed 0.07 lbs/ton.
- When 40% < raw mix ≤ 60% Kimmswick limestone, emissions shall not exceed 0.084 lbs/ton.
- When 60% < raw mix ≤ 80% Kimmswick limestone, emissions shall not exceed 0.10 lbs/ton.
- When raw mix > 80% kimmswick limestone, emissions shall not exceed 0.12 lbs/ton.

However, it was determined that the original BACT analysis did not take into account the following factors.

- The original BACT analysis was based on limited samples of kiln feed and did not adequately account for the variability of organic material in the limestone. Additional data have indicated that the average organic content is higher than shown by the limited test results.
- The original BACT analysis was based on calculations from KHD laboratories. KHD calculated an average TOC for the blend, then used a factor of one percent to calculate a theoretical VOC emissions. KHD reported this number to Continental as VOC and also converted to "as propane." However, when setting the original BACT, Continental Cement Company, LLC used the VOC value based on carbon only. This put the original estimate 22% lower than it should be since the carbon molecular weight in propane is 22% less than the total molecular weight of propane.
- When the BACT numbers were set in the original analysis, KHD assumed that 1% of the total organic compounds (TOC) would be VOC. However, observed data since the issuance of the permit 072006-003 suggests that 2% should be used.

Due to the various factors that were not taken into account in the original BACT analysis, it was determined that the BACT for VOC should be re-evaluated. The new BACT limits are given in Special Condition No. 2 of this permit.

BACT ANALYSIS

Introduction

The BACT requirement is detailed in Section 165(a)(4) of the Clean Air Act, at 40 CFR 52.21 and 10 CSR 10-0.60(8)(B).

A BACT analysis is done on a case-by-case basis and is performed in general by using a "top-down" method. The following steps detail the top-down approach:

1. Identify all potential control technologies – must be a comprehensive list, it may include technology employed outside the United States and must include the Lowest Achievable Emission Rate (LAER) determinations.
2. Eliminate technically infeasible options – must be well documented and must preclude the successful use of the control option.
3. Rank remaining control technologies – based on control effectiveness, expected emission rate, expected emission reduction, energy impact, environmental impacts and economic impacts.
4. Evaluate the most effective controls – base on a case-by-case consideration of energy, environmental and economic impacts.
5. Select BACT

BACT analysis was performed during the last PSD review (construction permit no. 072007-008, project no. 2006-11-095) and its subsequent amendment (permit no. 072007-008A, project no. 2008-01-017). For this permit, only the VOC BACT for the main stack (318SK1) was re-evaluated. The BACT analyses for other sources of VOC

emissions (storage tanks and emergency generators) and for other pollutants (i.e. PM_{10}, SO_x and CO) in the previous permits are still valid.

VOC Emissions Review

Continental Cement Company, LLC operates a preheater/precalciner cement manufacturing system in which the raw kiln feed is introduced to the four-stage preheater and preheated through a series of cyclones in a countercurrent flow design. Initially, fixed moisture is released from the raw feed by heat exchange with calciner/kiln exhaust gases. Then the raw meal is calcined (conversion of limestone fraction to lime) at approximately 870 ^{o}C (1,600 ^{o}F). Calcination of the raw kiln feed begins in the preheater system and is completed in the precalciner where fuel is burned to achieve the temperatures required to produce clinker in the cement rotary kiln. During the heating of the feed, organic materials naturally occurring the raw materials (kerogen and bitumen) begin to thermally degrade. The heating at relatively low temperatures and in the presence of low oxygen concentrations allows the reaction of the organic molecules to produce VOC, along with carbon monoxide (CO) and carbon dioxide (CO_2), which are carried away by the exhaust stream.

Thermal evolution of organic materials from the kiln feed occurs throughout raw material processing. The VOC generated from the kiln feed organics and the degree of complete oxidation are dependent on the nature of the organics present in the limestone. Continental Cement Company has chosen to utilize shale and clay that are low in organic carbon content. It has also elected to use two types of limestone: Burlington and Kimmswick limestone. The Kimmswick limestone has a higher organic content than the Burlington but there is a limited supply of Burlington limestone. The Kimmswick limestone will be phased in as the Burlington limestone is being exhausted. Since the Kimmswick limestone has higher organic content, VOC emissions are expected to be higher when it is used.

VOC control Technologies for Kiln System/Coal Mill Preheater

Thermal Oxidation

Thermal oxidizers are used to oxidize pollutants by combustion. The removal rate is dependent on the inlet concentration of the pollutant. Thermal oxidizers typically operate at temperatures that range from 1,200 ^{O}F to 2,000 ^{O}F.

The three types of thermal oxidizers most commonly used in industrial plants are regeneration, recuperative and open-flame. The most energy-efficient is the regenerative thermal oxidizer (RTO), which transfers heat through a ceramic media. It can recover up to 95% of the heat used. However, due to fouling of the heat transfer media in the RTO at cement plants, it can only achieve a maximum of 75%. The recuperative thermal oxidizer is less thermally efficient than the RTO. Heat from the treated gas is transferred to the untreated gas using a gas-to-gas heat exchanger. The open-flame is the least energy-efficient thermal oxidizer because it does not recover any heat.

Catalytic Oxidation

Catalytic oxidation systems utilize catalysts, typically composed of platinum, to oxidize pollutants. A catalytic oxidizer operates effectively at lower temperatures than an RTO, normally within a temperature range between 600 ^{O}F and 900 ^{O}F, which minimizes fuel costs.

Good Combustion Practices (GCP)

GCP at Portland cement plants include 1) good combustion at the main kiln burner and calciner, 2) addition of tertiary air from the kiln hood and clinker cooler; and 3) varying degrees of calciner sizes and duct lengths to complete burnout. Staged calciner combustion and hot excess air from the kiln hood and clinker cooler allows for proper mixing and complete oxidation.

Selective Quarrying

VOC emissions from the main kiln stack originate mainly from the thermal evolution of organic materials from the raw materials fed to the kiln. VOC emissions can be reduced if the material used has lower organic content.

Eliminate the Technically Infeasible Options

Thermal Oxidation - Feasible

Thermal oxidation units are technically feasible for the reduction of VOC. Due to the large volume of exhaust gas from the kiln, Continental Cement Company would need four units operating in parallel. It will require additional components i.e. (baghouses and scrubbers) to limit the acid gases and particulate matter entering the RTO in the exhaust gas. Particulate matter entering the thermal oxidation units will plug and foul the units while the acid gases may cause corrosion. The thermal oxidation units will also require supplemental fuel to maintain the optimal operating temperature range for destruction of VOC.

Catalytic Oxidation - Infeasible

Catalytic oxidation systems are subject to fouling by certain species of particulate matter that may be present in the flue gas from the Kiln. Even PM in the post-baghouse exhaust gas stream will eventually poison the catalysis. This method is considered infeasible as BACT control and will not be considered further.

Good Combustion Practice – Feasible

GCP has been proven to be a technically feasible method of controlling VOC emissions from cement kilns and calciners and will be considered further in the BACT analysis.

Selective Quarrying – Infeasible

Selective Quarrying can be considered a VOC emissions control method when the quarry has specific rock formations with higher organic content than the bulk of the material. In certain cases, deposits of higher organic concentration material can be discarded and replaced with alternative raw materials with lower organic concentration. The quarries at Continental Cement, LLC contains two types of limestone: The Kimmswick and the Burlington. The Burlington limestone has lower organic content than the Kimmswick. There is a finite amount of the Burlington limestone and as it is exhausted, the Kimmswick limestone will be phased into use. Therefore, the types of geological formation required to gain benefit from selective quarrying do not exist in the Continental quarries. In order to implement selective quarrying, limestone with lower organic content must be brought in from distant quarries. The logistics involved with finding distant quarries with organic content lower than the limestone at the site and bringing them to the site makes the implementation of this control method difficult. The potential for interrupted supply would be high and this would affect production. This method is considered infeasible for this site.

Ranking of Remaining Control Technologies

Table 1: Ranking of VOC Control Technologies

Technology	VOC Control Efficiency
Thermal Oxidation Units	50%-99.9%
GCP	Variable

Evaluate the Most Effective Control

The use of thermal oxidizing units create negative environmental and energy impacts. Because the particulate matter present in the uncleaned flue gases would routinely plug and foul thermal oxidizers, a baghouse and scrubber would have to be placed upstream. The thermal oxidizers would require supplemental fuel firing to maintain the optimal operating temperature range of 1,200 ^{0}F to 2,000 ^{0}F. The additional fuel firing would result in an undesirable increase in combustion emissions. The acid gases in the kiln exhaust may also cause corrosion problems in the oxidizer.

The use of thermal oxidizing units is also economically unviable. An economic analysis was provided by Continental Cement Company for RTOs. In the previous BACT analysis, 50% control efficiency was assumed. In the current BACT analysis, the facility suggested using a 98% control efficiency. Using 98% efficiency, the cost of the thermal oxidizing system is estimated to be $52,207 per ton of VOC removal. Using 50% control efficiency, the cost would increase to $102,325 per ton of VOC removed. Using either efficiency would lead to a high economic impact. The facility did not submit a cost analysis for the recuperative or the open flame thermal oxidizers. However, the recuperative and direct flame thermal oxidizers require more natural gas fuel input since they are thermally less efficiency than the RTO, which lead to higher fuel costs. The previous BACT analysis performed for the installation in Permit 072006-003 (Project 2005-09-092) also shows that the cost of using the RTO is higher than the cost of using the recuperative thermal oxidizer. It is expected that even if the recuperative or the

direct flame thermal oxidizers have lower capital costs than the RTO, it will not decrease the cost per ton of VOC removed to a level where the use of these thermal oxidizers would become economically viable, especially considering that the lower capital costs may be partially (or even fully) offset by the increase in fuel costs.

Furthermore, negative economic, environmental and energy impacts can also be shown from the operating history of thermal oxidizers used at Portland cement plants. To date, only two Portland cement plants have installed thermal oxidizers to control VOC emissions and none were added due to a BACT analysis. The unit installed by TXI Corporations in Texas faced significant problems with larger than expected heat exchanger fouling and pressure drop, which increased afterburner fuel costs and decreased kiln capacity. The units installed at Holcim, Inc. in Dundee, Michigan to control VOC emissions from two wet cement kilns have experienced poor heat recovery, high fuel costs and significant maintenance problems. In some cases under high hydrocarbon loads, the units have experienced over temperature due to uncontrolled self-fueling. Holcim, Inc. eventually discontinued the use of the thermal oxidizers, leaving the unit at TXI as the only thermal oxidizers in use in the country to control emissions from a Portland cement kiln.

Select BACT

Thermal oxidizers can be rejected as BACT control on the basis of cost and negative environmental and energy impacts, leaving only GCP as a viable option. This is consistent with BACT determinations around the country. The new BACT limits are as follows.

- When using 100% Burlington limestone, emissions shall not exceed 0.08 pounds of VOC per ton of clinker.
- When 0% < raw mix ≤ 20% Kimmswick limestone, emissions shall not exceed 0.13 pounds of VOC per ton of clinker.
- When 20% < raw mix ≤ 40% Kimmswick limestone, emissions shall not exceed 0.18 pounds of VOC per ton of clinker.
- When 40% < raw mix ≤ 60% Kimmswick limestone, emissions shall not exceed 0.23 pounds of VOC per ton of clinker.
- When 60% < raw mix ≤ 80% Kimmswick limestone, emissions shall not exceed 0.28 pounds of VOC per ton of clinker.
- When raw mix > 80% Kimmswick limestone, emissions shall not exceed 0.33 pounds of VOC per ton of clinker.

New Emissions Analysis

Due to the new BACT limit, potential VOC emissions have been increased. The table below gives the new emissions from the installation.

Table 2: Emissions Summary (tons per year)

Pollutant	Regulatory *De Minimis* Levels	Existing Potential Emissions	Existing Actual Emissions (2010 EIQ)	Potential Emissions of the Plant
PM_{10}	15.0	Major	89.56	510.80
SO_2	40.0	Major	29.84	1162.35
NOx	40.0	Major	645.27	1629.58
VOC	40.0	Major	108.42	199.06
CO	100.0	Major	436.40	2168.62
HAPs	10.0/25.0	Major	44.27	109.78
Lead	0.6	N/D	0.00	0.0506
Mercury	0.1	N/D	N/D	0.0162
Beryllium	4E-4	N/D	N/D	4.46×10^{-4}
Fluorides	3.0	N/D	N/D	0.608
Arsenic	10.0	N/D	N/D	0.0081
Hydrogen Chloride	10.0	N/D	N/D	94.54
Selenium	10.0	N/D	N/D	0.135
Benzene	10.0	N/D	N/D	10.80

* N/D = Not Determined

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (8) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of PM_{10}, SO_x, VOC and CO are above *de minimis* levels. Netting analysis performed in the previous permit (No. 072006-003, Project 2005-09-092) shows a NO_x increase below the *de minimis* level.

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated October 5, 2010, received October 14, 2010, designating Continental Cement, LLC as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.

Comments and Responses on Continental Cement Company, L. L. C.
Portland Cement Manufacturing Facility
Hannibal, MO

Prevention of Significant Deterioration (PSD)
New Source Review Permit Amendment

Project Number 2010-10-007

This document responds to comments made to the PSD amendment. The Missouri Department of Natural Resources' (MDNR) Air Pollution Control Program (APCP) responded to comments during the public notice period. The Department appreciates everyone's participation in the public process associated with this project. In some cases, comments have been summarized, abbreviated, or paraphrased for the sake of clarity or brevity. All comments received are available on our website at:

http://www.dnr.mo.gov/alpd/apcp/PermitPUblicNotices.htm

The numbers of Special Conditions from the draft permit may have changed. The numbers referenced in the response reflect the final Special Condition numbering.

The following comments were submitted to the Air Pollution Control Program by the **United States Environmental Protection Agency (USEPA).** There were no comments from private citizens or other entities.

Comment 1: According to permit to construct 072006-003 and permit to construct 072007-008; 63% of the facility's particulate matter less than ten microns in diameter (PM_{10}) potential to emit; 100% of the facility's sulfur oxides (SO_x) potential to emit; 100% of the facility's carbon monoxide (CO) potential to emit and 100% of the facility's volatile organic compound (VOC) potential to emit is being discharged through the main stack. Therefore, the source of the information that leads to the statement "The BACT analysis was not revised to reflect the additional emissions from the coal mill" (Page 6 of the draft permit) is unclear. It appears that the BACT analysis completed in 2006 and again in 2007 did in fact include all of the SO_x, CO and VOC that could potentially be emitted. Therefore, Continental Cement and MDNR should further develop the explanation which justified this re-evaluation reason.

Continental Cement Company (CCC) Response: Particulate emissions and fuel combustion emissions were counted in the PTE for the new facility. No organic emissions were associated with the coal mill exhaust. Subsequently, CCC found that organic emissions in the form of methane are released during the grinding of the coal which exhausts through the main stack. While these organic emissions were not included when the BACT limit for VOC as determined, there would have been no impact related to "additional emissions." The methane is not a VOC; therefore, it would not be included in a VOC limit. The presence of the methane does, however, affect the measurement of organic compound emissions as total hydrocarbons (THC). The methane must be subtracted to determine the VOC emissions from the main stack.

Additional MDNR Response: MDNR realizes now that the language used might be confusing. The bulleted points on Page 6 of the draft permit are designed to show the reason for the BACT re-evaluation. However, the first bullet on page 6, which includes the statement that "The BACT analysis was not revised to reflect the additional emissions from the coal mill," is not the reason for the BACT re-evaluation. Instead, it is an explanation on how CCC determined that there are methane emissions from the coal mill, but that because methane is not considered a VOC, its emissions do not contribute to the VOC emissions from the main stack. This statement does not belong in this section and will be deleted from the final permit.

Comment 2: This draft PSD construction permit (Project 2010-10-007) indicates that *"BACT analysis for other pollutants; PM_{10}, SO_x and CO, in the previous permits is still valid."* CCC's application describes in detail the formation of and the relationship between CO and VOC in the kiln system and the organic material content of the limestone used as raw material. The discussion of CO and VOC from the kiln feed also indicates that there may be an impact on formation of CO_2. Therefore, it is not clear how a change in limestone organic content only impacts the VOC emitted and not the emissions of CO and CO_2. Therefore, CCC and MDNR should detail the reasons why there is not a significant increase in CO and CO_2 and include data to support the position.

CCC Response: In the original BACT analysis, CCC obtained analyses of the kiln raw materials from KHD, the kiln designer, in which KHD estimated the VOC that would be emitted from the kiln processing. The analyses were used as the basis for the BACT limits proposed for inclusion in permit 072007-008. Upon review of the basis for the VOC emission limits found in the permit, CCC discovered errors in the determination of the limit that resulted in the PTE for VOC to be underestimated, on a pound per ton basis. The contributing errors are listed below.

1. The raw materials analyzed did not include mill scale; therefore, the contribution of these components to the amount of organics in the kiln feed was not represented in the VOC emission result reported by KHD. These raw materials typically contribute to the organic content of the kiln feed.
2. The value taken from the KHD report for VOC emissions was only one data point, which does not represent the variability of organic content in the raw materials used in actual day-to-day production.
3. The value used for the VOC limit (0.03 lbs/ton) was based on an "as carbon" basis and not "as propane," causing the VOC emissions to be underestimated by approximately 22%.

In summary, CCC found that the variability of the organic content in the kiln feed is greater than originally thought. This variability was not represented in the proposed BACT limit for VOC. The associated CO limit was established from the same data from KHD. The stack test to demonstrate compliance with the CO limit indicated compliance with both 1.38 lbs/ton clinker and with 1,300 lbs/hr (1-hr rolling average). The CO permit limits, therefore, did not need adjustment. In addition, as part of their investigation into the elevated THC emissions results, CCC obtained additional analyses of kiln feed from KHD in September 2010. The kiln feed sample was representative of that being used in May 2010, contained only Burlington stone along with other normal components as well as mill scale that was not present in the analyzed samples for the original permit. The analysis predicted VOC emissions as propane to be 0.06 lbs/ton clinker, which is double the permit limit for the 100% Burlington mix. The predicted CO emission rate in the new data was similar to the original analysis, however, and measured CO in the stack remained consistent with the predicted emission rate. This indicates that organic constituents in the kiln feed are either being directly emitted as VOC or are being completely combusted in the high temperature environment of the kiln. In addition, the review of recent BACT determination in Table 5 of the permit application did not include any recent CO limits set that were lower than CCC's 1.38 lbs/ton clinker (30-day rolling average). Based on this information, it is not believed that there will be an increase in CO above the permitted level and did not request a change in the CO limit.

Furthermore, the permit application (2010-10-007) was submitted to MDNR (October 2010) prior to the requirement for GHG emissions quantification. Emission rates of CO_2 were, therefore, not quantified. CO_2 emissions from the combustion of the organic constituents in the kiln feed are related to the total organic carbon in the raw materials. It can be conservatively assumed that the TOC not emitted directly and not converted to CO will exit the stack as CO_2. The new analysis of the kiln feed conducted by KHD (September 2009) provided results for TOC. The TOC results, along with the CO results are comparable to previous data. The change, therefore, appears to be in the VOC emitted directly from the stack. The potential CO2 emissions as they are related to TOC in the kiln feed does not change. There is no increase in CO2 emissions associated with the correction of the VOC BACT emissions limit.

Additional MDNR Comment: The CO limit was not amended due to the reason given by CCC in its response. Regarding CO_2 emissions, it must be emphasized that this is a true-up amendment. The

facility is not physically modifying its equipment or method of operations. The BACT analysis is being revisited because of newer and more accurate information. Emissions of CO_2 are expected to be the same as before and therefore, there should be no significant increase.

Comment 3: Continental Cement's application discussion of a need for revised VOC limits includes a discussion regarding the contribution of non-VOCs, such as methane. The application indicates that an average 68% of the measured THC was methane. However, CCC did not provide in their application and MDNR does not include in their draft PSD permit an analysis and discussion as to why the GHG PSD requirements are not triggered. This apparent potential increase in methane coupled with the potential increased in CO2 generated, appears to indicate a potential significant increase in GHG emissions. Therefore, CCC should explain why a GHG BACT analysis is not required.

CCC Response: The methane emissions associated with the coal mill have always been emitted but were not required to be quantified previously. The permit application (project 2010-10-007) was submitted to DNR in October 2010 prior to the requirement for GHG emission quantification. The project proposed in the permit application, to increase the VOC emission limit, does not cause a change to the methane emissions from the coal mill. These emissions are related to the amount of fuel processed by the coal mill and the maximum hourly design rate of the coal mill has not been changed from that previously permitted. Therefore, there is no increase of methane emissions in accordance with PSD permit requirements. As stated in response to Comment 2, there is not the potential for significant increase in CO_2 emissions. A GHG BACT analysis is not required based on this information.

Additional MDNR Response: Please see MDNR response for Comment 2.

Comment 4: CCC proposes a BACT limit for VOC's of 0.21 lbs/ton clinker, 30-day rolling average; however, the draft permit includes a VOC BACT limit which varies from 0.08 to 0.33 lbs/ton clinker. The limit is based on the amount of Kimmswick limestone in the raw material feed. Therefore, MDNR should provide detail as to why they chose to include a sliding scale VOC BACT limit, in lieu of CCC's requested limit of 0.21 lbs/ton clinker.

CCC Response: No response, as this is a decision by MDNR.

MDNR Response: In the first permit issued to the new kiln (No. 072006-003), the VOC BACT limit was not issued as a tiered limit. It wasn't until CCC requested a modification to its original permit that a tiered limit was set (in permit 072007-008). Presumably, this was due to the difference in organic content between the Kimmswick and the Burlington Limestone. Organic compounds found in the raw materials are the primary source of VOC emissions. In Permit No. 072006-003, the permit was issued assuming the use of only Kimmswick limestone. In Permit No. 072007-008, the facility was permitted also for the use of Burlington Limestone, which contains significantly less organic carbon content, resulting in a decrease in emissions, on a pound per ton of clinker basis. Because the facility did not request to revert back to the use of only one type of limestone, MDNR sees no reason to change the decision that was previously made and agreed upon.

Comment 5: In an e-mail on May 5, 2011 from CCC to MDNR, CCC referred to the annual clinker production as 1,350,500 in the cost analysis. However, Special Condition 4 in the amended permit 072007-008A issued to CCC for this kiln limits the system to 1,204,500 tons per year, on a 12-month rolling average. It is not clear whether the facility intends to increase the annual production. If it does, this would indicate increase in VOC, PM_{10}, NO_x, SO_x, CO and GHG emissions. The increases should be analyzed for significance and the construction permit modified accordingly. However, if CCC does not intend to increase annual production, then MDNR should explicitly state that all of the other approved construction permit special conditions continue to apply.

CCC Response: CCC does not intend to increase production. The statement related to clinker production of 1,350,500 tons per year was incorrect.

Additional MDNR Response: The permit will be modified to include a statement that all of the other approved construction permit special conditions continue to apply.