

Hearing Officer's Report and Recommendations

Carolinas Cement Company LLC

Castle Hayne, New Hanover County, North Carolina

Hearings held October 20, 2009

Paul K. Muller, PE, Hearing Officer

Introduction

At the direction of Keith Overcash, Director, North Carolina Division of Air Quality, two public hearings were scheduled to receive comments regarding the draft air permit for the proposed Carolinas Cement Company LLC (CCC) Portland cement manufacturing plant to be located in New Hanover County. The hearings were both held on October 20, 2009 at the BB&T Auditorium in the McKeithan Center on the north campus of the Cape Fear Community College that is located in Castle Hayne, North Carolina. The first hearing began at 2:00 pm, and the second hearing began at 6:00 pm. Approximately 500 people attended the 2:00 hearing, and an estimated 1,000 people came to the 6:00 hearing. The attendance at both hearings exceeded the BB&T auditorium capacity of 200 people. The closing date for the hearing comment period was November 20, 2009.

The existing air permit for this site, Air Permit No. 07300R07, is held by Roanoke Cement Company LLC, a subsidiary of Titan America. Under the current permit the facility is classified as small. The draft permit is for Carolinas Cement Company LLC, also a subsidiary of Titan America, and due to the proposed modification is classified as Title V. The proposed modification also triggers the applicability of the Prevention of Significant Deterioration (PSD) rules and the associated Best Available Control Technology (BACT) analysis. The air quality rules do not require a public hearing for a modification of an existing permit such as this, but the determination was made that there was sufficient public interest to warrant two public hearings in this case. The notice for the public hearings was published in the Wilmington Star News on September 11, 2009. Copies of the draft permit and draft permit review were available to the public at the DAQ Wilmington Regional Office in Wilmington, the DAQ Central Office in Raleigh, and on-line at the DAQ website.

As the hearing officer, I want to acknowledge the help of the following DAQ staff members who were present and assisted with the hearings:

Tom Mather, DAQ Public Information Officer
Booker Pullen, DAQ Permits
Brad Newland, Wilmington Regional Office
Dean Carroll, Wilmington Regional Office

Mark Hedrick, Wilmington Regional Office
Devin Brisson, Wilmington Regional Office
Robert Hodges, Wilmington Regional Office
Sharon Prevatte, Wilmington Regional Office
Tony Sabetti, Wilmington Regional Office
Ron Edwards, Wilmington Regional Office
Ashby Armistead, Wilmington Regional Office
Scott Sanders, Wilmington Regional Office

I also want to acknowledge the assistance given by the Cape Fear Community College for providing the hearing auditorium and by the New Hanover County sheriff's office for providing security at both hearings.

Due to the large public attendance at the hearings, the speaking time for each person was limited to two minutes. It is estimated that 500 people attended the afternoon hearing and 1,000 people attended the evening hearing. The hearing auditorium capacity was 200 people, and therefore many people had to wait in order to enter the room. Many people chose to leave rather than having to wait indefinitely to enter. Public comments were submitted regarding these situations, and these comments will be addressed later in this report.

Summary of Process and Regulatory Review

The air permit for the existing facility at this site is held by the Roanoke Cement Company LLC and applies to the operation of one cement silo, one screw conveyor and truck load-out spout, and one railcar/truck unloading system. Emissions from all of these permitted items are controlled by bagfilters. The draft air permit for Carolina Cement Company LLC (CCC) would significantly expand the permitted emission sources to include a variety of equipment, including equipment for the following processes: mining and quarry operations; a coal/coke handling system; plant additives unloading and handling; raw material unloading and handling; a raw mill handling system; a clinker handling and storage system; finish mills; cement handling, storage, and loadout; and a kiln system. The proposed facility will mine limestone at the site, and that limestone will be processed and used as a raw material in the manufacture of cement. The facility will add other materials with the limestone, and the mixture is then converted into clinkers at high temperatures in the proposed kiln system. Heat for the kiln system is provided by the combustion of coal and/or coke. The clinkers are then ground and processed to produce cement. The production capacity of the facility will be approximately 2 million tons of cement per year.

Application:

The permit application for this proposed modification was received by the Division of Air Quality (DAQ) on February 26, 2008. Requests for additional information regarding the permit application were sent by DAQ to CCC on April 2, 2008; August 3, 2008; and October 21, 2008.

PSD and BACT:

The proposed CCC Portland cement manufacturing plant is classified as a major stationary source under the Prevention of Significant Deterioration (PSD) rules that are listed in the North Carolina Administrative Code (NCAC) 15A 2D .0530. Within the PSD rules, Portland cement plants are designated as major if the facility "...emits, or has the potential to emit, 100 tons per year or more of any pollutant subject to regulation under the Act...." The proposed CCC Portland cement manufacturing plant triggers the PSD rules because it has the potential to emit greater than 100 tons per year of the following pollutants regulated under the Clean Air Act: nitrogen oxides (NOx), particulate matter (PM) and particulate matter less than 10 microns in diameter (PM-10), sulfur dioxide (SO₂), carbon monoxide (CO), and volatile organic compounds (VOC).

Under the PSD rules, a Best Available Control Technology (BACT) analysis is required for the emissions of the pollutants that exceed the PSD thresholds. Based on the analysis discussed in the permit review, the following BACT limits were determined. (Please note that clinker is the product output from the kiln. The clinkers are larger pieces of mineral material that are then ground into a fine powder as part of the cement manufacturing process.)

- Nitrogen oxides: 1.70 lbs NOx/ton of clinker, 30-day rolling average
- PM/PM-10: 0.10 lbs PM and PM-10/ton kiln feed for emissions from main stack;
0.01 grams PM and PM-10/dry standard cubic feet for emissions from finish mills and other miscellaneous baghouses not connected to the main stack
- Sulfur dioxide: 1.33 lbs SO₂/ton of clinker, 30-day rolling average;
1.80 lbs SO₂/ton of clinker, maximum 24-hour average
- Carbon monoxide: 2.80 lbs CO/ton of clinker, 30-day rolling average
- VOC: 0.16 lbs VOC/ton of clinker

Additional Sources:

The draft permit also indicates the following BACT requirements for other areas of operation at the proposed facility:

- Best management practices to control PM/PM-10 emissions from the mining operations;
- Best management practices to control PM/PM-10 emissions from the quarry operations;
- Vacuum sweeping and/or water flushing to control fugitive PM/PM-10 emissions from paved plant roads;
- Purchasing an emergency generator that meets the New Source Performance Standards (NSPS), Subpart III requirements; and

- Raw material unloading and handling must meet National Emission Standards for Hazardous Air Pollutants (NESHAP) Subpart LLL limits for PM/PM-10 emissions.

Under Section 112(b) of the Clean Air Act, pollutants such as mercury that are listed as hazardous air pollutants for the federal NESHAP rules are designated as exempt from the provisions of the PSD rules.

New Source Performance Standards (NSPS):

NSPS Subpart OOO, “Standards of Performance for Nonmetallic Mineral Processing Plants” applies to the quarry operations. Based on this rule, the draft permit includes limits for particulate and visible emissions and for testing and reporting requirements.

NSPS Subpart Y, “Standards of Performance for Coal Preparation Plants” applies to the coal/pet coke handling system. Based on this rule, the draft permit includes limits for particulate and visible emissions and for testing, monitoring, and recordkeeping requirements.

NSPS Subpart IIII, “Standards of Performance for Stationary Compression Ignition Internal Combustion Engines” applies to the emergency generator. Based on this rule, the draft permit includes limits for the sulfur content of diesel fuel burned in the generator and requires purchase of certified by the manufacturer to meet the applicable engine design limits.

National Emissions Standards for Hazardous Air Pollutants (NESHAP)

NESHAP Subpart LLL, “National Emissions Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry” applies to (1) the coal/pet coke handling system; (2) the plant additives unloading and handling system; (3) the raw material unloading and handling system; (4) the raw mill handling system; (5) the clinker handling system; (6) the finish mills; (7) the cement handling, storage, and loadout system; and (8) the kiln system . Based on this rule, the draft permit includes limits for particulate matter and visible emissions and for testing, monitoring, notification, reporting, and recordkeeping requirements. For the kiln system, the draft permit also includes limits for dioxins and furans, mercury, and total hydrocarbons based on this rule.

NESHAP Subpart ZZZZ, “National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines” applies to the emergency generator. Based on this rule, the draft permit includes initial startup notification and recordkeeping requirements.

North Carolina Administrative Code (NCAC) rules:

The following NCAC 2D and 2Q rules apply and are discussed in the permit review:

- 15A NCAC 2D .0521 Control of Visible Emissions
- 15A NCAC 2D .0524 New Source Performance Standards (previously listed)
- 15A NCAC 2D .0530 Prevention of Significant Deterioration (previously listed)
- 15A NCAC 2D .0540 Particulates from Fugitive Dust Emission Sources
- 15A NCAC 2D .1100 Control of Toxic Air Pollutants

15A NCAC 2D .1111 Maximum Achievable Control Technology (previously listed under NESHAP)

Summary of Comments

There were 77 people who presented oral comments at the afternoon hearing, and 83 people who presented oral comments at the evening hearing. A large number of written comments were submitted as well, with some submitted at the hearings and many more submitted after the hearings during the comment period that ended on November 20, 2009. Written comments were received as letters, faxes, and e-mails, and I counted a total of 711 written comments that were submitted. Some people submitted both letters and e-mails, so there are undoubtedly some duplications included in that total number. Based on the comments received, I identified several issues related to the draft permit that I determined require a response. Each will be addressed individually. In addition to the issues listed below, there were many comments related to issues such as the importance of the jobs at the proposed facility; the value of a cement plant in North Carolina; the impact of the plant on property values; the economic benefits of the facility; the impact the facility could have on tourism; and the importance of concrete in construction and transportation. These comments were clearly important to the people who offered them, but they are not issues directly related to the air permit and will not be addressed in this report.

Mercury

Background: The draft permit establishes two limits for mercury emissions. The first mercury limit is 0.720 pounds per day and the applicable rule is 15A NCAC 2D .1100 "Control of Toxic Air Pollutants," a state rule. Based on 365 days of operation per year, that limit is equal to an annual emission rate of 263 pounds of mercury. Toxics modeling indicated that this emission rate resulted in an ambient concentration of mercury that was less than one percent of the Acceptable Ambient Level (AAL) specified in the state air rules. The second mercury limit in the draft air permit is 41 µg per dry standard cubic meter, corrected for 7 percent oxygen. The applicable rule for this limit is the current federal NESHAP, Subpart LLL, "National Emissions Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry." The permit review also notes that the limit of 0.720 pounds per day is an "Emission rate selected by the applicant that keeps mercury below the MACT/NESHAP limit."

Issue: DAQ has not adequately evaluated the impacts of mercury emissions from the cement plant. No evaluation was conducted as part of the permit application review to determine what the impact of the proposed facility's mercury emissions would be on the concentration of mercury in fish in the area around the plant. (The air toxics modeling conducted evaluated only inhalation as a mercury pathway for human health impacts and did not examine the pathway of additional mercury deposition impacting fish in the local area.) The Northeast Cape Fear River near the plant is currently designated on the North Carolina 303(d) list as mercury impaired, and the deposition of more mercury by a new source in that area could increase the mercury concentrations in fish and impact the health of the people who consume those fish. The calculations in the permit review may also have underestimated the amount of mercury emissions.

Response: The permit limit for mercury to assure compliance with the state air toxics rules was based on an evaluation of compliance with the acceptable ambient levels intended to protect human health via the pathway of inhalation. No evaluation was performed in the permitting process, however, to determine the impact of the mercury emissions on human health via the pathway of deposition that can affect the concentration of mercury in fish. I recommend that DAQ direct CCC to conduct an analysis of the impact of mercury emissions on fish in the area around the proposed plant. This analysis should examine the impacts of both of the following: (1) the rate of mercury emissions specified in the draft permit, and (2) the rate of mercury emissions specified in the proposed federal NESHAP.

The North Carolina Environmental Policy Act (SEPA)

Issue: The draft permit should not have gone to public notice until the proposed CCC facility is evaluated under The North Carolina Environmental Policy Act, often referred to as SEPA. The SEPA process is triggered where there is an expenditure of public monies or use of public land, an action by a state agency (such as issuing an environmental permit), and a potential environmental effect. The comments stated that all of these criteria had been met in the case of the proposed facility, so the SEPA process should be completed prior to the issuing of any environmental permit, including draft permits.

Response: The North Carolina Department of Environment and Natural Resources (DENR) previously determined that the SEPA process was not triggered by the actions involved with the proposed facility. A Declaratory Ruling was subsequently issued by the North Carolina Department of Administration on November 9, 2009 upholding this determination. This issue is currently under litigation.

Best Available Control Technology (BACT) Analysis

Issue: The BACT analysis is inadequate. There were several items of concern specified with respect to this issue :

- DAQ used the BACT analysis submitted by CCC in their application and did not provide an objective evaluation of available control technologies.
- DAQ did not conduct a BACT analysis for PM-2.5 and did not provide an adequate rationale to support the use of the PM-10 surrogate approach.
- DAQ did not properly consider pending federal NSPS and NESHAP rules for Portland cement plants and the information related to those rules. The pending rules should provide the “floor” for the BACT analysis, but some of the BACT determinations are less stringent than the proposed federal rules.

- The BACT determination resulted in emission limits for PM-10, SO₂, NO_x, CO, and VOC that are not sufficiently stringent given the available control technologies and their control efficiencies.

Response: I recommend that the BACT analysis be reviewed and all of the issues listed above be addressed. In particular, the review needs to address the differences between the proposed federal NSPS Subpart F rules and the BACT limits listed in the draft permit for pollutants such as nitrogen oxides (NO_x).

Analysis of Impacts to Soil, Vegetation, and Visibility

Issue: CCC did not provide a specific analysis of impacts to soil, vegetation, and visibility based on emissions from the proposed facility. Such an analysis is required as part of a PSD permit application but was not performed by CCC. The company cited their modeling compliance with the NAAQS as their evaluation of impacts to soil, vegetation, and visibility.

Response: I recommend that DAQ review these items and verify whether or not the previous determination that modeled compliance with the NAAQS is adequate to satisfy this part of the PSD permitting process. If it is not, CCC should be required to submit additional analysis that is adequate.

Hazardous Air Pollutants (HAPs)/Toxic Air Pollutants (TAPs)

Issue: There were several items of concern specified with respect to the emissions of HAPs and TAPs of which I identified the following as the key issues:

- *There is no limit for hydrogen chloride (HCl) in the draft permit. There is no limit for HCl imposed by current federal rules, but DAQ should evaluate the impact of the pending MACT limit for HCl and determine how that limit will be achieved and what control equipment will need to be installed to meet the proposed limit.*
- *Chromium VI emissions are underestimated. The assumptions used in the estimate of chromium VI emissions did not use the correct emission factor for coal combustion or the correct speciation factor for the chromium VI percentage of total chromium emissions.*
- *Benzene emissions are underestimated. The emission factor used for benzene emissions based on bagfilter controls was incorrect. This review should be redone using the correct emission factor.*

Response: Regarding HCl, please note that an HCl limit of 7.175 pounds per hour is listed on page 61 of the draft air permit. That limit is based on modeling to demonstrate compliance with the acceptable ambient levels specified in the state air toxics rules. I recommend that DAQ review the emissions calculations related to chromium VI and benzene to determine if the current calculations are accurate. Once the correct emissions are determined, the permit conditions

should be adjusted if needed to assure compliance with the applicable federal and state rules. I also recommend that DAQ direct CCC to submit their plans for compliance with the proposed NESHAP/MACT requirements for hazardous air pollutant emissions, including mercury. Due to the mercury impairment designation for the Northeast Cape Fear River, no discharge of water containing mercury is allowed in that area, and the emissions controls used to meet the proposed NESHAP/MACT limits must be compatible with that designation.

National Ambient Air Quality Standards (NAAQS) Modeling

Issue: The modeling to demonstrate compliance with the NAAQS for SO₂ and PM emissions is inadequate. The receptors were placed at 100 meter intervals, the greatest distance allowed under the applicable protocol. Based on this modeling, the SO₂ emissions modeled at 94% of the 24-hour NAAQS and 93% of the 3-hour NAAQS while PM-10 emissions were modeled at 86% of the 24-hours NAAQS. Based on the modeling, the PM-2.5 concentrations when combined with background concentrations reached 99.5% of the 24-hour NAAQS. Since these modeling results were so near the NAAQS, the modeling should have used intervals less than 100 meters (such as 20 meters) to determine if any exceedances of the NAAQS would be modeled with the smaller grid size.

Response: I recommend that DAQ review the modeling used to demonstrate compliance with the SO₂ and PM NAAQS and determine if that demonstration is valid. If so, then DAQ should explain the rationale behind the modeling that verifies that compliance with the NAAQS is adequately demonstrated. If not, additional modeling should be required until a compliance determination is finalized.

Regulation of Greenhouse Gases (GHGs)

Issue: The draft permit imposes no controls on greenhouse gases. Cement kilns are significant sources of GHGs, but the permit review did not address the amount of GHG emissions or require any reduction in those emissions.

Response: Greenhouse gases such as carbon dioxide, CO₂, are not currently regulated as air pollutants subject to review by this permitting process. EPA has begun the process to regulate greenhouse gases as pollutants, but that process is still underway.

Adequacy of the Public Hearing Process

Issue: Hearing did not allow all interested people to speak due to the amount of available seating compared to the size of the crowd. The time constraint of two minutes per speaker did not allow some speakers enough time to voice all of their concerns. The opportunity for public comment was inadequate at the two public hearings conducted for the CCC draft air permit.

Response: I recommend that DAQ review the public hearing practices currently used by the division and evaluate their adequacy. Based on that evaluation, DAQ should issue a written statement explaining the rationale used to determine how to provide adequate access to the public for submission of comments. This issue should also be addressed by the office of the DAQ director because this issue is not part of the permit application review process.

National Environmental Policy Act (NEPA)

Issue: DAQ is interfering with the NEPA process. The proposed facility has triggered a NEPA review under Section 404 of the Clean Water Act that is being conducted under the direction of the U.S. Army Corps of Engineers (Corps). Under the NEPA process, the Corps compares the environmental impacts of the proposed project with the impacts of all reasonable alternatives in an environmental impact statement (EIS). The DAQ should not issue an air permit prior to the completion of the EIS because doing so could limit the number of reasonable alternatives that are evaluated in the EIS.

Response: I recommend that the Director's office review this decision and verify that proceeding with the air permitting process prior to the completion of NEPA is valid.

Environmental Justice

Issue: The DAQ did not evaluate the environmental justice impacts of the proposed CCC facility. Census data indicates that areas of poverty and minority residents are adjacent to the site for the proposed facility. Ten public schools are also located within that area. An evaluation of the impacts of the air emissions from the proposed facility on these communities and schools should be performed.

Response: The permit review evaluated the compliance of the CCC application with respect to existing federal and state rules, including the federal NAAQS and state AALs that are set to protect human health. The review indicated compliance with these rules and therefore indicated that human health in that area would be protected through the inhalation pathway. I recommend that DAQ review the issue of environmental justice if information becomes available through additional analyses to determine if that information is compatible with maintaining environmental justice.

Summary of Recommendations

1. I recommend that DAQ direct CCC to conduct an analysis of the deposition impact of mercury emissions from the proposed facility on fish in that area. This analysis should examine the impacts of both of the following: (1) the rate of mercury emissions specified in the draft permit, and (2) the rate of mercury emissions specified in the proposed federal NESHAP.
2. I recommend that DAQ clarify the current status of the SEPA issue and DAQ's role in this SEPA process. The SEPA determination and its current status are not part of the air permit application review process, so this clarification should be issued by the Director of DAQ.
3. I recommend that DAQ review the BACT analysis. In particular, the review needs to address the differences between the proposed federal NSPS Subpart F rules and the BACT limits listed in the draft permit for pollutants such as nitrogen oxides (NO_x).
4. I recommend that DAQ review the analysis of impacts to soil, vegetation, and visibility and verify whether or not the previous determination that modeled compliance with the NAAQS is adequate to satisfy this part of the PSD permitting process. If it is not, CCC should be required to submit additional analysis that is adequate.
5. I recommend that DAQ review the emissions calculations related to chromium VI and benzene to determine if the current calculations are accurate. Once that is completed, the permit conditions should be adjusted as needed to assure compliance with the applicable federal and state rules.
6. I recommend that DAQ direct CCC to submit their plans for compliance with the proposed NESHAP/MACT requirements for hazardous air pollutant emissions, including mercury. Due to the mercury impairment designation for the Northeast Cape Fear River, no discharge of water containing mercury is allowed in that area, and the emissions controls used to meet the proposed NESHAP/MACT limits must be compatible with that designation.
7. I recommend that DAQ review the modeling used to demonstrate compliance with the SO₂ and PM NAAQS and determine if that demonstration is valid. If so, then DAQ should explain the rationale behind the modeling that verifies that compliance with the NAAQS is adequately demonstrated. If not, additional modeling should be required until a compliance determination is finalized.
8. I recommend that DAQ review the public hearing practices currently used by the division and evaluate their adequacy. Based on that evaluation, DAQ should issue a written statement explaining the rationale used to determine how to provide adequate access to the public for submission of comments. This issue should also be addressed by the office of the DAQ Director because this issue is not part of the permit application review process.
9. I recommend that the DAQ Director's office review the decision to proceed with the air permitting process prior to the completion of NEPA and provide a written response explaining the basis for this decision.

10. I recommend that DAQ review the issue of environmental justice if information becomes available through additional analyses resulting from the above recommendations to determine if that information is compatible with maintaining environmental justice.

I recommend that the issuance of this permit be based on the results of the additional analyses specified in the recommendations listed above.

Paul K. Muller

Paul K. Muller, PE, Hearing Officer

3-11-2010

Date