



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8960

October 26, 2009

Received

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Permits Section

Booker T. Pullen
Environmental Engineer II
Permitting Section
North Carolina Department of
Environment and Natural Resources
1641 Mail Service Center
Raleigh, North Carolina 27699

Dear Mr. Pullen:

Thank you for sending the Prevention of Significant Determination (PSD) draft permit for a proposed project at Titan America (Carolina Cement) in Castle Hayne (New Hanover County), North Carolina. The project consists of a new Portland cement manufacturing facility at the site of an existing cement storage terminal. The North Carolina Department of Environment and Natural Resources (NCDENR) has determined that the project is subject to PSD review for particulate matter (PM), nitrogen oxides (NO_x), sulfur dioxide (SO₂), carbon monoxide and volatile organic compounds (VOC).

The Region 4 office of the U. S. Environmental Protection Agency (EPA) has reviewed the permit application, and has the following comments:

- 1) **PM_{2.5}** - In reviewing the draft permit and preliminary determination, Region 4 finds that the NCDENR has not provided an adequate rationale in the preliminary determination to support the use of the PM₁₀ surrogate approach for this project. Region 4 does acknowledge that modeling was performed for PM_{2.5}. The preliminary determination should contain an explanation of the analysis.
- 2) **NSPS Applicability** – On June 16, 2008, (73 FR34072) EPA proposed New Source Performance Standards (NSPS) limits for Portland Cement Plants. While the permit correctly states that the final NSPS will apply to this facility, the limits in this submittal in some cases are not consistent with the proposed NSPS and in some cases are substantially less stringent. While the final NSPS will set a floor for future best available control technology (BACT), we would expect the permit to consider the information in the proposed NSPS and explain why a BACT determination less stringent than the proposed NSPS is appropriate. We also recommend keeping the test methods and form of the standard consistent with the NSPS standard. Otherwise, separate compliance determinations will have to be made for BACT and NSPS.

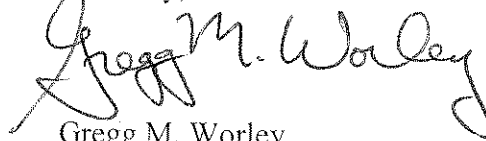
- a. **Particulate Matter** – The proposed limit for PM₁₀ for the kiln, raw mill, clinker cooler and coal mill is 0.012 gr/dscf outlet grain loading. The emission rate proposed in the NSPS is 0.086 lb/ton of clinker which converts to approximately 0.0067 gr/scf. The proposed limit is substantially lower than the proposed BACT limit. Since this facility is modeled to consume 99 percent of the 24 hour PM₁₀ increment we strongly suggest you review your BACT determination of PM.
 - b. **Sulfur Dioxide** – The estimate of the cost of the wet scrubbing option is excessively high. A cost of \$3,392 per ton calculated for this facility assumes the worst case. It assumes that the facility will not be able to crystallize and reclaim the gypsum from the wet scrubber. In fact, several Portland cement operations currently in operation recover and reuse the gypsum. The gypsum is not a waste product requiring disposal but a feedstock offsetting costs in acquiring gypsum. Recovering gypsum also eliminates the need for water treatment. These costs should also be eliminated from the analysis and a credit added back for the recovered gypsum. Also the amortization period for a wet scrubber should be at least 20 years, not the 15 used in this analysis. Adjusting the analysis for these differences substantially reduce the cost estimate. Furthermore, besides recovering gypsum, wet scrubbing has ancillary benefits such as reducing emissions of mercury and other heavy metals, reducing condensable particulates, reducing hydrogen chloride, and reducing sulfuric acid mist emissions, which were not assessed. We strongly suggest you consider this option. The wet additive addition (hybrid) option delineated in this submittal barely complies with the proposed NSPS of 1.33 lb/ton of clinker. If the assumptions used in the analysis prove optimistic, this option has the potential of being a future compliance issue. Further, since the facility is modeled at 94% of the 24 hour SO₂ NAAQS, and 93% of the 3 hour SO₂ NAAQS, the facility could significant contribute to a future NAAQS violations in the area.
 - c. **Nitrogen Oxides** – The technology proposed is appropriate, SNCR, but the emission limit of 1.70 lb/ ton thirty day average is higher than expected with SNCR installed. The proposed NSPS is 1.50 lb/ton of clinker. The major difference seems to be in the assumptions regarding the emission rates with low NO_x burners and other NO_x reducing combustion controls. The analysis assumes a baseline emission rate without SNCR of 2.8 lb/ton of clinker. We typically have seen facilities meet an emission rate of about 2 lb/ton of clinker without installing SNCR. Assuming 40% control efficiency, we would expect a unit equipped with SNCR to be able to meet an emission rate of 1.25 lb/ton of clinker. We recommend you review the assumptions and the basis for the 1.70 lb/ton thirty day average NO_x limit.
- 3) **MACT Applicability** – On May 6, 2009 (74 FR 21136) EPA proposed new maximum achievable control technology (MACT) limits that would apply to this facility once the final standards are promulgated. While the permit correctly states that the final MACT will apply to this facility, the BACT limits in this submittal are not consistent with the proposed MACT limits and in several instances, are substantially less stringent. While the final MACT standards will set a floor for future permits, we would expect the permit to consider the information in the proposed MACT and explain why a determination less

stringent than the proposed MACT is appropriate. We also recommend keeping the test methods and form of the standard consistent with the MACT standard. Otherwise, separate compliance determinations will have to be made for BACT and MACT.

- a. **Mercury** - The proposed limit for mercury for the kiln, raw mill, clinker cooler and coal mill is 41ug/dscm. According to estimates in the preliminary determination this will result in 263 lb/year of Mercury emissions. The emission rate proposed in the MACT standard is 14 lb/million tons of clinker. Based on 2,190,000 tons of clinker production. The maximum allowable under the proposed MACT standard would be 30.66 lb. The proposed MACT limit is substantially lower than the proposed permit limit.
- b. **Hydrogen Chloride** – There is no limit for hydrogen chloride (HCl) in the permit. Region 4 recognizes that NCDENR currently does not have a mechanism to regulate HCl at this time. However, we do encourage you to look at the proposed controls and analysis how the facility will meet this potential limit. According to estimates in the preliminary determination, this project will result in 62,900 lb/year of HCl emissions. The proposed limit for HCl for the kiln, raw mill, clinker cooler and coal mill is 0.1 ppmv from the main exhaust of the kiln. Preliminary calculations indicate that the facility will need to install controls to meet this limit. While the final MACT standards will set a floor for future permits, we would expect the permit to consider the information in the proposed MACT and explain why the determination did not address this proposed standard.
- c. **Total Hydrocarbons** – The proposed limit for total hydrocarbons is 20 ppmv while the proposed MACT standard is 6 ppmv. The proposed MACT limit is substantially lower than the proposed permit limit.
- d. **Particulate Matter** - The proposed limit for PM₁₀ for the kiln, raw mill, clinker cooler and coal mill is 0.012 gr/dscf outlet grain loading. The proposed MACT limit is 0.080 lb/ton clinker which converts to approximately 0.0063 gr/scf. The proposed MACT limit is substantially lower than the proposed permit limit.

If you have any questions about these comments or require additional information, please contact John Calcagni at (919) 514-9775 or Heather Abrams at (404) 562-9185.

Sincerely,



Gregg M. Worley
Chief
Air Permits Section