FINAL DETERMINATION

PERMITTEE

Suwannee American Cement, LLC (SAC)
5117 U.S. Highway 27
Branford, Florida 32008-2463

PERMITTING AUTHORITY

Florida Department of Environmental Protection (Department)
Division of Air Resource Management
Office of Permitting and Compliance
2600 Blair Stone Road, MS #5505
Tallahassee, Florida 32399-2400

PROJECT

Permit No. 1210465-026-AC
Minor Source Air Construction Permit
Branford Cement Plant

The project is use of coal power plant bottom ash as a raw material and the removal and transfer of kiln baghouse dust to the finish mill system. The purpose of the project is to reduce mercury (Hg) emissions in order to comply with the Hg emission standard contained in 40 Code of Federal Regulations, Part 63, Subpart LLL - National Emission Standards for Hazardous Air Pollutants for the Portland Cement Manufacturing Industry (the Cement NESHAP).

PUBLIC NOTICE

The Department distributed a draft minor source air construction permit package on February 1, 2013. Link to draft documents The applicant published the Public Notice in the Suwannee Democrat on February 8, 2013. Direct notice by electronic mail was provided to a number of interested individuals and agencies.

No requests for an administrative hearing or requests for an extension of time in which to file a petition for an administrative hearing were received by the Agency Clerk in the Department's Office of General Counsel.

COMMENTS

No comments on the permit were received from the public or agencies during the 14-day public comment period that began on February 8 and ended on February 22, 2013. SAC's consultant (Koogler and Associates – K&A) provided initial comments by electronic mail on February 21. K&A advised that the draft permit document was not available at the link. Further comments and a marked up copy of the draft permit were received by electronic mail on February 22.

The Department's representative held initial discussions with SAC's facility/environmental contact or K&A on February 21 and 22 to discuss initial comments and questions. Further comments and a copy of the draft permit showing recommended changes were received by electronic mail on February 22.

Department Initiated clarifications

On February 12, 2013 the U.S. EPA published the Cement NESHAP. Link to Cement NESHAP The publication date of the final rule and the compliance date of September 9, 2015 will be referenced in several conditions or notes that referenced the final rule prior to its official publication. For reference, the Hg standard is 55 pounds per million tons of clinker (lb/million tons) and the compliance date September 9, 2015. This provides time for SAC to conduct trials using different sources of bottom ash and to refine the techniques that will transfer baghouse dust (including Hg) to the product.

Permit Changes Requested by SAC

SAC's comments and recommended changes are stated below (paraphrased for brevity) and followed by the Department's response.

1. Page 1, Project Description: *Insert "for the purposes of mercury emissions reduction"* and "*Bottom ash and dust transfer are expected to reduce mercury emissions. Bottom ash, alone, is expected to reduce mercury emissions by at least 25 percent from current emissions".*

   According to SAC/K&A, "We stress that even though the Technical Evaluation and Preliminary determination (TEPD) discusses Hg emissions reduction, the permit must also mention the purpose of these construction actions is not for any other reason than Hg reduction".

   Response: The Department will insert "The purpose of the project is to reduce mercury (Hg) emissions to comply with the applicable standard contained in 40 Code of Federal Regulations, Part 63, Subpart LLL - National Emission Standards for Hazardous Air Pollutants for the Portland Cement Manufacturing Industry (the Cement NESHAP)".

   The Department acknowledges SAC's statement that the project is for no other reason than Hg reduction, but it is not necessary to state this in the permit.

2. Page 3, Facility Description: *Substitute an upper case "P" in the spelling of portland cement and wherever it occurs*.

   Response: Either spelling is in actual use. Several dictionaries use the lower case when describing the type of cement. For example, according to the **P**ortland Cement Association, "Bricklayer Joseph Aspdin of Leeds, England first made **p**ortland cement early in the 19th century by burning powdered limestone and clay in his kitchen stove". The Department will use the convention requested by SAC in their permit. SAC actually manufactures Portland (or portland) cement.

3. Page 3, Facility Description: *The main stack is equipped with a total hydrocarbon (THC) continuous emission monitoring system (CEMS) monitor and not a volatile organic compounds (VOC) CEMS. Insert THC "a surrogate for VOC".*

   Response: The final permit will refer to a THC CEMS and not a VOC CEMS. THC is the pollutant regulated under the Cement NESHAP and is actually the surrogate for (non dioxin/furan) organic hazardous air pollutants (HAP). VOC is the pollutant regulated under the rules for prevention of significant deterioration (PSD) and subject to a determination of best available control technology (BACT).

   For cement plants in Florida, the Department considers the THC to provide a conservative (high) estimate of VOC, making it possible to separately monitor both pollutants. Generally, for cement plants in Florida, THC and VOC include the same species except that THC also encompasses methane and ethane, which are not VOC. The Department will insert the phrase THC also serves as a surrogate for volatile organic compounds (VOC).

4. Page 3, Project Description: *Include Emissions Unit (EU) No. 006, "Clinker and Cement Processing Operations Controlled by Baghouses" as an EU affected by the project.*

   Response: EU 006 will be included in the project description since it includes the finish mill and its baghouse that will ultimately collect combined finished cement including transferred kiln baghouse dust.

5. Page 3, Project Description: *Insert "The transfer of baghouse dust is a method recommended by EPA to reduce mercury emissions per subpart LLL NESHAP" and "Bottom ash is expected to reduce mercury emissions".*

   Response: After consulting with EPA, the Department will not state that EPA recommends baghouse dust transfer. The Department agrees that use bottom ash is expected to reduce Hg emissions based on information submitted in the application and reproduced in the Department's TEPD. Link to Application

The Department will use an abbreviated version of the phrase as proposed in Item 1 above; "The purpose of the project is to reduce Hg emissions to comply with the applicable standard contained in the Cement NESHAP".

6. Page 3, Project Description: *Insert "180 operating days" as the time during which a temporary VOC annual cap will apply and insert "This annual VOC cap ensures that the BACT limit established under the PSD program for initial permitting of the facility remains enforced".*

   Response: The Department will insert "180 kiln operating days". According to the application, "SAC is requesting a waiver of the FDEP-PSD based limits for VOC emissions for 180 kiln operating days after completion of construction of injection equipment and initial injection of bottom ash. The facility will remain compliant with the EPA NESHAP based limits of 50 ppmvd (as propane at 7% oxygen) as stated in the current Title V permit".

   The draft permit is consistent with the application. The proposed annual cap of 58 tons VOC/year established by the Department is equal to the permitted potential-to-emit (PTE) of VOC based on the original BACT determination of 0.12 lb VOC/ton of clinker given in permit 1210465-001-AC (PSD-FL-259) and the final annual production limitation of 965,425 tons of clinker.

   (0.12 lb VOC/ton)*(965,425 tons/year)*(ton/2,000 tons) = 58 tons VOC/year

   The annual VOC cap does not actually ensure that the BACT limit (0.12 lb/ton and 14.4 lb/hour on a 30-day basis) established under the PSD program for initial permitting of the facility remains enforced. It does ensure that annual emissions will not exceed the PTE and also that PSD will not be triggered again by the proposed project.

7. Page 3, Project Description: *Insert "SAC may request additional days to test the bottom ash materials from FDEP in writing".*

   Response: It is not necessary to state in the permit that SAC may request additional days. Such requests are provided by Department rules through the application process for minor permit modifications (revisions).

   Some approaches to estimate emissions based on raw material characteristics are discussed at the following F.L. Smidth publication, "Accurately Predicting Cement Plant Emissions". Link to F.L. Smidth Document By combining the planned bottom ash trials with similar laboratory techniques (such as expulsion tests), the time to finalize the raw mix and meet the final THC standards will be minimized.

8. Section 2, Administrative Requirement No. 7, Application for Title V Air Operation Permit Revision: *Replace the term "required work" with "defined project" in the phrase "no later than 180 days after completing the required work and resuming normal operation to include any new methods of operation authorized by this project.*

   Response: The relevant provision is 62-213(1)(a)3., Florida Administrative Code (F.A.C.) actually states "no later than 180 days after the emissions unit commences operation or commences operation as modified". The condition will be revised to reflect the precise rule language.

9. Section 3, Specific Condition 3: *SAC made two corrections to the exact manner by which kiln baghouse dust will be conveyed to the finish mill area and mixed with milled cement.*

   Response: The changes will be made as specified by SAC.

10. Section 3, Specific Condition 4: *Bottom ash "will be introduced as raw meal or part of the dry preheater feed and not injected" directly into the calciner. No change is needed to the calculation procedure for loss on ignition (LOI) to account for the bottom ash as it is will be part of the feed and accounted by the feed LOI factor.*

Response: The comment implies that no changes to the condition as expressed in previous permits are required. The Department will therefore delete the condition that was intended to show only changes to the same condition as specified in previous permits.

11. Section 3, Specific Condition 5(a) and 5(c) – renumbered 4(a) and 4(c): *Items a. and c. will be conducted in accordance with NESHAP definitions and methodology per 40 CFR 63.1343(a).*

    Insert comment "The 58 tons of VOC per 12-month calendar period standard ensures that the current BACT limit developed through the PSD program is not exceeded during the trial period".

    Insert comment "If the trial is extended upon the Department approval, this limit (20 ppmvd of THC @7% O_2) will not apply during the days of the extension".

    Response: the Department concurs with use of the Cement NESHAP methods and averaging periods. Consistent with 40 CFR § 63.1343(a), the THC emissions shall be measured as propane. The THC standard is based on a rolling 30-day average. The 30-day period means 30 consecutive kiln operating days excluding periods of startup and shutdown. The Department will express the THC concentration limits as "ppmvd @7%O_2 (reported as propane) on a rolling 30 kiln-operating-day average (excluding periods of startup and shutdown)".

    The second part was addressed in the response to Item 6 above.

    The Department agrees that if it issues a permit modification (revision) as discussed in Item 7 above, then the THC limit of 20 ppmvd @7% O_2 will not apply during the additional time granted. The Cement NESHAP THC emission standard of 24 ppmvd @7% O_2 will, nevertheless, apply on September 9, 2015.

    The permit condition has been rewritten for greater clarity as follows:

    ~~5~~4. VOC: Beginning the date of initial use of bottom ash, the applicable VOC emission limits (0.12 pounds per ton of clinker and 14.4 pounds per hour) contained in Condition III.B.15 of Permit No. 1210465-011-AC shall be replaced and superseded by the following emission standards:

    a. 50 parts per million by volume, dry at 7 percent oxygen (ppmvd @7% O_2), (THC reported as propane), on a rolling 30 kiln-operating-day average (excluding periods of startup and shutdown) ~~beginning on the date of initial use of bottom ash following issuance of this permit~~ until condition 4.c. below is applicable;

    b. 58 tons per 12-calendar month period, rolled monthly, (THC reported as propane)~~, within the 180 operating days beginning with the first use of bottom ash after issuance of this permit~~ until condition 4.c. is applicable. Methane and ethane emissions may be measured and subtracted from the THC value to demonstrate compliance with the 58 tons per 12-calendar month period ~~calculate this value~~;

    c. A limit of 20 ppmvd @7% O_2, (THC reported as propane), on a rolling 30 kiln-operating-day average (excluding periods of startup and shutdown) shall apply after ~~beginning~~ 180 ~~181~~ kiln operating days during which bottom ash is used ~~after the date of initial use of bottom ash following issuance of this permit~~, but no later than September 9, 2015.

12. Section 3, Specific Condition 7 – renumbered 6: *Remove the carbon monoxide (CO) CEMS from the list. "It is confusing and misleading to list the CO process monitor for compliance. While the monitor is a surrogate for compliance it is not directly applicable for compliance".*

    Response: Specific Condition 7.a. already includes a note that the CO CEMS is actually a process monitor for reasonable assurance. The condition listing the instruments was adopted verbatim from a recent permit 1210465-023-AC, Section 3, Specific Condition 14. The mentioned permit provides for numerous physical modifications related with the use of alternative fuels. No change is required.

13. Section 3, Specific Condition 9 – renumbered 8: "*While SAC is willing to conduct such dioxin/furan (D/F) testing with bottom ash, we do not believe the fundamental scientific understanding of D/F formation and control demonstrates that bottom ash will impact D/F emissions".*

    "If [the Department] plans to cite 62-296.310(7)(a)4., F.A.C. for condition 8, please add a permit note that the state rule is not requiring additional D/F testing other than the NESHAP requirement".

    "[We] recommend that [the Department] just cite the reasonable assurance rule (62-4.070, F.A.C.) instead for that condition".

    In further discussions, SAC asked for consideration for the possibility that they will not have bottom ash available during the next scheduled D/F stack test conducted pursuant to the Cement NESHAP.

    Response: The Department is not requiring additional testing outside of the regularly scheduled D/F testing pursuant to the Cement NESHAP. The Department will remove the citation to paragraph 62-296.310(7)(a)4., F.A.C. because an annual test is not required each federal fiscal year for dioxin/furan. An annual test is required for CO by that rule. However, the Department's authority to require special testing pursuant to paragraph 62-297.310(7)(b), F.A.C. is preserved.

    The Department will cite the reasonable assurance provision as requested and will provide for the possibility that the optimal bottom ash is not yet available in sufficient amounts during the first dioxin/furan test required by the Cement NESHAP.

    ~~9~~8. Compliance Stack Tests: The permittee shall continue to conduct stack tests in accordance with the methods and requirements reflected in the current Title V air operation permit to demonstrate compliance with the emissions standards. At least one of the first two required stack tests for CO and dioxins/furans conducted after first use of bottom ash shall be conducted while using bottom ash unless the applicant ceases usage of bottom ash. [Rules 62-4.070 and 62-297.310(7)(a)4, F.A.C.]

    {Permitting Note: This condition is not intended to require additional testing beyond that already required by the other presently applicable permits or the requirements of the Cement NESHAP. It provides for the possibility that at the time of the first dioxin/furan test required pursuant to the Cement NESHAP, bottom ash compatible with the project objectives has not yet been determined or is not available.}

14. Comment: In discussion with the Department's representative, K&A verbally pointed out that the reference to a federal significant emission rate (SER) for greenhouse gases (GHG) in the TEPD, Table 4 is not accurate. GHG are not included in the definition of significant at 40 CFR § 52.21(23i). Instead, GHG are "subject to regulation" as described at 40 CFR § 52.21(49).

    Response: The Department acknowledges the comment and will use the terminology of correct the reference in future TEPD's to use the terminology given in 40 CFR § 52.21(49i).

CONCLUSION

The final action of the Department is to issue the permit with the changes and clarifications as noted above.