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January 23, 2008

Travis Weide,
Lafarge North America, Seattle Plant
5400 W. Marginal Way, SW
Seattle, WA 98106-1517

RE: Proposed Best Available Retrofit Technology Report, for Seattle, Washington Plant, December 2007

Dear Mr. Weide:

We have reviewed your company's proposed Best Available Retrofit Technology (BART) report submitted by David Keen of RTP Environmental Associates, Inc. on your company's behalf. Thank you for the analysis report. Attached are a number of comments and requests for additional information and analysis. They are included with letter as Attachment 1. Please submit your response to be by February 19, 2008.

If you have any questions about these comments and questions, do not hesitate to contact me at (360) 407-6810 or by e-mail at anew461@ecy.wa.gov.

Sincerely,

Alan R. Newman, P.E.
Senior Air Quality Engineer

Attachment

cc: Mike Pelan, Lafarge
David Keen, RTP Environmental Associates, Inc.
Steve VanSlyke, PSCAA

Attachment 1

1. One method to reduce emissions from an existing wet process cement plant is to convert or replace it with a modern pre-heater/pre-calciner system. There should be a short discussion of the viability of this process change.

2. Section 3.2, SO_2 controls analysis. You evaluate the use of a limestone based wet flue gas desulphurization process. As part of available SO_2 controls review for a coal fired power plant, an ammonia based wet flue gas desulphurization process was identified as having an equivalent removal capability and cost as the limestone based control. Please evaluate the technical feasibility of an ammonia based SO_2 control system, and if technically feasible, please complete the BART analysis for that process.

3. Section 3.2, SO_2 controls analysis. There is no discussion of the sulfur content of the current fuels used by the plant. As EPA Region 8 has noted in its comment letters on the BART analyses developed by Ash Grove Cement in Clancy, MT, and Holcim in Three Forks MT, changing to a lower sulfur content fuel is a reasonable SO_2 emission reduction option that should be evaluated. Thus, there should be a discussion of changing fuel to a lower sulfur fuel as a SO_2 reduction process in this report.

4. Section 3.2, SO_2 controls analysis, Step 1, Duct Sorbent injection. What is the dry reagent proposed for use? In the text on page 3-4, you note that hydrated lime is a typical reagent used in this process. Sodium bicarbonate (also known as nahcolite) is an alternate reagent that is commonly used by facilities in Washington. Some of my research (and Appendix B to your report) indicates that it is advantageous to include some sulfate (gypsum) in the final cement product. Will the collected reagent be incorporated into the cement product or otherwise disposed of? What reagent is proposed for use?

5. Section 3.2, SO_2 controls analysis, Step 4, Evaluate feasible control options. While it is important to know what the costs and cost effectiveness of the wet FGD system is, we also need to know what the cost analysis and cost effectiveness of the duct sorbent technology proposed as BART to compare with the control costs for other cement plants and other BART facilities. Please provide this information.

6. Section 3.3, NOx BART analysis. I need a discussion of combining compatible NOx controls; i.e. combining the use of low NOx burners with mid-kiln fuel firing or SNCR, or combining mid-kiln fuel firing with SNCR. Note, that EPA Region 8 identified this same lack in the BART analysis referenced above.

7. Section 3.3, NOx BART analysis, mid-kiln fuel firing. The discussion on the value of mid-kiln firing is fuel neutral through most of this paragraph. My review of the literature on the process indicates petroleum coke, biomass, or even coal should be equally effective for mid-kiln firing. The only fuel specific sentences in this discussion address the use of whole tires. Without any supporting evidence or discussion, the last sentence in the paragraph on mid-kiln firing dismisses the control option stating that mid-kiln firing with whole tires is not considered a viable NOx control because a supply of whole tires cannot be assured. This

simple statement is not adequate to discount this viable, proven NOx control technique. You need to supply better justification of why the technique is not technically viable, or carry the technique forward to steps 2, 3, and 4 of the analysis.

8. Section 3.3, NOx BART analysis, SNCR. The references I have reviewed indicate that removal efficiencies of SNCR can be on the order of 30 – 50+% rather than the 30 – 40% indicated in your report. Please supply information detailing why a 30 – 40% removal rate is more appropriate than the 30 – 50+% removal rate indicated in the literature (see EPA's Draft Alternative Control Techniques document update – NOx emissions from new cement kilns, June, 2007, or the Texas, France, and Florida cement plant NOx emission control reports for example).

9. Section 3.3, NOx BART analysis. There are 2 controls not mentioned or discussed in your analysis that must be included, the use of an expert system to optimize fuel usage and emissions, and the CemStar process from TXI. Both of these technologies are available and have been used on cement kilns to reduce NOx emissions.

   While I don't request that you provide an evaluation, both Montana cement plant BART reports discuss changes to the kiln inlet as methods to reduce NOx.

10. Section 3.3, NOx BART analysis, Step 2 on page 3-18. As noted above, mid-kiln firing has not been demonstrated to be technically infeasible. This technology along with any others in a revised technical feasibility analysis need to be retained for ranking and determination of feasible control options. The opportunity to pair control options such as low NOx burner technology with SNCR needs to be evaluated.

11. Section 3.3, NOx BART analysis, Step 4. While SNCR is being proposed for installation, a cost analysis is still required; if for no other purpose than to be able to compare your proposed NOx controls to those proposed for (or rejected at) other wet process cement plants subject to BART.

12. Section 4, BART modeling procedures. We note that you properly used the high 24-hour actual emissions during the baseline period applied the proposed emission control system's removal rate to that maximum 24-hour rate to model the post control impacts.

13. Appendix A, Wet FGD annualized cost estimate. I have a number of concerns about your assumptions in the annualized cost estimate.

    a. You need to justify 3 operators/shifts for the Wet FGD system. This is high for equipment that exhibits stable operating characteristics and can be operated from a central control room. Note that the CUECost spreadsheet used to estimate costs estimated 6 operators per week (less than 1 per shift) and the 1995 EPA Control Cost Manual estimates ½ hour/shift for wet FGD operation.

    b. $.08/kWh is not a realistic Seattle power cost. Based on the Seattle City light rate charge tables, it looks like you should be paying on the order of $0.06/kWh during peak demand time and almost $0.02/kWh less during off demand times.

14. Appendix B, Emission calculations. The printed table and the spreadsheet "Seattle BART Model Input.xls". For the SO_2 modeling, why was the second high concentration value selected rather than the high value? Please explain why the second high SO_2 emission concentration was used as the basis for the emissions modeling and cost analysis.

As part of the same series of calculations, why was the second high concentration's lb/hour rate then applied against the high SO_2 concentration day's production rate to generate a pounds SO_2/thousand tons clinker emission factor?