ASH GROVE CEMENT COMPANY

WESTERN REGION
Hwy 132 6 Miles East of Leamington
LEAMINGTON, UTAH 84638
PHONE (435) 857-1200 FAX (435) 857-1288

August 26, 2021

Ms. Chelsea Cancino
Utah Department of Environmental Quality
195 North 1950 West
Salt Lake City, Utah 84114-4820

RE: Ash Grove Cement Company, Leamington Plant,
Four-Factor Analysis – Supplemental Information

Dear Ms. Cancino:

We received your review of Ash Grove Cement Company's (AGC's) four-factor analysis for the Leamington facility dated July 27, 2021. Per your request, we are providing additional information.

Comment (paraphrased): The Department of Environmental Quality (DAQ) recommends that AGC revisit their annual potential to emit (PTE) estimation for SO_2 given the seeming disparity with the current actual annual emission rate values for SO_2.

Response:
AGCs actual emission rate is determined via source testing on a periodic basis. Recent source test results for the main kiln stack are as follows:

Date	SO2 – Method 6C (lb/ton)
8/26/2013	0.01
6/25/2015	0.07
6/12/2017	0.04
6/20/2019	0.02
6/2/2020	0.003
6/15/2021	0.02
Emission Limit	0.4

The actual emission rate has varied from 0.003 to 0.07 lbs/ton while the PTE is based on the emission limit of 0.4 lb/ton (30-day rolling average). The emission limit in this case corresponds with the NSPS Subpart F standard for new portland cement kilns.

Although the actual emission rate is indeed well below the emission limit used for PTE calculations, there are still factors that could cause actual SO_2 emission levels to increase and thus it would be a concern for Ash Grove to lower the PTE (limit). As pointed out in the four-factor analysis, sulfur is introduced into the system both from raw materials and fuel and both have variable sulfur contents. The sulfur content of the fuel is expected to largely be fully absorbed in the process, and is already limited to less than 1 lb/MMBtu of heat input, but the sulfur content of the raw material can vary and have an impact on SO_2

emission levels. Currently, the sulfur contents in the raw materials are relatively low, and in fact they are so low that from an overall process chemistry standpoint, it would actually be beneficial from a maintenance standpoint if the sulfur levels were slightly higher. That is, if sulfur is too low, the process chemistry can be such that a buildup of unwanted materials can occur in the system that leads to increased maintenance. Thus, from a process standpoint, it would not be beneficial to plant operation to lower sulfur contents in the raw materials. Further, the overall chemistry of the process requires the addition of aluminum and iron which comes from raw materials and the sulfur contents in these raw materials can vary depending on the source that is identified. These raw materials are not mined or produced onsite, and thus AGC does not have long term control over their sulfur levels or availability. Thus we cannot speculate that in the long term, raw materials with extremely low sulfur levels will always be available and must continue to have flexibility in the permit to allow for modest increases in SO_2 in the future (within reason of course, which we would consider to be the PTE levels).

Comment (paraphrased): Provide additional information on the potential for improvements in efficiency of the existing SNCR system.

Response:
The SNCR system was designed specifically for the Leamington plant to be able to achieve 2.8 lb NOx/ton clinker on a 30-day rolling average basis, and the plant typically operates in the 2.5 to 2.6 lb NOx/ton clinker range. For example, in 2020 the plant averaged 2.6 lb NOx/ton clinker. On a shorter term basis, the emission rate can be nearer to the 2.8 lb/ton range with the SNCR system operating at maximum capacity (maximum reagent flowrate). AGC certainly desires to operate as efficiently as possible, but AGC is not aware of any changes that could be made to achieve a higher level of control with the system. The plant uses an Aqua NH3 solution as the chemical reagent in the process and it is not feasible to add additional reagent in the existing design. That is, adding additional reagent would require additional and/or larger nozzles as well as an expansion or addition to the reagent storage tanks. The plant already receives reagent by truck every 2 days. Further, there is concern that the system is already near saturation with the aqua NH3 reagent rates such that adding additional NH3 may not increase the control efficiency but rather it would cause NH3 to slip from the system and be released from the stack.

Summary
AGC believes that the current SO_2 and NO_X limits reflect a reasonable level of safety margin relative to actual emission rates.

If you have any questions or comments, please do not hesitate to contact me at (435) 857-1283.

Sincerely,

Cody Watkins

Cody Watkins
Environmental Engineer

cc: Jeff Briggs, Ash Grove Cement Company, Montana City Plant