

**Appendix D - 1-hour SO<sub>2</sub> Compliance Dispersion Modeling report for Alumax of South Carolina INC (Alcoa Mt. Holly/Century Aluminum of SC) (Permit Number 0420-0015)**

The modeling report submitted by the facility ("Century") is attached to this appendix. Associated electronic modeling files are contained in Appendix H.

The modeling analysis submitted by Century demonstrates compliance with the 1-hr SO<sub>2</sub> NAAQS.

The Department's Bureau of Air Quality, Modeling Section reviewed the report and modeling submitted by Century. There are 2 minor differences in the Department review modeling analysis compared to the Century modeling analysis: 1) the Department used base elevations for the buildings that are slightly higher than those used by Century, and 2) the Department used a background design value that is slightly less than that used by Century (both design values are based on Jenkins monitor data from 2012-14). This background data has been reviewed by the Department and meets data completeness and validity requirements for use in NAAQS attainment demonstrations. The result of the Department review model run (maximum model concentration + background) is slightly less than the result of 145 ug/m<sup>3</sup> of the modeling submitted by Century.

The Department believes the domain of the Century analysis is adequate to determine the maximum concentration of SO<sub>2</sub> expected, because of the following: 1) the large receptor domain (which extended to approximately 10 km from Century); 2) the lack of significant terrain in the area; 3) the relative isolation of Century; 4) the lack of significant contribution to the expected maximum concentration from background sources (which were screened out of being included in the modeling analysis, as described in detail in the Century modeling report); and 5) the pattern of modeled concentrations that showed the maximum being located in close proximity to Century and general trend of decreasing concentrations with increasing distance from Century.

Based on the information submitted by Century and the Department's modeling review, the Department concludes that SO<sub>2</sub> emissions from Century will not cause or contribute to a violation of the 1-hr SO<sub>2</sub> NAAQS.