INTEROFFICE MEMO

Ohio Environmental Protection Agency

To:	Robert Hodanbosi, Chief, DAPC and Michael Hopkins, Assistant Chief, Permitting, DAPC
From:	Christopher Beekman, SIP Section, DAPC
Date:	February 2, 2018
Subject:	Hot-Mix Asphalt Plant Modeling for 1-hour Sulfur Dioxide NAAQS

New or modifying hot-mix asphalt plants seeking to utilize No. 4 fuel oil, No. 6 fuel oil, and/or on-spec used oil as a fuel source, and/or seeking to utilize slag aggregate as part of their raw material mix will be required to demonstrate via dispersion modeling that the 2010 1-hour sulfur dioxide (SO2) National Ambient Air Quality Standard (NAAQS) is not threatened. Division of Air Pollution Control staff have developed a three-step methodology for this demonstration, as follows:

Step 1: Model Maximum Hourly Emission Rate

The maximum hourly SO2 emission rate shall be modeled and compared to the 1-hour SO2 NAAQS of 196.2 $\mu g/m^3$ (75 ppb), including background. Central Office modeling staff should be consulted to determine an appropriate background value prior to modeling. Modeling of this nature requires the use of the most recent version of U.S. EPA's regulatory default refined dispersion model, AERMOD. In addition to the standard AERMOD outputs, the AERMOD OU pathway should be configured to generate an SO2 MAXIFILE output for a 1-hour averaging period for source-group ALL. The threshold should be set to the value of the standard, 196.2 $\mu g/m^3$, less background. This output generates the data necessary for Ohio EPA to conduct a frequency analysis, if needed. Details on configuring AERMOD to generate the MAXIFILE can be found in the AERMOD User's Guide. If compliance with the NAAQS is demonstrated, then no further modeling or analysis is required. The modeling results shall be submitted with the permit application. If compliance cannot be demonstrated, then further modeling and/or analysis is necessary.

Step 2: Visual Presentation of Step 1 Model Results

If compliance cannot be demonstrated in Step 1, then it is necessary to evaluate the extent, magnitude, and frequency of the modeled exceedances. Note that Step 2 is simply a visual presentation of the Step 1 results. The applicant shall generate an aerial/satellite map of the facility including nearby facilities, buildings, and residences, the facility fenceline, and all receptors exceeding the standard including background. Upon completion of Step 2, Central Office modeling staff should be contacted and provided with all results and modeling input and output files. The modeling staff shall review the resulting model to determine if the modeling was performed correctly. They will then provide the resulting maps to the Permitting Section for review. The Permitting Section shall review the maps and frequency data to determine if (a) it is acceptable to move on to Step 3, (b) if it is not acceptable to move onto Step 3, or, if the decision should be elevated to the Division of Air Pollution Control (DAPC) Chief. The decision to allow the facility to proceed to Step 3 modeling will be made based on these data on a case-by-case basis.

Step 3: Annualized Emissions Modeling

If the modeling results of Steps 1 and 2 are approved, a second modeling analysis shall be conducted, using annualized emissions. Maximum hourly emission rates for SO2 used in the modeling shall be annualized using the method described in the March 1, 2011 U.S. EPA guidance document entitled *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO2 National Ambient Air Quality Standard* and in consultation with Central Office modeling staff. As with Step 2, this modeling should be conducted using the AERMOD modeling system. Compliance is demonstrated by comparing the high-first-high 1-hour concentration across five years, with no averaging, to the Generally Acceptable Incremental Impact for 1-hour SO2 given in Table 3 of Ohio Engineering Guide #69. A background concentration should not be considered in this step.

The results of this modeling shall be submitted to the Central Office modeling staff for review. The District Office/Local Air Agency (DO/LAA) permit writer shall confirm with the modeling staff that the modeling passes prior to signing off on the permit recommendation.