AERMOD/AERSCREEN Questions for EPA Region I and II (December 20, 2005)

Policy Questions

1. What types of applications will require the use of AERMOD after December 9, 2006. PSD source permits? Major sources of NAAQS to be constructed or modified in attainment and non-attainment areas? Minor sources?

Response 1. AERMOD will replace ISC3 in 40 CFR Part 51 Appendix W (and Appendix A of Appendix W). Therefore, any application that previously used ISC3 under Appendix W will now use AERMOD. Note, AERMOD is an all terrain model so the complex terrain screening algorithm often used in conjunction with ISC3, such as Complex I, will also be replaced. CTDM+ and CTSCREEN remain in Appendix W.

2. Can modeling applications for minor source permits of NAAQS pollutants continue to use ISC3 and/or SCREEN3 after December 9, 2006?   What about minor sources of air toxic pollutants?

Response 2. After December 9, 2006, ISC3 will an alternative model under Appendix W so its use for the minor source permits and air toxics applications is permissible. SCREEN3 is still referenced in the AERMOD preamble language as a screening model but will be ultimately replaced by AERSCREEN (An alpha version is currently under review by RO modelers)

3. In a multi-source analysis, how should a source (not the applicant source, but one that may exist in the area of interest) be handled if they have already previously demonstrated compliance with ISC, but are now shown to cause or contribute to a violation in AERMOD?

Response 3. EPA will consider such situations on a case by case basis, if necessary. However, please note that the transition from ISC to AERMOD is no different than the previous transitions to newer versions of ISC under Appendix W. In addition, please consider that AERMOD tends to predict lower concentrations than ISC at least on a short term basis so this scenario is not a given outcome with respect to these models.

AERMOD Guidance

1. What type of terrain data and land use will be recommended for AERMOD applications?   Will EPA provide a web page and provide user guidance for downloading terrain elevation data and land use data?

Response 1. Regarding terrain data, EPA is recommending that 7.5 minute DEM data be used. EPA does not have any plans on providing this data directly. However, several commercial vendors provide this data (some for free). Regarding land use data, USGS land use data is acceptable. Guidance is available in the AERMAP User's Guide available on SCRAM. This may be done manually; however, EPA is working to complete the development of a non-regulatory tool, AERSURFACE, which facilitates the process of selecting land use. It is expected to be completed later this year and will be posted on SCRAM

when finalized. In addition, other States are or have developed automated land use models using GIS products (e.g., Iowa).

We recognize and understand that selecting land use categories is an important consideration when applying AERMOD and we have documented the sensitivity of the model to surface characteristics (See SCRAM for 2005 and 2006 R/S/L workshop presentations). As a result, there is some guidance available in the September 2005 Implementation Guide on SCRAM. In light of these documented sensitivities, these tools and related guidance are not substitutes for users/applicants to fully understand and justify the application of the surface characteristics in AERMOD.

2. If surface wind data from a representative NWS station is to be employed, should land use data at the same NWS station also be used when running AERMET, even if land use is significantly [different] at the location of the source to be modeled?

Response 2. Guidance on this is provided in the AERMOD Implementation Guide. In short, if there is a large difference in land use between the met tower and the source, then the met tower is not representative of the source. Please refer to Al Cimorelli's presentation at the 2006 R/S/L workshop for more details on this issue.

3. Will guidance be forthcoming regarding receptor spacing in AERMOD? With near-wake impacts being calculated with the PRIME algorithm, a receptor spacing such as 10m or 20m may be needed near buildings.

Response 3. Consideration on receptor spacing is no different with AERMOD than with ISC3. SCREEN3 automates this step but both AERMOD and AERSCREEN allow for manual entry.

4. AERMAP uses a 2-dimensional distance weighted interpolation to determine receptor elevations. Is this acceptable given current EPA guidance requiring the highest elevation within a representative area (i.e. maximum elevation in a grid square) to be employed?

Response 4. For background here, AERMAP selects the closest node elevation in each quadrant with respect to the receptor or source. Then, the program weights the elevation with respect to the distance from the receptor or source. The closer the elevation, the more weight it is given.

COMMENT: NOT SURE WHAT IS MEANT BY "ACCEPTABLE" HERE?

5. Will there be further guidance regarding the extent of the domain in AERMAP?

Response 5: The domain limiting issue was resolved in the 02222 version at the same time PRIME was included. If the question is referring to the UTM boundary zone, this too is resolved and can be found in the current AERMAP documentation on SCRAM.

6. How much flexibility do states have to modify the land use tables contained in the AERMET User's Guide (Tables 4-1 to 4-3)?

Response 6. The Tables in the user's guides are only "guides" and should not be viewed so strictly. The best technical judgment to the surface characteristics should always be used even with the future availability of AERSURFACE and other existing tools, tables, etc.

AERSCREEN Guidance

1. When will a guideline AERSCREEN model be available?

Response 1: An alpha version of AERSCREEN has been released to the ROs for review.   After addressing the comments from the ROs, we hope to release a final version of AERSCREEN by late summer.

2. Will a user guide also be provided, including recommended 3 hour, 24 hour, seasonal and annual scaling factors?

Response 2: Yes, and the scaling factors will be provided for 3-, 8-, 24-hr, and annual concentrations.

3. How will local terrain data and land use data be obtained and used in AERSCREEN?

Response 3: Surface characteristics are input into the model. These values can be derived from any available land use data.   For terrain, the AERSCREEN program calls AERMAP. Follow procedures that are pertinent to AERMAP.   The interactive version of AERSCREEN uses only the USGS data for terrain.

4. Can data sets other than from USGS be used in AERSCREEN (for example using a data set developed by a University)?

Response 4:   AERSCREEN calls AERMAP and whatever is acceptable for AERMAP is acceptable by AERSCREEN.   See response to question #3 above.

5. Assuming AERSCREEN is available after December 9, 2006, can AERSCREEN be used instead of AERMOD to demonstrate compliance with NAAQS?

Response 5: Yes, however AERSCREEN is a screening model and is not appropriate for multiple sources.

6. What would an acceptable AERSCREEN compliance demonstration consist of?

Response 6:   "Acceptable" would be determined through consultation with appropriate Regional Office.