

January 16, 1996

MEMORANDUM

SUBJECT: Options for Modifying ISC3

FROM: Joseph A. Tikvart, Chief
Air Quality Modeling Group, MD-14

TO: Regional Modeling Contacts, Regions I-X

Recently Rob Wilson brought to our attention an issue concerning the application of ISC3 in complex terrain when one is attempting to predict air quality impacts resulting from emission reduction credits. As currently configured, ISC3 implements the intermediate terrain policy whereby model predictions are done using both ISC3 and COMPLEXI for the intermediate terrain receptors. Because COMPLEXI is a screening model, this model would tend toward more conservative predictions for the intermediate terrain area. When one is using the model for emission reduction credits, these conservative predictions may result in nonconservative emission reduction credits.

We addressed this issue in a ~~November 6, 1992~~ Clearinghouse memo to Region I. In that memo, our position was that predictions from a screening model such as COMPLEXI for intermediate terrain and complex terrain receptors should not be used to estimate emission reduction credits. Thus, there is the potential for application of ISC3 that is inconsistent with our stated position for these cases.

In his memo (enclosed), Rob Wilson provided coding changes to ISC3 that would result in the application of ISC3 consistent with the November 6, 1992 position. Rob recommended that these changes be implemented. We identified several options whereby the recommended changes could be implemented. These are:

1. Make the necessary changes to ISC3. This would result in the generation of a new version of the model. Also, it may be several months until the necessary changes could be made to the algorithm, quality-assured and uploaded to SCRAM using in-house resources.
2. Provide the code changes indicated in Rob's memo on the SCRAM BBS Topics for Review/Comment area. Thus, those wishing to do so could insert these code changes in their current ISC3 code.
3. Provide a simpler fix to ISC3 whereby the COMPLEXI algorithm is "locked out" of the concentration calculations whenever negative emission rates are input to the model. This

would eliminate all COMPLEXI concentration calculations for all receptors above stack height.

4. Provide a message in the ISC3 README.TXT file on the SCRAM BBS warning modelers not to use ISC3 with negative emission rates when there are receptors above stack height.

There might be other options. We would like your comments on this issue and the options listed. We request that you forward any comments to us through e-mail and that you also e-mail your comments to the other Regional Office Modeling Contacts. This way everyone has access to each comment and can respond accordingly. We plan to have a conference call on Wednesday, January 24, 1996 from 11:00 a.m. to 12 noon EST to discuss the comments and reach a consensus on the appropriate action. The call-in number is 919541-1590. Note that the November 6, 1992 memo is available through the Model Clearinghouse area on the SCRAM BBS should you desire a more in-depth discussion of this issue.

There is another related issue concerning ISC3. This involves the application of ISC3 in an urban mode and complex terrain. The current version of ISC3 is configured such that one could apply ISC3 in urban mode and, for the intermediate and complex terrain receptors, ISC3 and COMPLEXI calculations would be made for those receptors. This also is inconsistent with our modeling guidance whereby we recommend the SHORTZ/LONGZ models for urban, complex terrain applications. Thus, we suggest providing a message in the ISC3 README.TXT file warning users about this potential inconsistency in our guidance.

Again, we would appreciate your comments on this issue through e-mail and, as above, e-mail your comments to all Regional Modeling Contacts. We plan to discuss this issue also during our January 24 conference call. Note that Rob Wilson's comments on these issues are contained in the enclosed file. If you have any questions please contact Dennis Doll at (919) 541-5693 or Dean Wilson at (919) 541-0288.

cc:

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Attachments