30 November 1995

Reply To
Attn Of: ES-097

MEMORANDUM

SUBJECT: Estimating Air Quality Credits with ISC3
           in Complex Terrain

FROM: Robert B. Wilson
           Regional Meteorologist

TO: Joseph A. Tikvart, Chief
           Air Quality Modeling Group, OAQPS (MD-14)

     In a Model Clearinghouse memo dated November 6, 1992, from
Dean A. Wilson of your staff to Brian Hennessey in Region I, a
precedent was established for estimating modeled air quality
credits in complex terrain. The current version of the
Industrial Source Complex model (ISCST3) is not capable of
implementing the precedent established in that memo.

     When a source decreases its emissions, or shuts down, an air
quality credit is potentially created. The ISCST model can be
employed, by inputting negative emission rates for emissions
decreases, to estimate air quality credits in simple terrain. In
complex terrain, however, the above-mentioned memo established
the precedent that screening models, such as, Complex I, could
not be used with negative emission rates to estimate air quality
credits. Because of their conservatism, the complex terrain
screening models would tend to over-estimate the amount of air
quality credit. As a result, the memo states ±there is really no
other choice than to allow no credit for emission reductions from
sources impacting on complex terrain.± I agree with this
position.

     With the advent of version 3, the ISCST3 model can now
estimate impacts in complex terrain. When negative emission
rates are input to ISCST3, it estimates air quality credits in
complex terrain using the Complex I algorithms. This may tend to
over-estimate the magnitude of air quality reductions, and is
inconsistent with the Model Clearinghouse precedent.

     In working with a PSD applicant in Alaska recently, this

issue arose. The consultant for the applicant made modifications to the ISCST3 model to cause it to estimate air quality credits in complex terrain consistent with the 11/6/92 Model Clearinghouse precedent. A copy of these code modifications is attached. The modified ISCST3 code was used in the multi-source, complex terrain PSD increment analysis, with sources both increasing and decreasing emissions.

I recommend that you consider making the ISCST3 model capable of estimating air quality credits in complex terrain consistent with the Model Clearinghouse precedent. If you choose to modify ISCST3 for this purpose, I suggest that rather than just including the attached code changes, you install a switch to allow user control of how air quality credits are estimated. The default should be consistent with the Clearinghouse precedent.

Please let me know of your plans to deal with this matter.

Attachment

cc: J. Irwin, OAQPS
      D. Doll, OAQPS
      J. Anderson, Alaska DEC
      M. Podrez, RTP Environmental Associates