UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

11 JUL 1993

MEMORANDUM

SUBJECT: Stack-Structure Relationships--Further clarification of our memoranda dated May 11, 1988 and June 28, 1989

FROM: Russell F. Lee, Meteorologist
Techniques Evaluation Section, SRAB (MD-14)

To: Richard Daye, Regional Meteorologist
Region VII

It has come to our attention that, if the suggestions provided in the Model Clearinghouse memoranda to you of May 11, 1988 and June 28, 1989, are followed mechanically, they can sometimes result in downwash calculations being made for a Good Engineering Practice (GEP) stack. This, of course, is in conflict with the definition of GEP stack height. It could also result in unnecessarily restrictive emission limits being required of the source.

It was never our intention to suggest modeling a GEP stack as though downwash were occurring. The purpose of this memorandum is to suggest a procedure to avoid this problem in future cases where the approach described in the Clearinghouse memoranda, or a similar approach, is being used. The problem may have occurred in the case addressed in our original memoranda. However, we do not believe that there is sufficient likelihood of significant error to justify re-evaluating the modeling for that case.

The problem can occur only for a tall building (i.e., a building whose height is greater than its projected width for at least some directions). The GEP stack height is a function of the projected building height and the projected building width, which varies by wind direction. The maximum GEP height is determined only from those circumstances when the wind crosses the building blowing to or from the stack. For circumstances when the wind does not cross the building, but the stack is close to the building (as described in my Clearinghouse memoranda), the projected building dimensions provided to Industrial Source Complex (ISC2) should be restricted to be no greater than that used in defining the maximum GEP height. Otherwise, ISC2 may calculate downwash from a stack that meets GEP, as if it did not meet GEP criteria.

It is our intention to include this approach in the development of a building orientation preprocessor that is currently being prepared by this Branch. The Regional Modeling Contacts will be given an opportunity to review that preprocessor when it is completed.

cc: D. Atkinson
P. Eckhoff
J. Irwin
D. Wilson
Regional Modeling Contacts, Regions I - VI, VIII - X (with copy of list of FY-93 Clearinghouse memoranda)

FY-93 MODEL CLEARINGHOUSE MEMORANDA (Cont'd)

Date	Region	Subject
3/2/93	VIII	E. Helena Lead SIP Attainment Demonstration
3/30/93	V	Nonmethane Organic Compound (NMOC) and Nitrogen Oxides (NO_x) Monitoring Required for the Empirical Kinetics Modeling Approach (EKMA) for Nonattainment Areas in Ohio
4/5/93	V	Nonmethane Organic Compounds (NMOC) and Nitrogen Oxides (NOx) Monitoring Required for the Empirical Kinetics Modeling Approach (EKMA) for Nonattainment Areas in Ohio
5/18/93	VI	Technical Comparison Document--Phelps Dodge Smelter
6/7/93	VII	Wind Field Development for the Urban Airshed Model (UAM)
6/10/93	V	Draft Protocol for Modeling a Sewage Sludge Incinerator
6/22/93	II	Proposal for Calculating Plume Rise for Stacks with Horizontal Releases or Rain Caps for Cookson Pigment, Newark, New Jersey
6/28/93	VII	Stack-Structure Relationships--Further clarification of our memoranda dated May 11, 1988 and June 28, 1989