



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6

1445 ROSS AVENUE, SUITE 1200

DALLAS, TEXAS 75202

June 28, 1989

REPLY TO: 6T-AN

MEMORANDUM

SUBJECT: Request for Support in Evaluating Meteorological Data Bases

FROM: William B. Hathaway  
Director  
Air, Pesticides & Toxics Division (6T)

TO: William Laxton  
Director  
Technical Support Division (MD-14)

At a recent Region 6 - Texas Air Control Board (TACB) meeting in Dallas, TACB managers expressed a continuing concern about the lack of a consistent, explicit EPA policy in dealing with modeling results associated with what TACB believes are erroneously low meteorological mixing heights derived from the standard Holzworth algorithm for mixing height calculation.

I understand that the only EPA policy in such matters is a generic admonition to check the meteorological conditions associated with the modeled, design concentrations. I know of no specific EPA criteria for rejecting a modeled concentration due to erroneously low mixing heights.

I do not want OAQPS to rigidly limit Regional modeling flexibility, but it seems to me that this is a straightforward issue for which guidance is needed. Until recently, in the absence of EPA guidance, TACB was rejecting modeled concentrations due to mixing heights lower than 30 meters or lower than 10 meters above any modeled stack top. We believed that this rejection philosophy was too liberal and asked TACB to halt such a policy for federally regulated modeling. My staff informally asked Joe Tikvart's Branch to evaluate some Texas meteorological data sets to determine the difference such low mixing heights make in modeling. Joe's staff did some initial analyses using a Louisiana data base but modeled a "generic source" whose lowest stacks are 35 meters. These results were very briefly presented at the Seattle Modelers' meeting in May. As Jim Yarbrough of my staff pointed out then, the evaluations should be done with much shorter stacks to properly ascertain the effects that TACB has noted. Further, OAQPS should realize that, although the number of hours "overpredicted" by using an unaltered mixing height data base may be small compared with the number of hours in a year, we are in the business of controlling emissions based upon a very few number of modeled hours (i.e., typically the highest second high concentration over a five year period for PSD). A very small number of "overpredicted" hours in a year can make a big difference in EPA-suggested industrial controls.

I would appreciate it if your staff could find time to perform the following services in this matter:

- (1) make modeling runs using the attached 1982 meteorological data base for Houston (Houston-Hobby surface, Lake Charles upper air)(TACB can supply this on tape to OAQPS) for a generic source with very low stack heights (e.g., 3 meters, 5 meters, 10 meters, and 20 meters -- typical of some petrochemical facilities), noting (A) predicted concentrations using the original, unaltered meteorological data base for Houston for 1982, (B) noting the design concentrations with deletions for mixing heights meeting the above TACB rejection criteria, and (C) noting design concentrations with deletions for mixing heights below 10 meters. The critical concentrations for this one year period should be the highest and second highest 3-hour and 24-hour concentrations.
- (2) provide Region 6 with an OAQPS position on the likelihood that mixing heights (A) below 30 meters, (B) below 10 meters, and (C) of 0 meters actually occur in nature in (a) rural areas and (b) urban areas.
- (3) depending upon the outcome of (1) and (2), develop a refined OAQPS position as to whether (a) further modeling evaluations are necessary, (b) a policy change is indicated or (c) a policy change is not indicated.

I also include for your information an evaluation of the effects of the TACB mixing height criteria (which are still used for State permitting) on State ambient levels (including health effects screening levels). Although these levels do not relate to EPA regulations, I believe that these examples emphasize the need for EPA to recommend some explicit mixing height guidance.

Thank you for your staff's work on this matter to date. I would appreciate hearing from you at your earliest convenience about my request. Staff questions and comments should be directed to Jim Yarbrough. Thank you.

#### Attachments

cc: Joe Tikvart (MD-14)  
John Hepola (6T-E)  
John Irwin (MD-80)  
Roger Brode (MD-14)  
Dean Wilson (MD-14)