

07-1493  
PDR



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
ENVIRONMENTAL RESEARCH LABORATORIES

Post Office Drawer E  
Oak Ridge, Tennessee 37830

August 30, 1982 RF/326

Mr. Sae Duraiswamy  
Senior Staff Engineer  
Advisory Committee on Reactor Safeguards  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555

Dear Mr. Duraiswamy:

The following are my comments, as requested on August 17, 1982, on the proposed Revision 2 to Regulatory Guide 1.145. My comments are mostly editorial in nature, with the exception of (i) and (ii), which are technical. I am pretty well satisfied with the technical accuracy of the proposed Revision, with the possible exception of these two issues.

- (1) p.1.145-4, lines 15-16. The method continues the use of temperature gradient as the main stability indicator; Drs. Frank Gifford and Paul MacCready took issue with this at the November 2, 1977 meeting on this revision, and the controversy is still continuing. Our problem is that  $\Delta T$  (or  $\Delta T/\Delta Z$ ) is not always a good indicator of lateral dispersion. However, the staff's following sentences do allow the option of using site-specific diffusion test results, so I am willing to accept the method for now. But I believe the NRC staff should reconsider this procedure in the light of the past decade's research and field test results.
- (2) p. 1.145-7, lines 29-30; p.1.145-8, lines 1-4. The text does not make it clear (although the Appendix does) that the procedure described is to be applied at each distance of interest, and not just at some arbitrary single point. A sentence clarifying this should be inserted just before the last sentence of the paragraph.
- (3) p.1.145-9, equation (5). The subscript on the wind speed symbol should be corrected; compare to line 15 on same page.
- (4) p.1.145-9, line 15. The phrase " $h_e$  layer of depth  $h_e$ " should be changed to read "fumigation layer of depth  $h_e$ ."
- (5) p.1.145-7, line 9. I object on general principles to describing calculated values of  $\chi/Q$  as "data points." Call them "computed values" or "computed points" or something similar; "data" always suggests something measured, rather than calculated.

B207180082

- (6) p.l.145-11, line 9. Change "from each" to "for each," to indicate that there will be a set of 16 such values.
- (7) p.l.145-11, line 17. Insert "fumigation" between the words "sector" and " $\chi/Q$ 's."
- (8) p.l.145-12, line 5. "3200 meters" must be a conversion from the English 2 miles, but seems unnecessarily precise. Why not "3 km" or "3.5 km"?
- (9) p.l.145-12, line 18. Delete the comma after " $\chi/Q$ ."
- (10) p.l.145-12, line 20. Insert a comma after "values."
- (11) p.l.145-14, line 26. Is "4-hour" correct, rather than "2-hour"? If so, offer some justification.
- (12) p.l.145-15, lines 11-12. The  $\chi/Q$  value selected is not "the dispersion condition indicative of the type of release being considered"; rather, it is a consequence of that dispersion condition. This phrase should be reworded, or even dropped.
- (13) p.l.145-15, lines 14-15. Change "the appropriate time periods" to "intermediate time periods."
- (14) Appendix A. The Appendix is clearly written and I have no real quarrel with its technical content. I do take issue with its method of presenting technical results. I believe the NRC should encourage it to publish papers in the reviewed technical literature describing the bases for bounding procedures such as those described here. It is difficult to either endorse or reject an estimation method without seeing a detailed discussion of its foundation.

Remarks on resolution of public comments. I have listed these in the order encountered in the description prepared by the NRC staff.

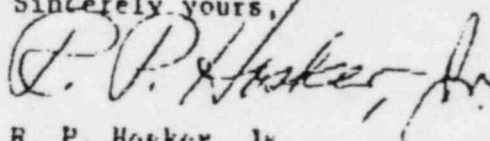
Comment 6.1 A request for methods to deal with wet deposition and complex terrain. Staff response is that these topics are beyond the scope of the Guide. I am not convinced that this should be the case; these are both important areas that can strongly affect  $\chi/Q$  estimates. However, they are also topics of current research, and it may not be possible to say much in an authoritative way at this time. I recommend that the staff aim toward incorporating such information in the next revision of the Guide.

Comment 6.3 Asks for basis of setting wind speed during calms equal to higher of instrument starting speeds. As far as I can tell, the staff did not respond to this query. See also the discussion of Comment 5.1, below.

- Comment 9.7 Requests some justification for using a 4-hour fumigation period (rather than 2 hours) at coastal reactor sites. The staff has not done this. I also raised this point in my comment (11), above; if the Guide is correct, a reference or justification should be provided.
- Comment 5.1 Points out conflicting definitions of calms in Regulatory Guides 1.111 and 1.145. The staff's response is that this apparent conflict is deliberate, and is rooted in the different purposes of the two Guides. My sympathy is with the commenter, especially since both definitions are quite artificial. The staff should rethink this, and try to resolve the conflict. It seems needlessly confusing to change definitions from one document to another.
- Comments 2.1, 4.4, 5.3 These are directed at the method of selecting the bounding values of  $\chi/Q$  and the method of time interpolation. The staff really has not answered these questions at all; they have merely responded that there may be other ways to skin these cats. I would like to see a more rigorous (and vigorous) defense of the method recommended.
- Comment 3.1 Asks for guidance in determining site boundary distance over large bodies of water. The staff seems to be saying that this is a decision beyond the scope of the Guide. This is probably true, but the staff could be a bit more helpful by suggesting a reference for guidance.
- Comment 3.4 Asks that algorithms for the dispersion sigmas be included in the Guide. I agree with the staff that these are available elsewhere, but the staff again could be helpful and include a sample reference in the Guide.
- \*Comment 6.5 Asks about supporting technical information for the Guide (see also my comment 14, above). I think this is a legitimate question; NUREG/CR-2269 should be referenced in the Guide, either in the Introduction or in the Appendix.

I hope you find the above remarks helpful. If you have any questions, please don't hesitate to call (FTS 626-1246).

Sincerely yours,



R. P. Hosker, Jr.  
Physical Scientist  
Atmospheric Turbulence  
and Diffusion Laboratory