

**ADVISORY COMMITTEE ON REACTOR SAFEGUARDS**  
**UNITED STATES ATOMIC ENERGY COMMISSION**  
 WASHINGTON 25, D. C.

MEMORANDUM TO FILE

*J. B. Graham*

January 16, 1962

FROM: J. B. Graham, Executive Secretary, ACRS

SUBJECT: MEETING OF ENVIRONMENTAL SUBCOMMITTEE WITH AEC STAFF  
 HELD ON JANUARY 8, 1962

On January 8, 1962 a meeting of the Environmental Subcommittee and representatives of the Regulatory Staff was held in the "H" Street Building. The following were in attendance:

ACRS

J. C. Geyer, Chairman  
 F. A. Gifford  
 C. R. Williams  
 J. B. Graham, Staff  
 R. F. Fraley, Staff

AEC

C. K. Beck  
 J. J. DiNunno  
 F. D. Anderson  
 R. E. Baker  
 R. L. Waterfield

The meeting began at 11:30 A.M. Dr. Beck reviewed briefly the changes planned for the revised Part 100. These include coverage of the multiple reactor site problem, especially as it relates to a smaller reactor located just within the exclusion area for a large reactor. The significant problem in this part is the nature of the wording which accompanies the 25r - 300 rem dosage values. Dr. Beck reported that Dr. Western suggested that reference to NBS Handbook 59 concerning the value 25r should include the remark "although numerically the same [25r in Part 100 and 25r in the handbook] these values do not relate to the same problem". Dr. Western again emphasized that these are not "acceptable" doses.

Dr. Beck has discussed the basic revisions to Part 100 with members of the nuclear community at the Fall ANS Meeting in Chicago and during a recent visit to Tokyo. He has the impression that the principal difficulties arising during review of the earlier version have been taken care of.

Dr. Geyer observed that there was still some concern about some aspects of the problem which may not have been adequately covered, e.g., fallout, rainout, population center distance (and the man-rem concept).

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Mr. DiNunno stated that his people are actively working on the man-rem concept, trying to discover a practical way to use it. He hopes to publish at some later time an addendum to the TID which would present a calculational approach utilizing this concept.

Mr. DiNunno then summarized changes to the TID. [Revision #4 was furnished to the ACRS by Mr. DiNunno at the outset of the meeting.] The paper has been re-organized so that it reads more easily and the derivations and calculations are presented in a more orderly fashion. The correct energy absorption coefficient is used in the new gamma dose calculation (this reduces the result by a factor of three) but no credit is taken for shielding of the contained fission products (formerly a factor of ten for shielding was allowed).

The group then examined both the old and new versions of the document. No attempt will be made here to list all of the comments and suggestions made since Draft #5 should speak for itself in this regard. Listed below are some of the points which were made.

1. Words such as "evacuation", "fall-out", "catastrophic", etc., should be avoided.
2. A proper statement was suggested of the relationship (in terms of over-estimate or underestimate as a function of distance) between the results obtained using the referenced new atmospheric dispersion calculational method and those obtained by the use of the Sutton formula.
3. It was recommended that the sigma terms in the atmospheric dispersion formula be properly defined.
4. It was urged that the document express the view that the technique set forth was not a method of hazards evaluation but only a method of comparing reactor sites.
5. It was suggested that consideration be given to using a more accurate means of calculating the gamma source term, e.g., since there are only about a dozen nuclides involved (gamma emitting isotopes of krypton, xenon and iodine) they can be treated individually and the characteristics of this specific mixture obtained in a precise manner.

6. Care was urged that notice be taken of the proper use of the terms roentgen, rad, rem, etc.

7. In several places one could not be sure whether fractional release of the container volume or percent release was intended - this is to be corrected.

8. There was discussion of the breathing rates assumed in the calculation of iodine dose to the thyroid.

9. It was pointed out that the coincidence of obtaining about the same results with the TID approach as has been brought about by past siting practice is not "justification" for the method.

#### SUMMARY

Dr. Beck stated that the Staff would prepare Draft #5 of the TID and plan to furnish it to the ACRS office by January 15. Dr. Gifford commented that if time permits the full ACRS should have an opportunity to comment on the final document. Dr. Beck said he felt that this could be done during the February 8-10 meeting and still keep within present scheduling estimates concerning Commission review and publication. In any event the writer is to contact Dr. Geyer when Draft #5 is ready for distribution in order that the cover letter properly states, for the benefit of the full Committee, the manner in which the review by the full ACRS will be conducted.

CC: J. C. Geyer  
F. A. Gifford  
K. R. Osborn  
L. Silverman  
T. J. Thompson  
C. R. Williams