CERTIFIED COPY
DATE ISSUED: July 7, 1992

JOINT ACNW/ACRS WORKING GROUP MEETING SUMMARY MINUTES TO REVIEW SIX REGULATORY GUIDES IMPLEMENTING THE REVISED 10 CFR PART 20
MAY 27, 1992
BETHESDA, MARYLAND

INTRODUCTION

A joint meeting was held between the ACNW Working Group for the Review of Regulatory Guides to Implement 10 CFR Part 20 and the ACRS Subcommittee on Occupational and Environmental Protection on May 27, 1992 in Ballroom VERS-4 of the Holiday Inn of Bethesda, 8120 Wisconsin Avenue, Bethesda, Maryland. The purpose of this joint meeting was to review the NRC Office of Nuclear Regulatory Regulation (RES) staff's revisions of six regulatory guides deemed "especially useful" in the implementation of the revised 10 CFR Part 20. This joint working group had already reviewed draft versions of twelve regulatory guides (RGs) deemed necessary to implement the revised 10 CFR Part 20 during a September 23-24, 1991 meeting. The entire meeting was open to public attendance. The Designated Federal Official for this meeting was Mr. Giorgio N. Gnugnoli. Line editorial comments will not be explicitly addressed in these minutes. For detailed line-by-line editorial suggestions, the reader is directed to the transcript of the meeting, which is available from Ann Riley & Associates, Ltd., 1612 K Street NW, Suite 300, Washington, DC, 20006 (202-293-3950) or from the NRC Public Document Room, Gelman Building, 2120 L Street, NW, Washington DC, 20036. A copy of the annotated agenda is included as Attachment A. Attachment B consists of written comments provided to the RES staff, in addition to the verbal suggestions made during the meeting.

ATTENDEES

ACNW/ACRS	NRC
D. Moeller, ACNW	C. Raddatz, RES
E. Wilkins, ACRS	J. Wigginton, NRR
J. Shapiro, Consultant	B. Morris, RES
D. Underhill, Consultant	C. Haney, NMSS
D. Waite, Consultant	J. Buchanan, NRR
	D. Cool, RES

DESIGNATED ORIGINAL

Certified By EMB

OTHERS

J. Schmitt, NUMARC
A. Cummings, Bechtel
J. Kotsch, SCIENTECH
J. Bland, SCIENTECH/JSB Associates
T. Jentz, NUS
R. Cuff, Weston
C. Jones, NMSS
J. Trefethen, RES
S. Yaniv, RES
A. Roecklein, RES

1. OPENING REMARKS

Dr. Moeller convened the joint meeting at 8:30 a.m. He introduced the joint meeting panel consisting of Drs. Wilkins (Co-Chairman), Shapiro, Underhill, and Waite. He briefly noted that this meeting was a follow-on effort from a joint ACNW/ACRS meeting held on September 23-24, 1991. He indicated that the subject of the meeting was to review six regulatory guides (RGs), revised or developed to implement the provisions of 10 CFR Part 20 (the rule). He described the format of the meeting as consisting of an introductory summary by RES staff, followed by discussions of each RG in sequence. After addressing the rules and provisions required by the Federal Advisory Committee Act, he introduced Dr. D. Cool (RES) for the general introduction to the six subject RGs.

2. RES STAFF OVERVIEW

Dr. Cool indicated that only six of the twelve RGs previously reviewed by the joint working group were being promulgated at this time. These six RGs are:

RG 8.25, Revision 1, "Air Sampling in the Workplace," dated April 23, 1992. Draft.

RG 8.7, Revision 1, "Instructions for Recording and Reporting Occupational Radiation Exposure Data," dated April 10, 1992. Proposed Final.

RG 10.8, Revision 2, "Guide for the Preparation of Applications for Medical Use Programs." Appendix X, "Guidance on Complying With New Part 20 Requirements," dated April 16, 1992. Proposed Final.

RG 8.N.6, "Planned Special Exposures," dated April 1992. Proposed Final.

DG-8010, "Criteria for Monitoring and Methods for Summation of Internal and External Occupational Doses," dated May 18, 1992. Draft.

DG-8011, "Radiation Dose to the Embryo/Fetus," dated May 1992. Draft.

He characterized each of these six RGs as "especially useful," since it either:

a. addressed a new topic or represented a significant modification of the existing RG, or

b. was considered important to the licensees in addressing the rule.

The remaining RGs will be provided to the ACNW/ACRS during the course of the summer. He indicated that RES was seeking review and comments from the Committee to Review Generic Requirements concurrent to the ACNW/ACRS review. This was being done to streamline the publication process. Dr. Cool also described the RES staff efforts to involve industry, licensees, and others in order to prepare for a smooth transition in implementing the rule.

Dr. Moeller suggested some general comments relating to the whole 10 CFR Part 20 guidance effort. These included:

a. The international system of units (SI units) for dosimetric conversions should at least be acknowledged parenthetically, if not exclusively in the guidance.

b. Dosimetric nomenclature from ICRP-60 (absorbed dose, equivalent dose and collective dose) should be used instead of the ICRP-26/30 nomenclature, which relies on the superfluous modifier "equivalent" (e.g., effective dose instead of effective dose equivalent).

c. Replace the term "nonstochastic" by "deterministic."

d. More explicitly indicate whether weighting factors are radiation weighting factors or tissue weighting factors.

e. The RGs should be more explicitly worded in the area of compliance determination. Specifically, the Annual Limit on Intake (ALI) and Derived Air Concentration (DAC) in 10 CFR Part 20 are based on exposure to a single radionuclide. If more than one radionuclide is involved in the possible exposure, a normalized sum of fractions (ratio of measured concentration to Part 20 limit) must be computed for the compliance determination.

Dr. Wilkins cautioned the RES staff to submit the next six RGs in one batch, in order to avoid the unnecessary expense in time and resources required to convene further reviews by the ACNW and ACRS.

Dr. Cool indicated that he would make every effort to accommodate these general comments, except for the use of ICRP-60 terminology over that of ICRP-26/30. The rule utilizes the ICRP-26/30 terminology, and Dr. Cool indicated that it would be improper to implement terminology in the RGs, which is different than that of the rule.

In response to several of the participants' questions and comments, the RES staff indicated that an NRC overall 10 CFR Part 20 technical support guidance document is under development. The RES staff indicated that it was inefficient to duplicate the glossary definitions of terms in each RG. This document will be published in the form of a NUREG, and will be available in addition to the RGs. The joint working group endorsed this approach.

3. RG 8.25, Revision 1, Air Sampling in the Workplace.

C. Trottier (RES) briefly addressed the provisions of this RG.

Points raised during the discussion include:

- The hazard index was deleted; fractions of the Annual Limit on Intake (ALI) or Derived Air Concentration (DAC) are used.
- The RG was reorganized by the types of sampling in a given area, as opposed to areas where given sampling methods are used.
- The RG explicitly acknowledges the focus on noncommercial nuclear power plant facilities; e.g., fuel fabrication facilities.
- Dr. Underhill recommended that the RG should caution licensees that the deposition of airborne contaminants in copper sampling lines and other effects could lead to incorrect measurements.
- Drs. Moeller and Wilkins pointed out that some of the language in the RG encouraged "sloppy" techniques, as opposed to making conservative assumptions.
- Dr. Waite recommended a higher level of statistical rigor, especially regarding the use of "minimum detectable amounts" (MDAs).

- ANSI standards on air sampling are still under development; the RG will be reevaluated when these are published.

Additional written comments on this RG, as well as on the accompanying support document (NUREG-1400), are included in Attachment B.

4. RG 8.7, Revision 1, Instructions for Recording and Reporting Occupational Radiation Exposure Data.

C. Raddatz (RES) summarized this RG. Comments raised during her presentation and the ensuing discussion include:

- New software has been developed to significantly facilitate recording, reporting, analysis and transmission of employee exposure data; this software minimizes the frequency and opportunity for introducing human error. The joint working group strongly endorsed this effort.

- NRC Forms 4 and 5 have been significantly improved.

- Dr. Wilkins raised the issue that, if records for a pregnant worker whose pregnancy does not go to term are not kept, then there might be a question of whether a miscarriage may have been related to occupational exposure.

- Similarly an employer might coerce a worker to seek an abortion in order to permit the worker's exposure time to be increased. RES staff indicated that appropriate language would be inserted into the RG to caution against such practices.

- Dr. Shapiro took issue with the ambiguous definition of the deep dose equivalent in the RG and in the rule. He indicated that this concept is very critical for the use of this guide; the location of the dosimeter could significantly impact the validity of the dose measurement, especially for organ dose.

5. RG 10.8, Revision 2, Guide for the Preparation of Applications for Medical Use Programs, Appendix X, Guidance on Complying With New Part 20 Requirements.

C. Trottier (RES) introduced this RG. Comments made during the presentation and the ensuing discussion include:

- Even though an overall revision of RG 10.8 is planned after the implementation date for the rule, Appendix X was revised to implement Part 20 because most of the affected licensees have small staffs who need guidance as soon as possible.

Dr. Waite indicated that much more guidance should be provided in the RG.

- Many of the public comments addressed the unduly restrictive language; e.g., implications that limiting access to a patient's room would require posting a nurse there.

- Other comments referred to clarifications with respect to monitoring labeled or unlabeled packages.

- Dr. Waite indicated the ambivalence in the RG regarding guidance on meeting ALARA; Nuclear Material Safety and Safeguards (NMSS) staff indicated that this would be remedied in the more complete revision of RG 10.8. ALARA (occupational) guidance is explicitly provided in 10 CFR Part 35.

- Questions were raised regarding the adequacy of the response to comments on problems with disposal in sewers.

- Dr. Moeller pointed out errors in terminology used in the guide; for example, use of "quality factor" instead of "radiation weighting factor."

- The room posting criteria of 30 mCi is being reconsidered by the American College of Nuclear Medicine; recommended guidance is dose-based. This will be addressed in the future revision planned for RG 10.8.

- There were discussions regarding what should be considered radioactive and what should be the designating criteria. U.S. Department of Transportation defines such material, but Dr. Wilkins speculated that the sensitivity of monitoring equipment seemed to influence such criteria more so than did the question of safety or public health.

- There did not appear to be any consensus on whether radioactively contaminated organic waste might be reconcentrated in sewage; e.g., in the sludges. Presently, the RG does not prohibit such releases for reasons of flexibility, but this matter will, most likely, be revisited at a later time.

- Dr. Shapiro pointed out an inconsistency between the RG and the rule. The rule imposes security with respect to storage of radionuclides, not necessarily of the entire laboratory room, as is implied by the RG.

- Dr. Shapiro took issue with the 22 dpm/cm^2 contamination criterion for immediate notification, as being too low.

6. RG 8.N.6 Planned Special Exposures (PSEs)

C. Trottier (RES) observed that this new guide was developed to gather all the rule's requirements in one guidance document. Observations made regarding this RG include:

- This RG provides additional (beyond the rule) guidance in the areas of portioning routine and PSE doses, of exposure to pregnant workers not involving the embryo/fetus, and of prohibition of PSE to minors.

- The immutability of a dose as a PSE, once so designated, was discussed. The rule and the RG do not allow any ex post facto reassignment of a PSE, if in hindsight, it could have been allowed as a routine exposure.

- The RG was unclear in the listing and description of maximum annual and lifetime limits for PSEs. Dr. Wilkins questioned whether the guide specified the numbered options as being conjunctive or disjunctive. The rule specifies these as conjunctive.

- Staff from the Office of Nuclear Reactor Regulation supported the designation of the radiation protection manager, rather than the plant manager, as the PSE authorizing official.

- Dr. Waite questioned the restrictive language regarding whether work during a PSE must be done in one stage versus multi-stage. RES staff will consider additional rationale for such choices.

- Drs. Cool and Wigginton noted that the RG was silent on the situation where the PSE was underestimated; this would constitute a violation and would be handled as an enforcement issue. The RG will be revised to deal with this omission. Additional clarifying discussion of the partitioning of routine exposures and PSEs will also be added.

7. DG-8010, Criteria for Monitoring and Methods for Summation of Internal and External Occupational Doses.

C. Raddatz (RES) presented this RG. Comments raised during her presentation and the ensuing discussion include:

- Conversions between special and SI units are incorrect by a factor of 10 in Table 1.

- Guidance has been added to clarify summation of doses to extremities and determination of the maximally-exposed extremity, as well as other situations where summation is and is not appropriate.

- Calculational flexibility beyond procedures stipulated in EPA Report No. 11 (EPA-520/1-88-020) has been added to the RG.

- There was some concern that the 10% ALI criterion may be below current monitoring detection limits for certain radionuclides and for certain monitoring equipment.

- Dr. Underhill recommended that the DAC, ALI and dose equations be presented, so as to show that all are expressions of the same basic principles. It would simplify the relationship to the eventual risk associated with one or more activities where the risk would need to be evaluated.

- It was pointed out that if a worker shifts activities from a task not requiring monitoring to one that does, then the licensee would need to "estimate" the exposure from the previous activity and add it to the exposure from the monitored activity for the annual estimate.

- The rule does not require reporting/recording of exposure data, if the worker is not likely to exceed the 10% criterion (ALI); even if monitoring was collected for some other reason, those results would not be included in a summation of exposures.

- The RES staff agreed to clarify the confusing text in the RG on whether stochastic/nonstochastic ALIs/DACs are placed in parentheses and when corresponding organs are identified in the tables of the rule.

8. <u>DG-8011, Radiation Dose to the Embryo/Fetus.</u>

S. Yaniv (RES) briefly discussed the salient features of this RG. Observations made during the presentation and the ensuing discussion included:

- The joint working group commended Dr. Yaniv and his associates on the quality of the RG and the pioneering effort represented by its development.

- The bulk of the RG is concerned with the assessment of the dose to the embryo/fetus from internal emitters, both within the mother and the embryo/fetus.

- The dose calculational methods can be characterized as being simple and very conservative.

- Appendix D of the RG consists of actual examples illustrating the use of the RG.

- It was acknowledged that additional research was needed to fill the gaps for those radionuclides not yet incorporated into the tables; NCRP and ICRP guidance may assist in this effort.

- Dr. Shapiro made a general comment that more detail is needed in describing the whole process of embryo development as well as the distribution of dose. He indicated that this was necessary to properly apply the guidance. He further indicated that a simpler terminology was necessary considering the background of the primary users of the RG.

- The dose conversion factors relate to the content of the radionuclides in the mother's blood; for that reason, the total burden or activity in the mother's blood is available for uptake by the embryo/fetus.

- Dr. Shapiro and Dr. Yaniv disagreed over the assumption of zero uptake/dose to the embryo at the beginning of the gestation period. Dr. Yaniv indicated a correlation between the size of the organism and its uptake potential. Dr. Shapiro questioned the consistency of that assumption with that of the fetal dose being a function of the mother's blood burden. The suggestion was made that the RG explicitly discuss the "dose" as an average dose, not particular to an organ.

- Chemical toxicity from radionuclides, especially those with long effective half lives, is not addressed in this RG; Dr. Yaniv speculated that there would be little data available on which to base such estimates.

Drs. Moeller and Wilkins encouraged the RES staff to expedite the completion and publication of these RGs. Dr. Cool indicated that the ACNW and ACRS letters should be addressed to E. Beckjord, Director of RES, because the RGs did not require EDO approval for publication.

Dr. Moeller adjourned the joint meeting at 3:20 p.m..

********** **********

NOTE: [Copies of the transcript taken at this meeting will be available in the NRC Public Document Room, Gelman Building, 2120 L Street, N.W., Washington, D.C. 20036 or Ann Riley & Associates, Ltd., 1612 K Street, N.W., Suite 300, Washington, D.C. 20006 (202 -293-3950).

ATTACHMENT A

ANNOTATED AGENDA OF THE JOINT ACNW/ACRS WORKING GROUP MEETING

UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON NUCLEAR WASTE
WASHINGTON, D.C. 20555

SCHEDULE AND OUTLINE FOR DISCUSSION
JOINT ACNW/ACRS WORKING GROUP MEETING
ON REGULATORY GUIDES TO IMPLEMENT 10 CFR PART 20
MAY 27, 1992
(OPEN MEETING)

May 27, 1992, Ballroom VERS-4, Holiday Inn of Bethesda, 8120 Wisconsin Avenue, Bethesda, Maryland

1) 8:30 - ~~8:50~~ 8:41 a.m. Opening Remarks by Working Group Co-Chairmen (Open) (DWM/JEW/GNG)

2) ~~8:50~~ 8:41 - ~~9:10~~ 9:00 a.m. Introduction and Comments by NRC/RES Staff. (Open) (DWM/JEW/GNG) D. Cool (RES)

3) ~~9:10~~ 9:00 - 9:55 a.m. Regulatory Guide 8.25, Revision 1, Air Sampling in the Working Place (Open) (DWM/GNG) C. Trottier (RES)

~~9:55~~ 10:00 - ~~10:10~~ 10:05 a.m. ******** BREAK ********

4) ~~10:10~~ 10:05 - ~~10:55~~ 11:00 a.m. Instructions for Recording and Reporting Occupational Radiation Exposure Data (Open) (JEW/GNG) C. Raddatz (RES)

5) ~~10:55~~ 11:00 - 11:40 a.m. Preparation of Applications for Medical Use Programs (Open) (DWM/GNG) C. Trottier (RES)

11:44 - 11:46 a.m. ** ** BREAK ** **

6) 11:46 - 12:25 p.m. Planned Special Exposures (Open) (JEW/GNG) C. Trottier (RES)

12:~~25~~ 39 - 1:~~25~~ 3 p.m. ******* LUNCH *******

7) 1:~~25~~ 3 - 2:~~10~~ 56 p.m. Criteria for Monitoring and Methods for Summation of Internal and External Occupational Doses (Open) (DWM/GNG) C. Raddatz (RES)

8) 2:~~10~~ 36 - ~~2:55~~ 3:11 p.m. Radiation Dose to the Embryo/Fetus (Open) (DWM/GNG) S. Yaniv (RES)

~~2:55 - 3:10 p.m. ****** BREAK ******~~

9) 3:~~10~~ 11 - 3:~~55~~ 20 p.m. Followup Discussion (Open) (DWM/JEW/GNG)

10) 3:~~55~~ 20 p.m. ******* ADJOURN *******

[= portion of meeting transcribed

ATTACHMENT B

WRITTEN COMMENTS PROVIDED TO THE NRC STAFF ON SIX REGULATORY GUIDES TO IMPLEMENT 10 CFR PART 20

To: G. N. Gnugnoli May 23, 1992

From: D. A. Orth

NOTES ON REGULATORY GUIDE 8.25, "AIR SAMPLING IN THE WORKPLACE."

General Comment:

RG 8.25 has a few sections that lack real guidance on what is acceptable in air sampling. Presumably, the guide should aid licensees to protect the workers and to satisfy reviewers that the sampling program is adequate; these two points are not identical. Specific sections are commented on below.

Specific Comments:

- A very good discussion of essentially all aspects of air sampling is given in NUREG 1400 and some further emphasis on that document appears warranted. Such modification could be added to the reference to NUREG 1400 given in Section B with statements that implementation of points in 8.25 will be evaluated against the corresponding items in the NUREG.
- The guidance in section 1.7 notes that it might be appropriate to eliminate air sampling for materials that are easily detected by bioassay, materials such as tritium and others. Such materials that are readily assimilated also are likely to be handled in glove boxes, or at the least hoods. The guidance completely misses the point that a primary purpose of sampling in these cases is to detect escape from containment. If the guidance is to stand, it should be restricted to cases with low total material at risk. The case of generally low intake that is cited as a basis does not mean low hazard or low quantities, just good normal containment, which requires continuing surveillance.
- One modification that can be suggested to section 2.1 is to relate the types of operation to the corresponding purposes and types of sampling. In typical glove box operations, sampling is used to detect a breach of containment and not generally to establish dose; this function requires continuous sampling. In hood operations, sampling generally is to alert personnel to changes in the normal ventilation flow that keeps activity within the hoods, and again not generally for dose estimates. Sampling is related to doses primarily in the cases where operations involve dispersible materials in a general working area. A discussion in section 2.1 such as the above should help the licensee to meet that dual purpose of protecting the worker in accordance with Part 20 as well as justify the selected air sampling system to auditors.
- The guidance for annual reviews in Section 6.5 might be qualified further to note that all of the items listed should be considered and summarized on an annual basis but that they do differ in timeliness, with some requiring essentially continuous evaluation. As a specific example, item (3), Trends, must be evaluated constantly to "indicate that confinement of radioactive material remains adequate." Other of the items can be satisfied with only periodic review. Either a general comment on the timeliness issue or specific note that some items such a Trends require frequent review could satisfy this concern.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON NUCLEAR WASTE
WASHINGTON, D.C. 20555

June 1, 1992

MEMORANDUM FOR: Dr. Donald A. Cool, Chief
Radiation Protection & Health Effects Branch
Division of Regulatory Applications, RES

FROM: G. N. Gnugnoli, Senior Staff Scientist
ACNW Support Staff

SUBJECT: ADDITIONAL COMMENTS FOR SIX REGULATORY GUIDES IMPLEMENTING 10 CFR PART 20

Subsequent to our meeting on May 27, 1992, the Advisory Committee on Nuclear Waste (ACNW) staff received comments from Mr. James Carroll of the Advisory Committee on Reactor Safeguards (ACRS) on the subject Regulatory Guides (RGs). Drs. Moeller and Wilkins thought that Mr. Carroll's comments would be of interest to you and your staff (Attachment 1). In his comments, Mr. Carroll raised the question of whether the NRC's Advisory Committee on Medical Applications has been asked to comment on Regulatory Guide (RG) 10.8, Appendix X. If this has not been done, Drs. Moeller and Wilkins suggest that you consider doing so.

As you will note, Mr. Carroll also recommended that Dr. Underhill be invited to review NUREG-1400 (Air Sampling in the Workplace) and to offer comments on it. A copy of Dr. Underhill's comments on this report are attached (Attachment 2).

Attachments:
As stated.

cc: With Attachments:
Dr. J. E. Wilkins, Jr., ACRS
ACNW Members
R. Fraley
R. Savio
G. Quittschreiber
R. Major
S. Duraiswamy
E. Igne
H. Larson
S. Long

5/25/92

To J Ernest Wilkins, Jr

FROM JCC (510) 254-6324

SUBJECT: JCC's Comments on the Six 10 CFR 20 RGs to be Discussed at the Joint ACNW/ACRS Meeting on 5/27/92

As you know, I will not be able to attend Joint ACNW/ACRS Meeting on 5/27/92. Accordingly, I am providing my comments on these RGs for your use during this meeting. I assume that it has been arranged to have NUMARC representatives at the meeting, I recall that they made an extremely positive contribution to our 9/23-24/91 meeting.

RG 8.25, Rev. 1 - Air Sampling (ACNW lead) - The third paragraph of the "Introduction" of this RG states that it does not apply to air sampling programs at "nuclear reactors" (If this means "nuclear power plants and non-power reactors", it should say so. If it means only "nuclear power plants", it should use this terminology instead of "nuclear reactors.") In any case, I support the staff in its exclusion of NPP air sampling programs. Although my somewhat dated expertise on this subject relates to NPP air sampling programs, I did review the RG and the attached "resolution of comments" and have the following comments:

- The last sentence of 1.2 on p. 4 seems to be a non sequitur?
- The second sentence of 1.3 on p. 4 doesn't say what to do about sample exchange period for short lived stuff.

In addition, I briefly reviewed NUREG-1400 (Draft report for comment). It seems to contain a lot of good information, much of which is applicable to NPPs. I believe that the Joint Working Group (or at least our consultant, Dr. Underhill) should review this document in detail upon receipt of the staff's analysis of the comments received on this draft NUREG. I note that there was industry input to this report (see Acknowledgements) and that the appropriate statements are made with respect to its use by the NRC in compliance matters (see Use of NUREG-1400 by Licensees)

RG 8.7, Rev. 1 - Reporting Exposure Data (ACRS lead) - I believe that the comments in ACRS letter of 10/17/91 continue to be appropriate, including our comment that a RG in this area is necessary. There were extensive public comments and it appears that they were dealt with in a very through manner by the staff (This is the best way to get a good final product for a RG of this nature) I was very favorably impressed by the staffer who had the lead on this RG during our 9/23-24/91 meeting; she seemed to know this subject extremely well and it appears that she has done a good job of finalizing this RG

RG 10.8, Appendix X - Medical (ACNW lead) - This is not my field, but I did read the RG and staff response to comments. and nothing jumped out at me. I would ask the staff if they have done a lowest common denominator test; i.e. have they asked several randomly selected, private practice physicians who use radiation and/or radioisotopes in their practice to read the RG and comment on its scrutibility. I don't trust the public comment process as a vehicle to obtain such information from a diverse user community like this one. (JEW - I remember that there is an Advisory Committee on Medical Applications; Dade would know If so, they also should be asked to review this RG.)

RG - 8N6 - Planned Special Exposures (ACRS lead) - I believe that the comments in ACRS letter of 10/17/91 continue to be appropriate, including our comment that a RG in this area is necessary. There were extensive public comments and it appears that they were dealt with in an appropriate manner by the staff. Not withstanding all this, I continue to have concerns about the viability of the concept of Planned Special Exposures; even though it is a part of 10CFR 20.

RG DG-8010 - Criteria for Occupational Doses (ACNW lead) - I read the RG and staff response to comments and nothing jumped out at me.

RG DG-8011 - Embryo/Fetus (ACNW lead) - Again, this is one is a long way from my field. I did look through the RG, the staff response to comments and NUREG/CR-5631 PNL-7445 Rev. 1. I also reread comment 5 of the ACNW letter of 10/23/91 on this subject. My only significant comment is the one I made during our 9/23-24/91 meeting; I continue to be concerned that the NRC may be placing itself and its licensees in serious legal jeopardy by issuing this guidance absent any specific guidance on this subject from NCRP or ICRP. I recognize that guidance is urgently needed in this area. (This RG was high on NUMARC's most wanted list) I would again ask the staff to make sure that OGC understands and is comfortable with the legal ramifications of this RG package. OGC may wish to include some sort of special legal disclaimer with this RG

Page 1.1 Brodsky's number "generally less than" Not strong enough language to support its use.

Page 1.2 Why difference between α and ß surface contamination?

Page 1.6 Q is given in first paragraph, then derived from numbers not given. Numbers to derive "Q" should be given in first paragraph.

Page 1.7 The fact that the Commission recognizes the burden of respirators is excellent.

Page 1.8 Chemical toxicity of unenriched UF_6 is also important and left out of discussion.

page 2.4 Definition of positive displacement pump - "create a vacuum in a vessel" A vacuum or reduced pressure?

Page 2.5 Undocumented reference to "Advanced Systems Technology"

Ibid. Examples are good - I would like to see an attempt to collect as many as possible to serve as a primer.

Page 2.10 "In the laboratory" What about in the field? Airborne concentrations of what?

Page 3.3 In general Eqs. are wrong. Efficiency depends on particle size and this changes as, if as usual with HEPA filters, 99.97% of the aerosol is collected on the first filter, then fraction passing through is far different from fraction passing into filter, and filtration efficiency on next filter is far different.

Page 3.4 Need a () around "100+10+1"

Ibid. As air flow will be measured within ±5%, a 1% error is a meaningless example.

Page 3.5 Replace some of the "He"s with "She"s. Not all HPs are men.

Page 4.4 Are the lower limits puffery or proven? As stated by manufacturers, outside testing laboratories, or calculated from physical principles?

Page 5.1 For rotameter, add reference to Chem Engrs Hdbk. It is not the buoyant force; it is a momentum transfer that is important.

Page 5.3 What about Primary Reference Standard; Calibrated Standard; and Field Standard?

Page 5.4 Error in Wet Test Meter also depends on what part of the cycle is used.

Page 5.6 Suggested correction of error in rotameter reading introduces as much error as it eliminates. See Chem. Enggrs Hdbk.

Definitions:

Alarm set point What about a noble gas detector that merely monitors concentrations?

Critical Flow Orifice - No mention of need for adiabatic sonic flow or of factor of 0.53 in presssure drop..

Dispersion factor is independent of being measured.

Flow rate measurement - Why a filter? What about an impactor?

Gaseous tracers are not aerosols.

Ice Nuclei Particle Tracer - Clouds implies that nuclei are already present

Mass flow meters - Temperature difference is caused by flow.

Worst mistake that I ever heard of regarding air sampling in a nuclear plant was omitted. Should add that cannot use long metal tubing to sample iodines.