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Walter S. Cool, Occupational Health
Standards Branch
Office of Standards Development

ANSI Committee N13

ANSI N721, "Internal Dosimetry
Standards for Tritium"

Dr. John V. Nehemias
Radiological Assessment Branch
Office of Nuclear Reactor Regulation

Health Physics Society
Attn: MaryJo McCarrick, N13 Staff Assistant
4720 Montgomery Lane
Bethesda, Md. 20014

OP-713-4

Gentlemen:

Reference is made to a telephone conversation with Dr. John Poston on March 14, 1979. Dr. Poston indicated that (1) there have been a number of comments on draft ANSI Standard N721 that will require the HPSSC Working Group on N721 to reconsider the draft standard, and (2) the chairman of the Working Group is resigning because of acceptance of a work assignment outside of the United States, and that a new chairman will have to be appointed.

As a result of Dr. Poston's telephone call, Dr. Nehemias and I are not balloting on N721 at this time. We are enclosing a copy of the "Guidelines for Bioassay Requirements for Tritium" that has been used by NRC since October 1977, and a summary of the comments that have been received on the draft N721 from within NRC. We hope that they will be helpful to the working group in their further consideration of draft N721.

Sincerely,

Enclosures;
As stated

Walter S. Cool
Member , N13

Dr. John V. Nehemias
Alternate Member

cc: Dr. A. Brodsky

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COMMENTS ON DRAFT ANSI STANDARD N721

In order to be readily implemented as an NRC Regulatory Guide an ANSI standard must be understandable to all licensees. Many licensees do not have professional health physicists on their staff and lack the sophistication in that field necessary for proper application of the current draft N721.

The dose equivalent of 0.3 rem per calendar quarter selected by ANSI as a lower limit for determining the need for bioassays is too high. This dose equivalent would represent a significant increase over the criterion in the guidelines currently being used by NRC. Selection of 0.3 rems appears to be based on 25% of the external dose limiting standards in 10 CFR Part 20 applicable to whole body. We ~~opinion~~ believe that 10% of the standard, or 0.12 rems per calendar quarter, would be more in keeping with the "as low as is reasonably achievable" (ALARA) concept, and a better goal for evaluating the effectiveness of tritium control procedures. We note that the N721 value of 0.3 rem is exclusive of other internal and external contributions to total dose commitment.

There is confusion about "should" and "shall" especially in Section 5. The document was read initially by one professional health physics staff member who interpreted it to imply that justification for all bioassays could be based on Table 5 or the judgment of the licensee's health physicist. The misinterpretation was clarified after careful re-reading of Section 5, but indicated a potential source of confusion to licensees.

A number of objections to the draft standard are directly related to Table 5. (We don't consider it appropriate to label the first table in a standard as Table 5 just because it falls in Section 5. The same comment applies to Table 10.)

1. Table 5 stipulates only the total amount of tritium which would be handled in a quarter. There should also be guidelines for quantities which would be handled at any one time, i.e., batch size. Table 5 limits allow a large quantity to be handled once or twice in a quarter without a bioassay requirement.
2. The data in Table 5 are difficult to apply in their present form. We recommend using the total "through-put" or total daily activity handled and believe that would be simpler for most licensees.
3. We don't know how "quantity processed" in Table 5 will be interpreted. The term "processed" as used in this context should be precisely defined.
4. There may be some circumstances when use of activity concentration (Ci/kg values in Table 5) is appropriate, but it is not appropriate for most licensees. In order to have it applied correctly, a complete explanation should be included in the text.
5. There is no provision for evaluating the need for a bioassay check for use of quantities less than those in Table 5. Our present guide requires an evaluation of bioassay needs when amounts greater than 0.1 of the tabular values are used. We recommend that the needs should be evaluated at a value far less than the 0.3 rem lower limit used in the ANSI draft. This would be in keeping with the ALARA concept.

On page 18, Table 10, for $H_c > 3$ Rem include action (5) in the summary of actions to be taken so that it reads "Take actions (1), (2), (3), (5) and (6)..."

It is stated that for calculations described in section 9, concentrations measured to be less than 2 uCi/liter may be taken as zero. A urine concentration of 2 uCi/liter indicates a dose commitment of about 200 mrem. This may not be an insignificant exposure for chronic tritium intake. It is suggested that this provision be removed from the standard.

In the last two paragraphs on page 21 "specific activity" and "concentrations of the material" are used as if synonomous. We believe it would be more precise to use "concentrations of the material" in each case.