

**POLICY ISSUE**  
(Notation Vote)

November 26, 2004

SECY-04-0223

FOR: The Commissioners

FROM: Luis A. Reyes  
Executive Director for Operations /RA/

SUBJECT: REQUEST FOR APPROVAL OF STAFF COMMENTS ON THE  
2005 RECOMMENDATIONS OF THE INTERNATIONAL COMMISSION  
ON RADIOLOGICAL PROTECTION

PURPOSE:

To inform the Commission of the staff's review of the draft "2005 Recommendations of the International Commission on Radiological Protection" (ICRP), and to seek the Commission's approval of the staff's plans to send related comments to the ICRP.

BACKGROUND:

The primary mission of the ICRP is to advance the science of radiological protection by providing recommendations and guidance on all aspects of protection against ionizing radiation. The Main Commission of the ICRP regularly examines the status of its recommendations and reviews scientific information to decide whether new recommendations are needed. The ICRP published the last comprehensive revision of its recommendations in 1991 as ICRP Publication 60, "1990 Recommendations of the International Commission on Radiological Protection." Since then, the ICRP has issued 10 publications that provide additional guidance for controlling exposures from radiation sources. The Main Commission of the ICRP believes that a new set of recommendations is warranted because (1) sufficient new scientific data have been produced since 1990, (2) there has been a move to refocus concern for radiation protection from a utilitarian approach (greatest good for the greatest number) to one of concern for the individual, and (3) doing so would allow the ICRP to issue a single publication that consolidates many of the recommendations made since 1990.

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The ICRP has prepared several iterations of conceptual ideas for proposed recommendations. The ICRP posted its latest draft of the consolidated recommendations on its Web site ([www.icrp.org](http://www.icrp.org)) on June 21, 2004, and has requested comments by December 31, 2004. The ICRP will post comments on its Web site as they are received, and will consider the comments in preparing a final draft. The ICRP Main Commission intends to finalize the recommendations by June 2005 and print the new ICRP publication in late 2005 or early 2006.

#### DISCUSSION:

The system of protection recommended by the Main Commission of the ICRP is viewed as a natural evolution, and further clarification, of the 1990 Recommendations. The draft 2005 Recommendations consolidate all of the advice included in and developed since 1990. In particular, recent ICRP publications have recommended new dose assessment methodologies for the human respiratory tract (Publication 66) and alimentary tract (draft for comment), usage of new anatomical and physiological data (Publications 70 and 89), adoption of new radiation weighting factors (Publication 92), and usage of new age-dependent dose conversion coefficients (Publications 67, 69, 71, and 72). Principle features of the draft 2005 ICRP Recommendations also include:

- a discussion of the general system of radiation protection to include the retention of the 1990 dose limits and clarification of the role of optimization in radiation protection,
- the establishment of maximum dose constraints that quantify the most fundamental levels of protection for workers and the public from single sources,
- a discussion of the biological and radiation quantities that are important for assessing radiation protection, including a recommendation to adopt new tissue weighting factors,
- a review of the control of medical exposure to emphasize that patient dose should be commensurate with clinical benefit, and
- a proposal to develop a framework for radiological protection of non-human species

In SECY 04-0055, dated April 7, 2004, the NRC staff proposed a plan for evaluating radiation protection recommendations. As part of its proposal, the staff committed to continue participating in the revision process by providing comments on early draft documents directly to the ICRP. The staff established a Radiation Protection Steering Group, which includes representatives from each NRC program office, to develop a strategy for dealing with the proposed ICRP recommendations. In addition, the steering group provides advice and guidance to the staff for use in identifying issues and impacts associated with proposed changes and in developing a recommended strategy for influencing the on-going debate.

The NRC's Radiation Protection Steering Group solicited comments concerning the ICRP's draft 2005 Recommendations (Attachment 1) from its members' respective offices, as well as the NRC's Advisory Committee on the Medical Uses of Isotopes, the Agreement States, the Organization of Agreement States, and the Conference of Radiation Control Program Directors. In addition, at the suggestion of the ICRP Secretariat, the NRC staff also hosted two workshops at NRC headquarters on September 15, 2004. The first workshop was conducted for members of the Interagency Steering Committee on Radiation Standards (ISCORS), and the second workshop was open to members of the public. The Chairman and Vice-Chairman of the ICRP presented identical overviews of the draft recommendations to both groups, and engaged in an exchange of ideas concerning the draft document.

The NRC staff also participated in a special Advisory Committee on Nuclear Waste (ACNW) working group review of the ICRP recommendations on October 19, 2004. During that meeting, the NRC staff provided an overview of the draft 2005 Recommendations and identified potential impacts that those recommendations might have on 10 CFR Part 20, "Standards for Protection Against Radiation." The ACNW working group subsequently prepared a letter report and forwarded it to the Commission on November 3, 2004. The NRC staff has reviewed the ACNW letter report and incorporated their concerns into the consolidated comments as appropriate.

Considering the above, and prior Commission guidance on ICRP activities, the Radiation Protection Steering Group has prepared a set of consolidated comments (Attachment 2) concerning the draft 2005 Recommendations. The staff has identified several significant issues that should be brought to the attention of the ICRP's Main Commission:

- First, there are a number of instances where the draft 2005 ICRP Recommendations appear to be a "work-in-progress" because at least five major documents that support the technical bases for the recommendations have not been made publically available. Four of the documents will not be available for public review and comment before March 2005. Consequently, a thorough review cannot be completed until the information contained in these documents is made publically available.
- Second, the ICRP recommendations, when finalized, will document an improved understanding of the health effects of ionizing radiation exposure which should improve realism in conducting risk informed regulation. However, the draft recommendations will not substantially improve public health and safety for NRC-licensees. The majority of occupational exposures, as reported in NUREG-0713, are below the suggested constraints and dose limits. Adopting and implementing the 2005 Recommendations may necessitate time-consuming, contentious, and possibly expensive changes to documents prepared by national regulatory authorities and radioactive material licensees with little or no improvement in public health and safety.
- Third, the ICRP proposes a system of protection that consists of multiple tiers of constraints and limits. The relationship between limits and the various meanings of constraints is not adequately described, and in some cases the terms are used inconsistently. This strategy will not simplify the general system of radiological protection. As proposed, adopting a tiered system of maximum constraints which encourages national authorities to set their own source specific constraints does not promote international consistency.
- Fourth, the role of collective dose in the proposed system of radiological protection is unclear. The ICRP observation that collective dose has been inappropriately used to aggregate exposures over time and distance is consistent with NRC views. However, the draft recommendations do not provide adequate guidance on how the concept of collective dose should be applied and under what circumstances it should not be used. Collective dose, when properly constrained to specific time periods, populations, and locations, is a useful regulatory analysis tool. Conversely, collective dose can be misused in certain circumstances and such misapplications should be avoided. Therefore, clarification is needed, both in terms of conceptual considerations as well as in practical implementation.

- Finally, the draft 2005 Recommendations include a section and an annex devoted to the protection of non-human species. The Commission's related views, as articulated in a Staff Requirements Memorandum dated May 13, 2004, in response to SECY-04-0055, are fully reflected in the NRC's comments.

In conclusion, the staff believes that it is unreasonable for the ICRP to finalize its consolidated recommendations in June 2005. Rather, the staff believes that the ICRP should delay finalization until the "foundation" documents have been completed, posted on the ICRP's Web site, and reviewed by the international community. A 2-year delay would afford the ICRP's Radiation Effects Committee the opportunity to review the U.S. National Academies' Biological Effects of Ionizing Radiation report (BEIR VII) on health effects from low-level ionizing radiation to ensure consistency between that report and the ICRP's consolidated recommendations. Similarly, the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) report is expected to provide a comprehensive review of new scientific data on the biological effects of ionizing radiation and this report should be considered by the ICRP before it finalizes its' recommendations.

At the 16<sup>th</sup> Meeting of the IAEA Commission on Safety Standards, November 15-17, 2004, Dr. Lars-Erik Holm, ICRP Vice-Chairman, discussed the current status of the draft 2005 ICRP Recommendations. Dr. Holm acknowledged that radiation risk has not changed since the issuance of ICRP Publication 60, the objective of the new recommendations are simplification and clarification of the recommendations, the "foundation" documents have been delayed and may not be available until Spring 2005, and that ICRP plans to delay issuance of the 2005 Recommendations until 2006 or later. Finally, the ICRP also plans to solicit another round of comments after the draft 2005 Recommendations are revised.

The staff will continue to monitor the ICRP's activities, review documents as they become available, and provide technical advice directly to the various ICRP committees. In addition, various staff representatives will continue participating as members of Expert Groups, sponsored by the Nuclear Energy Agency (NEA), which are also providing comments on the ICRP's draft 2005 Recommendations.

RECOMMENDATION:

The staff recommends that the Commission approve the staff's plans to send its comments (Attachment 2) to the ICRP.

*/RA/*

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- Attachments: 1. 2005 Recommendations of the International Commission on Radiological Protection (Draft for Consultation)  
2. NRC Comments to ICRP on the 2005 Recommendations of the International Commission on Radiological Protection

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