



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON NUCLEAR WASTE AND MATERIALS  
WASHINGTON, D.C. 20555-0001

March 27, 2008

The Honorable Dale E. Klein  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

SUBJECT: REVIEW OF ICRP PUBLICATION 103 – THE 2007 RECOMMENDATIONS OF  
THE INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION  
(ICRP)

Dear Chairman Klein:

During our meeting on February 12–14, 2008, the Advisory Committee on Nuclear Waste and Materials (ACNW&M, or the Committee) discussed ICRP Publication 103 (ICRP, 2007) with the NRC staff. Based on the Committee's review of this final report, our previous written observations and recommendations on earlier drafts (ACNW&M 2006a,b; ACNW&M 2007a,b) are still applicable.

#### **OBSERVATIONS**

1. The NRC staff reported that its editorial and specific comments provided to ICRP led to significant improvements in the text of Publication 103. However, the staff also noted that ICRP continued to rely on unpublished reports and data as a partial basis for Publication 103.
2. Publication 103 describes scenarios in which it is appropriate to use the concept of collective dose, but ICRP did not provide quantitative guidance. For example, collective dose can be applied when planning work scenarios. Those who plan particular work scenarios often select from various approaches to optimize accumulated doses to individuals or small groups of workers.
3. Publication 103 clearly states that collective dose should not be used for risk assessments since there is substantial uncertainty in risk coefficients at low doses. The ICRP rationale for this statement is that there is substantial uncertainty in risk coefficients at low doses and that radiation related detriments are not observable at low doses. Further, the ICRP indicates it is not possible to predict such detriments based on theory and it is not appropriate to use a single risk coefficient for heterogeneous populations over a wide range of doses and dose rates.
4. In response to the publication of the ICRP recommendations, the NRC staff has begun to review NRC's radiation protection standards and guidance and prepare options for the Commission to consider. The staff plans to send an options paper to the Commission in December 2008. The Committee endorses its earlier recommendations for consideration of ICRP's updated radiation and tissue weighting factors, as appropriate (ACNW&M, 2005; 2006b).

It may also be appropriate to consider other changes based on factors such as harmonization of various NRC requirements and guidance and increased international harmonization given the increased globalization of the nuclear industry. The Committee observes that any changes to NRC regulations based on the recommendations in ICRP Report 103 have the potential to impact other federal and Agreement State regulators as well. The staff has stated that it plans to coordinate with other federal agencies through the Interagency Steering Committee on Radiation Standards and with the Agreement States during the options development process. Some of these meetings are expected to be open to the public.

5. ICRP Publication 103 includes a brief chapter titled, "Protection of the Environment." ICRP "...acknowledges that, in contrast to human radiological protection, the objectives of environmental protection are both complex and difficult to articulate." ICRP states that they do not propose to set any form of 'dose limits' with respect to environmental protection. ICRP has published for comment a draft document with data for a set of reference animals and plants to further the dialogue on this issue. Consistent with our previous observations, the Committee emphasizes that it has seen no evidence that the current set of radiation protection controls is not protective of the environment.

## **RECOMMENDATIONS**

1. The Committee recommends that the staff continue to develop options for possible changes in radiation protection regulations and guidance.
2. NRC staff should remain informed of future ICRP work and continue active engagement through participation on ICRP committees.
3. The NRC staff should continue to discourage ICRP from basing its documents and reports in part on incomplete or unpublished reports and data.
4. The Committee continues to recommend that the NRC not support developing separate radiation protection standards for plant and animal species.

The Committee will defer additional comments on the use of collective dose until it has obtained insights from the Working Group on the Effects of Low Radiation Doses – Science and Policy, scheduled for April 2008.

Sincerely,

*/RA/*

Michael T. Ryan  
Chairman

## **REFERENCES**

ACNW&M, 2005. Comments on ICRP Foundation Documents—A Followup to the ACNW November 3, 2004, Comments, Letter to N. Diaz from M. Ryan, July 1, 2005.

ACNW&M, 2006a. Comments on ICRP Draft Document—Scope of Radiation Protection Regulations (Spring 2006 Version), Letter to N. Diaz from M. Ryan, June 8, 2006.

ACNW&M, 2006b. The 2006 Draft Recommendations of the International Commission on Radiological Protection, Letter to D. Klein from M. Ryan, July 18, 2006.

ACNW&M, 2007a. Comments on Draft Recommendations of the International Commission on Radiological Protection, Dated January 12, 2007, Letter to D. Klein from M. Ryan, February 28, 2007.

ACNW&M, 2007b. Engagement with the International Commission on Radiological Protection (ICRP), Letter to D. Klein from M. Ryan, September 25, 2007.

ICRP, 2007. The 2007 Recommendations of the International Commission on Radiological Protection. *Annals of the ICRP*, Volume 37/2-4, Report 103, *Elsevier* (Dec. 2007).

ACNW&M, 2006a. Comments on ICRP Draft Document—Scope of Radiation Protection Regulations (Spring 2006 Version), Letter to N. Diaz from M. Ryan, June 8, 2006.

ACNW&M, 2006b. The 2006 Draft Recommendations of the International Commission on Radiological Protection, Letter to D. Klein from M. Ryan, July 18, 2006.

ACNW&M, 2007a. Comments on Draft Recommendations of the International Commission on Radiological Protection, Dated January 12, 2007, Letter to D. Klein from M. Ryan, February 28, 2007.

ACNW&M, 2007b. Engagement with the International Commission on Radiological Protection (ICRP), Letter to D. Klein from M. Ryan, September 25, 2007.

ICRP, 2007. The 2007 Recommendations of the International Commission on Radiological Protection. Annals of the ICRP, Volume 37/2-4, Report 103, *Elsevier* (Dec. 2007).

<u>Distribution:</u>			
RidsSecyMailCenter	RidsEDOMailCenter	RidsNRROD	
RidsNMSSOD	RidsFSMEOD	RidsOCAMailCenter	
RidsNSIROD	RidsRESOD	RidsNROOD	
RidsOIGMailCenter	RidsOGCMailCenter	RidsASLBPMailCenter	
RidsOCAAMailCenter	RidsOPAMailCenter	RidsRGN1MailCenter	
RidsRGN2MailCenter	RidsRGN3MailCenter	RidsRGN4MailCenter	
BChamp ABates JPerry MLee DWidmayer	CLBrown NColeman YDiaz-Sanabria LHamdan VMurphy	JFlack CJaegers DPelton ADias SChey	SMcKelvin LMike PTressler SJones

ADAMS ML080790301

<b>OFFICE</b>	ACNW&M	SUNSI	ACNW&M	ACNW&M	ACNW&M
<b>NAME</b>	NColeman	NColeman	ADias	FPGillespie	FPG for MTR
<b>DATE</b>	03/27/08	03/27/08	03/27/08	03/27/08	03/27/08

**OFFICIAL RECORD COPY**