

January 16, 2007

MEMORANDUM TO: James E. Dyer, Director
Office of Nuclear Reactor Regulation

R. William Borchardt, Director
Office of New Reactors

Jack R. Strosnider, Director
Office of Nuclear Material Safety and Safeguards

Roy P. Zimmerman, Director
Office of Nuclear Security and Incident Response

Charles L. Miller, Director
Office of Federal and State Materials
and Environmental Management Programs

FROM: Brian W. Sheron, Director */RA/ J. Wiggins for*
Office of Nuclear Regulatory Research

SUBJECT: SUMMARY OF THE 2005 ACTIVITIES OF THE INTERNATIONAL
COMMISSION ON RADIOLOGICAL PROTECTION

Summary:

The U.S. Nuclear Regulatory Commission (NRC) has financially supported the activities of the International Commission on Radiological Protection (ICRP) since the late 1980s. These activities are generally directed toward the development of guidance documents and recommendations for radiation protection. The ICRP documents many of its activities in annual reports, which provide a brief overview of their current and planned activities. Annual reports for 1997 through 2005 are accessible on the ICRP Web site at <http://www.icrp.org>. The 2005 annual report is enclosed for your convenience. The remainder of this memorandum briefly describes the origin and purpose of the ICRP and provides a brief overview of the 2005 annual report.

Background:

The ICRP was established in 1928 to advance the science of radiological protection by providing recommendations and guidance on all aspects of protection against ionizing radiation. The ICRP is currently composed of a Main Commission, Committee 1 (Radiation Effects), Committee 2 (Doses from Radiation Exposure), Committee 3 (Protection in Medicine), Committee 4 (Application of ICRP Recommendations), Committee 5 (Protection of the Environment), and a

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small scientific Secretariat. The ICRP Main Commission consists of 12 members and a Chairman. Originally, the ICRP published its recommendations and advice in various scientific journals in the fields of medicine and physics. In 1959, the ICRP began producing its own series of reports as ICRP Publications. Today, draft reports are placed on the ICRP Web site for stakeholder review and comment before finalization as ICRP Publications.

During calendar year 2005, the ICRP released four major reports. Publication 95, "Doses to Infants from Ingestion of Radionuclides in Mother's Milk," discusses model predictions of fractional transfer of ingested or inhaled activity from breastmilk and the corresponding dose coefficients for infants are compared with dose coefficients for in utero exposure. Publication 96, "Protecting People Against Radiation Exposure in the Event of a Radiological Attack," provides professional advice on measures to be undertaken should a radiological attack occur. Publication 96 mostly addresses attacks involving radiological dispersion devices and is a decision-aiding tool to prepare for the aftermath of a radiological attack. Publication 97, "Prevention of High-dose-rate Brachytherapy Accidents," notes that human error has been the primary cause of more than 500 accidents with high-dose-rate sources. Publication 97 recommends specific procedures, equipment, emergency plans, and security to prevent the loss or theft of sources. Publication 98, "Radiation Safety Aspects of Brachytherapy for Prostate Cancer," discusses a number of radiation safety issues and recommends guidance that should be provided to patients and family members.

Overview of the 2005 Annual Report:

The ICRP Main Commission met twice in 2005 and continued preparing a set of draft fundamental ICRP recommendations, intended to replace the current 1990 recommendations (Publication 60). The ICRP made a draft available for worldwide public consultation in 2004. Approximately 200 respondents submitted more than 600 pages of comments during the 6-month comment period. The NRC staff submitted a set of general and specific comments in January 2005, after Commission review and approval. The ICRP Main Commission also addressed the public comments during the two meetings in 2005.

Although the ICRP was focused on revising its 1990 Recommendations, the various ICRP committees, task groups, and working groups did address other issues in 2005:

- Committee 1 (Radiation Effects) prepared a report (Foundation Document (FD) (FD-C-1)) on the health effects of ionizing radiation. This report supports the development of the next set of ICRP recommendations on radiological protection. FD-C-1 summarizes all post-1990 ICRP judgments relating to the health effects of radiation. FD-C-1 may be published as an appendix to the final recommendations under development.
- Committee 2 (Doses from Radiation Exposures) prepared a report (FD-C-2) on dosimetric quantities used in radiological protection. FC-C-2 may be published as an appendix to the final recommendations. In 2005, Committee 2 developed dosimetry for aircrew exposures; completed a new model of the human alimentary tract to replace the gut model described in ICRP Publication 30, "Limits for Intakes of Radionuclides by Workers"; and published a report on radiological exposure for infants from breastmilk (Publication 95).

- Committee 3 (Protection in Medicine) prepared and published two major reports in 2005, Publications 97 and 98. Future topics for Committee 3 publications include hand exposure while preparing radiopharmaceuticals, radiation protection of cardiologists performing fluoroscopic procedures, and radiation protection issues associated with modern radiotherapy techniques.
- Committee 4 (Application of ICRP Recommendations) is finalizing two reports, “The Optimization of Radiological Protection — Broadening the Process” and “Assessing Dose of the Representative Individual for the Purpose of Radiation Protection of the Public,” to support the new ICRP recommendations. Committee 4 will examine how the new recommendations will apply to the following:
 - populations during nuclear and radiological emergencies,
 - populations living in contaminated areas after a radiological event,
 - naturally occurring radioactive material, and
 - occupational exposures.
- Committee 5 (Protection of the Environment) is developing approaches to environmental protection that are compatible with approaches for the radiological protection of man and for protection of the environment from other potential hazards. Committee 5 is working on three documents:
 - a comprehensive document on reference animals and plants;
 - a review of issues relating to radiation weighting factors, relative biological effectiveness ratios, and other related issues; and
 - a comparison of environmental protection frameworks.

The ICRP Secretariat’s tasks include preparing and organizing meetings, editing final reports, maintaining contacts, and addressing administrative issues. ICRP activities are financed mainly by voluntary contributions from national and international organizations. In 2005, the ICRP received grants in the total amount of \$310,100. NRC contributed \$25,000 toward that amount. In addition, committee member institutions provide support to the ICRP by paying for members’ time and travel costs. Dr. Donald Cool, NRC’s Office of Federal and State Materials and Environmental Management Programs, is a member of Committee 4.

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