

POLICY ISSUE INFORMATION

May 31, 2006

SECY-06-0128

FOR: The Commissioners

FROM: Luis A. Reyes
Executive Director for Operations

SUBJECT: ANNUAL REPORT ON ACTIVITIES ASSOCIATED WITH
EVALUATING SCIENTIFIC INFORMATION
AND RADIATION PROTECTION RECOMMENDATIONS

PURPOSE:

To update the Commission with regard to the staff's activities to evaluate scientific information about radiation health effects, as well as the radiation protection recommendations of national and international organizations. This paper does not address any new commitments or resource implications.

BACKGROUND:

In the past, the U.S. Nuclear Regulatory Commission (NRC) has followed the basic radiation protection recommendations of the International Commission on Radiological Protection (ICRP) and its U.S. counterpart, the National Council on Radiation Protection and Measurements (NCRP), in formulating its basic radiation protection standards. These recommendations also form the basis for interagency Federal Guidance, developed under the leadership of the Environmental Protection Agency (EPA). The NRC's "Standards for Protection Against Radiation" are set forth in Title 10, Part 20, of the *Code of Federal Regulations* (10 CFR Part 20). The last major revision of these standards was completed with the publication of a *Federal Register* notice (56 FR 23360) on May 21, 1991.

CONTACT: T. Brock, RES
301-415-2323

In response to a staff proposal to update the agency's regulations concerning byproduct and source material (SECY-02-0196), dated November 17, 2003, the Commission provided the following staff direction:

“...provide the Commission with a comprehensive plan for evaluating the latest scientific information and the recommendations of the international/national radiation protection organizations for possible incorporation into our regulatory activities, policies, and regulations. This plan should include evaluation of all major efforts scheduled to be completed in the next several years, and lead to staff recommendations on the need to revise NRC's regulatory program...”

The staff subsequently transmitted a review plan to the Commission in SECY-04-0055, dated April 7, 2004, and the Commission approved that plan in the related staff requirements memorandum (SRM), dated May 13, 2004. One aspect of that plan involved a staff commitment to provide the Commission with annual status reports, including progress summaries concerning activities associated with evaluating scientific information about radiation health effects, as well as the radiation protection recommendations of national and international organizations. This paper is the second of those annual status reports. (The staff issued the first annual status report as SECY-05-0089, dated May 16, 2005.) As such, this paper reflects related staff activities that are coordinated by the NRC's Radiation Protection Steering Group, which includes representatives from the Offices of Nuclear Reactor Regulation, Nuclear Material Safety and Safeguards (NMSS), Nuclear Regulatory Research (RES), Nuclear Security and Incident Response, and State and Tribal Programs (STP).

DISCUSSION:

Ongoing scientific work continues to increase our understanding of the health effects and risks associated with radiation exposure. For example, in the United States, the National Academies has now published the report entitled “Health Effects of Exposure to Low Levels of Ionizing Radiation,” which the Biological Effects of Ionizing Radiation (BEIR) VII Committee prepared as an update to the 1990 BEIR V report, entitled “Health Effects of Exposure to Low Levels of Ionizing Radiation.” As such, the BEIR VII report constitutes the updated scientific basis for radiation safety standards in the United States. The NRC staff reviewed a prepublication draft of that report and conveyed its comments to the Commission in SECY-05-0202, dated October 29, 2005. In SECY-05-0202, the staff stated that the findings presented in the BEIR VII report contribute to our understanding of the health risks from exposure to ionizing radiation. The report's major conclusion is that current scientific evidence is consistent with the hypothesis that there is a linear, no-threshold dose response relationship between exposure to ionizing radiation and the development of cancer in humans. Although the National Academies noted that the occurrence of radiation-induced cancer will be small at low doses, it also noted that the statistical power of current scientific evidence is insufficient to exclude the theoretical possibility of a dose threshold for radiation effects. These observations are consistent with the system of radiological protection that the NRC uses to develop its regulations. Therefore, the NRC's regulations continue to adequately protect public health and safety and the environment. Consequently, none of the findings in the BEIR VII report (by themselves) warrant initiating any immediate change in NRC regulations or Federal guidance.

Other national and international organizations also review current research findings and develop risk estimates on the basis of their reviews. To date, most of the related understanding of the health effects and risks associated with radiation exposure has derived from studies of the Japanese atomic bomb survivors. Toward that end, the Radiation Effects Research Foundation (a private, nonprofit organization supported by the governments of Japan and the United States) recently revised the system by which radiation doses are assigned to the survivors from Hiroshima and Nagasaki, and is expected to update its related cancer risk estimates in the near future. Currently, these cancer risk estimates provide the fundamental basis for estimating radiation-induced health effects.

To address the issue of how low doses of radiation affect living organisms, the U.S. Department of Energy initiated a 10-year research program in 1999 to better characterize radiation effects on cells and molecules. Investigators funded under that program meet periodically to discuss progress on individual research projects, and NRC staff representatives participate in these discussions. The next scientific workshop is tentatively scheduled to be held on July 31 – August 2, 2006 in Washington, DC.

The United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) also periodically examines the effects of radiation exposure from natural and manmade sources and published its most recent major report in 2000. UNSCEAR is currently reexamining the health effects of radiation exposure by evaluating epidemiological studies of radiation and health (cancer and non-cancer illnesses), examining the mechanisms and consequences of radiation exposure in tissues, and examining the dynamics of radionuclides in the environment and their impact on ecosystems. UNSCEAR may publish four small reports in 2006 on topics that include radiation and cancer, diseases other than cancer, radon in homes and workplaces, and delayed effects of radiation exposure.

The International Commission on Radiological Protection (ICRP) periodically reexamines its recommendations using scientific information, such as UNSCEAR reports, to decide whether new recommendations are needed. As part of that effort, the ICRP is currently consolidating, simplifying, and updating its recommendations. To evaluate and participate in that revision, NRC staff representatives have provided comments directly to the ICRP and through other organizations such as the Nuclear Energy Agency. In addition, the staff has facilitated meetings between members of the ICRP Main Commission and NRC staff and stakeholders. The staff also reviewed and provided comments to ICRP on several supporting documents for its revised recommendations, which were made available for review and comment in April 2005. The staff is preparing for the ICRP's release of the next draft of the recommendations. In 2005, the ICRP formed a new Committee 5 to address issues related to protection of the environment. The NRC staff will provide comments on any documents provided for comment by that Committee.

The NCRP may also update its radiation protection recommendations following the publication of the BEIR VII and UNSCEAR documents and the finalization of any new or revised ICRP recommendations.

The enclosure to this paper summarizes each of the staff's related ongoing activities. The staff plans to coordinate comments with other Federal Agencies, and will solicit comments on documents from the Agreement States, the Organization of Agreement States, Inc., and the Conference of Radiation Control Program Directors, Inc. The staff is also working with the Nuclear Energy Agency and the Interagency Steering Committee on Radiation Standards (ISCORS) on the planning to host a North American Workshop on the ICRP Draft Recommendations in August, 2006.

Based on its review of these documents, the staff will assess the possible implications for NRC regulations and the related Federal guidance, and will update the Commission regarding its findings, conclusions, and recommendations. Consequently, the staff believes that the NRC should not undertake any significant revision of its radiation protection regulations until after the staff reviews the final ICRP recommendations.

RESOURCES:

The NRC staff has budgeted resources to evaluate scientific information about radiation health effects, as well as the radiation protection recommendations of national and international organizations for the next two fiscal years. These budgeted resources will enable the staff to review the next draft of ICRP's recommendations and supporting documentation.

COORDINATION:

The Office of the General Counsel reviewed this package and has no legal objection.

/RA Martin J. Virgilio Acting For/

Luis A. Reyes
Executive Director
for Operations

Enclosure:
As stated

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