

## **POLICY ISSUE INFORMATION**

May 31, 2006

SECY-06-0128

FOR: The Commissioners

FROM: Luis A. Reyes  
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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.

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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/***

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Enclosure:  
As stated

## **ACTIVITIES ASSOCIATED WITH EVALUATING SCIENTIFIC INFORMATION AND RADIATION PROTECTION RECOMMENDATIONS**

**Title: Radiation Effects Research Foundation**

### **Background/Context:**

The Radiation Effects Research Foundation (RERF) is a private, nonprofit organization (supported by the governments of Japan and the United States), which conducts scientific research to study the health effects of radiation exposure on the atomic bomb survivors from Hiroshima and Nagasaki. As such, RERF established several study groups to provide epidemiological and clinical data on the health status and eventual mortality of the survivors and their children. Specifically, RERF conducts research studies in the fields of radiobiology, immunology, genetics, and molecular epidemiology to help interpret the findings and promote an understanding of the mechanisms of disease induction. Among those studies, RERF recently reassessed and revised the radiation dosimetry system (DS) used to estimate the radiation dose to survivors. RERF published DS02 and made available on its Web site the updated report and is also expected to update its related cancer risk estimates, which provide a significant basis for estimating radiation-induced health effects.

### **Desired Outcome:**

Careful analysis of the cancer incidence and cancer mortality data for the atomic bomb survivors should yield fundamental health and risk information for radiation protection standards worldwide. RERF will also use the updated DS to reevaluate its radiation risk assessments for cancer incidence and mortality among the atomic bomb survivors. Much of this information was reviewed by the National Academies and will be used by the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR).

### **Activities:**

Japanese and U.S. investigators reassessed and revised the radiation exposures assigned to the Japanese atomic bomb survivors from Hiroshima and Nagasaki. The revisions included adjusting the bomb yields, burst heights, and orientation at the time of detonation, as well as the impact of shielding (e.g., trees, buildings, furniture, etc.) on individual radiation dose estimates. These revisions had a less-than-anticipated impact on the radiation dose assigned to each survivor, with the primary change being an increase of about 10 percent in the estimated gamma-ray exposure for both Hiroshima and Nagasaki survivors. This increase, in turn, decreased the radiation-induced cancer risk estimates for solid cancer (e.g., breast cancer) and leukemia by about 8 percent, although the apparent shape of the dose response curve remains virtually unchanged. RERF investigators believe these changes will substantially improve the analysis of data concerning children born to atomic bomb survivors.

### **Plans for Interaction and Evaluation:**

The NRC staff will review the RERF assessment of how the revised dosimetry affects the radiation risk estimates for solid cancer and leukemia among the atomic bomb survivors. The staff will also continue to monitor the review and assessment of non-cancer disease among survivors, through both the RERF activities and those sponsored by UNSCEAR.

## **Title: U.S. Department of Energy Low Dose Radiation Research Program**

### **Background/Context:**

In 1998, Congress asked the U.S. Department of Energy (DOE) to initiate a basic research program to establish risk assessment standards based on a strong scientific foundation. In response, DOE's Office of Biological and Environmental Research initiated a 10-year basic research program in 1999 (at a projected cost of \$20 million per year) to determine the health risks attributable to exposures to low levels (10 rad and below) of ionizing radiation.

### **Desired Outcome:**

This research program will generate data that should improve our understanding of the health effects attributable to exposure to low-level ionizing radiation. DOE intends to use the data to evaluate models that predict human health risks and determine whether radiation protection standards warrant any changes. In particular, it would be useful to ascertain the dose response curve for human health effects of exposures below 100 mrem (1 mSv), which remain well below the limit of detection for the biological techniques currently used by DOE investigators.

### **Activities:**

Currently, DOE funding for this program is focused on understanding how radiation damages deoxyribonucleic acid (DNA), and how cells respond by repairing this damage; how radiation-induced DNA damage differs from day-to-day damage induced by cellular metabolism; how cells respond or adapt when repeatedly exposed to radiation; how irradiation of a single cell impacts the cells surrounding it (bystander effects) in both single-cell suspensions and tissues; and whether there is a genetic basis for individual differences in sensitivity to radiation exposure. To date, DOE has reported a significant increase in new techniques and instrumentation for use in measuring the biological and genetic changes induced by exposure to low doses of radiation. Detailed information available at <http://www.er.doe.gov/production/ober/lowdose.html> includes a list of the funded projects, abstracts of past research, published scientific papers, and past and future directions of the program.

### **Plans for Interaction and Evaluation:**

Every 18 months, DOE hosts a Low-Dose Radiation Research Program Investigators' Workshop to review and discuss the scientific results of each funded project. The sixth workshop will be held on July 31– August 2, 2006, in Washington, DC. NRC staff representatives will participate in the workshop to assess the impact (if any) that the DOE research program may have on the NRC's regulatory activities in the near future.

## **Title: Biological Effects of Ionizing Radiation**

### **Background/Context:**

In 1996, the NRC staff recommended sponsoring a study under which the National Academies would conduct a comprehensive review of the health risks associated with exposure to ionizing radiation. In so doing, the staff intended the review to be a thorough, objective, scientific examination of recent health effects studies that have concluded since the National Academies published the Biological Effects of Ionizing Radiation (BEIR) V report, entitled "Health Effects of Exposure to Low Levels of Ionizing Radiation," in 1990. The Commission approved that recommendation in COMSECY-96-005, dated April 2, 1996. The prepublication draft of the resultant BEIR VII report, entitled "Health Effects of Exposure to Low Levels of Ionizing Radiation," was released on June 29, 2005, and the final report was released in March 2006.

### **Desired Outcome:**

The NRC staff expected the National Academies to provide an accurate assessment of health effects data and models of cancer induction, including a critical assessment of all data that might affect the shape of the dose response curve at low doses, evidence of thresholds (or lack thereof) in dose response relationships, and factors that might influence risk assessment. The staff also hoped that this review would describe the most appropriate risk models for all cancer sites and other outcomes for which adequate data exist to support a quantitative estimate of risk, including non-cancer disease. The staff would then use that information to update the risk estimates used in assessing health risks from radiation exposures, if necessary.

The staff believes that the findings presented in the National Academies' BEIR VII report contribute to our understanding of the health risks from exposure to ionizing radiation. The major conclusion from the report 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. While the BEIR VII Committee noted that the occurrence of radiation-induced cancer at low doses will be small, 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 conclusions 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 the health and safety of the public and the environment. Consequently, none of the findings in the BEIR VII report (by themselves) warrant initiating any immediate change to NRC regulations or Federal guidance.

### **Activities:**

The NRC staff reviewed a prepublication draft of the BEIR VII report and conveyed its comments to the Commission in SECY-05-0202, dated October 29, 2005. The BEIR VII Committee has completed its work, and the contract has been closed. The NRC staff will assist the agency's Advisory Committee on Nuclear Waste in comparing and contrasting the conclusion of the BEIR VII Committee with those of the French National Academy of Medicine.

### **Plans for Interaction and Evaluation:**

The staff will monitor any future National Academies' studies related to the biological effects of ionizing radiation. However, at this time, the staff does not anticipate that the BEIR Committee will conduct any future studies on this topic.

## **Title: United Nations Scientific Committee on the Effects of Atomic Radiation**

### **Background/Context:**

The UNSCEAR charter is to assess and report levels and effects of exposure to ionizing radiation on humans and the environment. Toward that end, UNSCEAR meets annually and issues comprehensive reports every 2–5 years. Foreign governments and organizations rely on UNSCEAR evaluations as the scientific basis for estimating radiation risk, establishing radiation protection and safety standards, and regulating radiation sources. In fact, United Nations agencies, such as the International Atomic Energy Agency, use UNSCEAR reports as the technical basis for their recommendations and decisions. UNSCEAR's work is also of significant interest to many U.S. agencies, including the NRC. For example, the staff used several annexes of the 1988 UNSCEAR Report as part of the technical basis to justify the last major revision of its radiation protection standards. UNSCEAR published its most recent major report in 2000, and may publish several small reports in 2006 and 2007.

### **Desired Outcome:**

The next UNSCEAR report should provide an updated assessment of health effects data and models of cancer induction, including a critical assessment of all data that might affect the shape of the dose response curve at low doses and evidence of thresholds (or lack thereof) in dose response relationships. The UNSCEAR report is a primary technical basis for developing and revising radiation risk estimates.

### **Activities:**

The UNSCEAR held its 53<sup>rd</sup> session in Vienna, Austria, on September 26–30, 2005, to consider new information relevant to assessing sources of radiation, the exposure to which these sources give rise, and the resultant effects. The Committee is currently reviewing information for inclusion in the next UNSCEAR report, which may be published in 2006. That report is expected to reexamine 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. The Committee will hold its 54<sup>th</sup> session in Vienna, Austria, on May 29 – June 2, 2006, to review reports in preparation for publication this year on a variety of topics, including “sources-to-effects assessment for radon in homes and workplaces,” “epidemiological studies of radiation and cancer,” “epidemiological evaluation and dose response of diseases other than cancer,” and “on-targeted and delayed effects of exposure to ionizing radiation.”

### **Plans for Interaction and Evaluation:**

The NRC staff will continue to directly support the U.S. delegation to UNSCEAR by reviewing draft documents as they become available and providing technical guidance to the delegation and the UNSCEAR secretariat during Committee deliberations. The staff will also assess the impact (if any) that a final UNSCEAR report will have on the technical basis supporting the NRC's rulemaking activities.



## **Title: International Commission on Radiological Protection, General Radiation Protection Recommendations**

### **Background/Context:**

The International Commission on Radiological Protection (ICRP) was established to advance the science of radiological protection by developing recommendations and guidance on all aspects of protection against ionizing radiation. The ICRP published the latest comprehensive revision of its recommendations in 1991, and now believes that sufficient new scientific data have been produced since 1990 to warrant a revised set of recommendations. The current revision effort is intended to make the system of radiation protection more coherent and less confusing.

The ICRP made a draft set of recommendations available for public review and comment on its Web site ([www.icrp.org](http://www.icrp.org)) in June 2004, and has since received numerous comments. The ICRP is also continuing to develop the supporting documents that describe the technical bases for the draft recommendations, which were made available for public review in April 2005. ICRP will offer a second opportunity to review the draft recommendations in June 2006.

### **Desired Outcome:**

NRC participation is intended to influence the drafting and revision of ICRP recommendations to ensure that they are supported by scientifically sound technical bases. It is important that the recommendations be implementable and continue to provide a sound basis for U.S. regulations.

### **Activities:**

The ICRP continues to revise the forthcoming recommendations based on the large number of comments received from the first draft, which was released for comment in June 2004; the Commission-approved staff comments (provided to ICRP last year) are among the comments currently being addressed.

In support of the draft recommendations, ICRP released several draft foundation documents, including "Optimisation of Radiological Protection," "Assessing Dose to the Representative Individual," "Health Risks Attributable to Radiation Dosimetric Quantities," and "Scope of Radiological Protection Regulations." The NRC staff reviewed the draft foundation documents and submitted comments to the ICRP. These comments were posted on the ICRP Web site on July 11, 2005. Staff comments were consistent with many that the ICRP received from others.

The NRC staff is currently prepared to review the next set of ICRP recommendations, which is expected in early June 2006. The staff, working through the Interagency Steering Committee on Radiation Standards (ISCORS), will also host a North American Workshop on ICRP Recommendations on August 28–29, 2006. That workshop, sponsored by the Nuclear Energy Agency (NEA), will include participants from the United States, Canada, and Mexico. Significant comments from the workshop will be forwarded to ICRP by NEA.

### **Plans for Interaction and Evaluation:**

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. The staff will also prepare comments for Commission endorsement during the anticipated second round of public review of the revised recommendations in Spring 2006.

## **Title: ICRP Environmental Protection Recommendations**

### **Background/Context:**

The ICRP has established a new activity on protection of the environment to develop a radiation protection policy and establish an environmental protection framework based on ethical and philosophical principles. The outline for the framework was published as ICRP Publication 91, "A Framework for Assessing the Impact of Ionizing Radiation on Non-Human Species" (2003). The new framework, which will likely be included in the ICRP's next set of recommendations, is intended to parallel the approach for protection of humans. It is also designed for use as a practical tool to help regulators with existing and future regulatory standards. An agreed upon set of quantities and units, a set of reference dose models, reference dose-per-unit-intake (or unit exposure), and reference fauna and flora will be developed as a basis for more fundamental understanding and interpretation of the relationships between exposure and dose for a few clearly defined types of animals and plants.

The ICRP recently formed Committee 5 for the protection of the environment. Committee 5 intends to propose recommendations that ensure the development and application of environmental protection approaches that are compatible with those for radiological protection of humans, and compatible with other approaches used to protect the environment from other potential hazards.

### **Desired Outcome:**

NRC participation in the ICRP process is intended to inform and influence the development of ICRP recommendations to ensure that they have a sound scientific basis and are consistent with U.S. policies.

### **Activities:**

The ICRP task group released a draft report on "Reference Animals and Plants" in April 2005. The NRC staff provided comments to the ICRP, expressing continued concern about the necessity and utility of establishing a radiation protection framework for the environment.

ICRP formed Committee 5, which had its inaugural meeting on September 11–15, 2005, in Geneva, Switzerland. The next meeting will be held in Corvallis, Oregon, in August 2006.

### **Plans for Interaction and Evaluation:**

The staff will review draft ICRP materials when they become available, and will then prepare comments for Commission approval.

## **Title: National Council on Radiation Protection and Measurements, General Radiation Protection Recommendations**

### **Background/Context:**

The National Council on Radiation Protection and Measurements (NCRP) has been active in the areas of radiation protection and measurements since its inception as “The Advisory Committee on X-Ray and Radium Protection” in 1929. The NCRP’s charter states that its objectives are, in part, to collect, analyze, develop, and disseminate information and recommendations about radiation protection and radiation measurements, quantities, and units concerned with radiation protection. The NCRP last issued general radiation protection recommendations when it published NCRP Report 116, “Limitation of Exposure to Ionizing Radiation,” in 1993. The NRC staff anticipates that the NCRP will want to reiterate and update its position on radiation protection issues following the publication of additional data on the biological effects of ionizing radiation by the National Academies (i.e., BEIR VII) and UNSCEAR, and finalization of new ICRP recommendations in 2007.

### **Desired Outcome:**

NRC participation in the NCRP process is intended to inform and influence the development of NCRP recommendations to ensure that they have a sound scientific basis and are consistent with Federal policies.

### **Activities:**

Last year, the NCRP published Report No. 150, “Extrapolation of Radiation-Induced Cancer Risks from Non-Human Experimental Systems to Humans”; Report No. 151, “Structural Shielding Design and Evaluation for Megavoltage X- and Gamma-Ray Radiotherapy Facilities”; Report No. 152, “Performance Assessment of Near-Surface Facilities for Disposal of Low-Level Radioactive Waste”; and Commentary No. 19, “Key Elements of Preparing Emergency Responders for Nuclear and Radiological Terrorism.” This year, the NCRP will continue revising Report No. 93, “Ionizing Radiation Exposure of the Population of the United States,” and should publish the revised report in 2008. The NCRP held its 42<sup>nd</sup> annual meeting in April 2006, and selected the topic of “Chernobyl at Twenty” to provide a forum for national and international scientists to provide a comprehensive retrospective review and analysis of the effects of the Chernobyl nuclear accident on human health and the environment.

### **Plans for Interaction and Evaluation:**

As an NCRP Collaborating Organization, the NRC will have an opportunity to review and comment on draft reports as they become available. The 43<sup>rd</sup> annual meeting will be held in Crystal City, Virginia, on April 16–17, 2007; the topic will be “Advances in Radiation Protection in Medicine.”

## **Title: International Atomic Energy Agency Basic Safety Standards**

### **Background/Context:**

The International Basic Safety Standards (BSS), which are based on the ICRP recommendations, form the basis for control of radiation and radioactive materials in many countries worldwide. As such, the International Atomic Energy Agency (IAEA) uses the BSS in its program of information transfer and technical assistance to its member states.

The IAEA last revised the BSS in a multi-year process following the publication of ICRP recommendations in 1991. Consequently, the IAEA has begun assessing if and how the BSS should be revised in order to reflect changes in radiological protection and revised recommendations from the ICRP.

### **Desired Outcome:**

NRC participation in an IAEA review of the BSS is intended to inform and influence the development of international safety standards to ensure that the positions and policies are consistent with U.S. activities and Commission direction.

### **Activities:**

NRC staff participated in consultant meetings, the IAEA Radiation Safety Standards Committee (RASSC), and the Commission on Safety Standards (CSS) to influence proposals by the IAEA secretariat for a rapid revision of the BSS. The NRC staff did not believe that the accelerated pace of the proposal was warranted because the ICRP has not completed its revised recommendations on radiological protection, and because there are no pressing safety issues to be resolved. The NRC staff successfully garnered support from other member states to slow the process and, to undertake a review of the various technical areas and identify the types of changes that might be considered. In the RASSC meeting in April 2006, NRC representatives led efforts with a coherent proposal and path forward, including proposals for additional consultancies to (1) consider the role of the BSS in the revised IAEA system of safety standards, and (2) develop criteria for determining whether a proposed change was sufficiently important to warrant consideration.

### **Plans for Interaction and Evaluation:**

Through the IAEA CSS, RASCC, and other venues, the NRC staff will remain aware of, and be prepared to participate in, activities as IAEA continues to develop its plans for review and possible update of the BSS.

## **Title: IAEA Environmental Protection Action Plan**

### **Background/Context:**

The IAEA sponsored an international workshop on protection of the environment in Stockholm, Sweden, in October 2003. That workshop concluded that “while accepting that there remain significant gaps in knowledge and that there needs to be continuing research... there was an adequate knowledge base to proceed and [the workshop] strongly supported the development of a framework for environmental radiation protection.” It also found that “the time is ripe for launching a number of international initiatives to consolidate the present approach to controlling radioactive discharges to the environment by taking explicit account of the protection of species other than humans.”

In September 2005, the Board of Governors approved a plan of activities to guide the IAEA activities. That plan provides for a bottom-up, stepwise approach, and key Commission views were successfully incorporated.

### **Desired Outcome:**

NRC participation is intended to influence the IAEA plan of activities, and subsequent actions and activities, to ensure that proposed activities have an adequate scientific basis consistent with Commission direction.

### **Activities:**

NRC staff participated in the first IAEA coordination meeting in January 2006. Staff participation was successful in keeping the focus of activities upon benchmarking of assessment techniques, and the development of the scientific information needed to make assessments of impacts. Consistent with the approved plan of activities, these activities need to take place before any consideration of standards.

### **Plans for Interaction and Evaluation:**

The NRC staff will continue to monitor IAEA activities, and participate in the annual coordination meeting.

## **Title: Nuclear Energy Agency**

### **Background/Context:**

The NEA is a specialized agency within the Organization for Economic Cooperation and Development (OECD), an intergovernmental organization of industrialized countries, based in Paris, France. Through expert groups under the Committee on Radiation Protection and Public Health (CRPPH), the NEA is providing its views on ideal evolution of the ICRP system of radiation protection, as well as development of guidance concerning radiological protection of the environment. The NEA expert groups are studying early concepts that the ICRP considered, and continuing to assess the potential regulatory and guidance implications that would result if the ICRP should finalize its draft 2005 recommendations. The NEA's Radioactive Waste Management Committee has also provided comments concerning the suitability of the radiation protection framework for waste disposal activities.

### **Desired Outcome:**

NEA activities should help to ensure that the final ICRP recommendations will best serve the needs of national and international radiation protection policy makers, regulators, and implementers.

### **Activities:**

An NRC staff representative participated in the NEA annual meeting in Paris in March 2006, where discussion topics included the activities of expert groups addressing ICRP activities to develop new recommendations, occupational exposures at nuclear power plants, emergency preparedness, the role of stakeholders, and the Committee's future work. In addition, a topical session was held to discuss lessons learned from the 1986 Chernobyl nuclear power plant accident.

### **Plans for Interaction and Evaluation:**

NRC staff representatives will participate in future expert group meetings as they are scheduled. The CRPPH secretariat is organizing three regional workshops to facilitate discussion of the next version of the ICRP draft recommendations. The workshops will be held in Tokyo (July 2006), Prague (October 2006), and Washington, DC (August 2006). In addition, the NRC and other Federal agencies will host a North American regional workshop on August 28–29, 2006, to review and discuss the latest set of proposed ICRP recommendations, which should be available for NRC review in June 2006. Representatives from the Mexican and Canadian regulatory authorities have confirmed their intent to participate in the workshop.