



NRC NEWS

U.S. NUCLEAR REGULATORY COMMISSION

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S-01-018

RADIATION PROTECTION POLICY AND PLANNING FOR THE 21ST CENTURY

By

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**Keynote Address
At the
2001 Annual NEI Health Physics Information Forum**

**Clearwater Beach, Florida
July 9, 2001**

Good morning. I am pleased to be here today to attend this important conference and to be amongst such good friends and colleagues from the health physics and radiation protection community. I would like to take this occasion to share with you my thoughts on radiation protection policy and planning for the 21st Century.

During the past several years, the NRC has undergone a period of considerable change as part of our agency-wide initiative to increase the efficiency and efficacy of nuclear safety regulations. Yet, the Commission's statutory mandate and thus our highest priority, ensuring the adequate protection of public health and safety and the environment and security, has remained unchanged. In the coming years, we intend to continue to improve our regulatory programs in a way that will endure and maintain safety, yet provide stability, clarity, and predictability.

In my years as a State Regulator and an NRC Commissioner, I have come to know quite well the challenges associated with changing radiation protection policies and planning for the future regarding the use of nuclear materials for the benefit of society. Of particular importance today in the radiation protection community are issues concerning the ongoing debate over the linear, no-threshold theory (LNT), possible future changes to the International Commission on Radiological Protection (ICRP) 1990 recommendations, and the ongoing desire to more fully engage with the public to better inform them on the potential health effects of radiation and our desire to have increased public understanding

of radiation protection issues. The challenges are complex in nature and contain many technical, policy, social and political elements to overcome.

In my presentation today, I will briefly look back at what has transpired over the past few years and then focus my remarks on our prospects for the future. I have intentionally kept my remarks brief to allow time for discussion.

THE SCIENCE OF RADIATION HEALTH EFFECTS

The relationship between the science of health effects due to exposure to low levels or low dose rates of radiation and regulation has received increased attention over the last few years. The public is concerned about radiation health effects but scientists are not in agreement about those effects at low doses and dose rates.

The strict application of the LNT theory at these low levels continues to be challenged. Controversies over the use of the LNT when setting standards and the costs associated with meeting the standards have further fueled discussions about the adequacy of U.S. standards as well as international radiation protection standards. In the opinion of some, the strict application of the LNT has led to unnecessarily conservative radiation protection standards, particularly for specific purposes such as the decontamination and decommissioning of licensed facilities. Thus, one way of obtaining relief from radiation protection standards that are viewed as unnecessarily restrictive or overly conservative is to challenge the theory underlying the standards.

Regulatory agencies are faced with the challenge of how to translate our current knowledge of radiation health effects into a regulatory framework that is protective of workers, the public and the environment and, at the same time, strikes a balance between the uncertainties in that knowledge and the beneficial applications of radiation. These uncertainties have led to a controversy over whether the present use of the linear non-threshold model to describe radiation health effects at low doses and dose rates is appropriate for establishing regulatory standards for radiological protection.

Knowledge and uncertainty about radiation health effects are not exclusively the domain of any individual country. Radiation health effects is an international science. The ICRP, an international body of experts, develops recommendations for a system of radiation protection that are based upon international knowledge about radiation health effects and takes into account the uncertainties about that knowledge. Their general belief continues to be that using the model for regulatory purposes is a safe and conservative approach that favors enhanced protection. As a result of the recommendations of these experts, Federal agencies including the NRC, DOE, and EPA have largely followed this model.

That being said, the NRC is pledged to move towards a risk-informed, performance based regulatory approach. The challenge facing the NRC when it applies this approach to the setting of radiation protection standards for the public and environment is to find assurance that: (1) the standards *will* be protective; and (2) the impacts, such as cost, for complying with those standards *are* justified by the risks that would result if the standards were not met.

Despite the fact that the underlying science is common to all, the present U.S. radiation protection regulatory system is neither uniform internally nor consistent with internationally accepted recommendations. Why?

CURRENT APPROACH TO DEVELOPING REGULATIONS

Many factors influence decisions in the business of setting regulatory standards for radiation protection. Historically, NRC's regulatory approach for radiation protection has considered new scientific information on radiation health effects as one important input into this complex business. The NRC has also depended upon a process in which first, independent bodies of experts evaluate information on radiation health effects and then other bodies of experts, drawing upon this collective knowledge, develop recommendations for systems of radiation protection. Examples of the first set of bodies are the United Nations Scientific Committee on the Effects of Radiation (UNSCEAR), the Radiation Effects Research Foundation (RERF) and the U.S. National Academy of Sciences Committees on the Biological Effects of Ionizing Radiation (BEIR). The second set of bodies include The National Council on Radiation Protection and Measurements (NCRP), in this country, and the ICRP. After considering these information resources, if the Commission agrees that revisions to NRC's radiation protection regulatory framework are needed, then the changes are proposed through an open and inclusive process that provides for public input. Finally, NRC is subject to statutory requirements to follow the generally applicable radiation protection standards issued, by the U.S. Environmental Protection Agency (EPA).

This then moves us from science into *policy* decisions. In the final analysis, the flexibility and direction that agencies have in making these policy decisions are dictated by a number of considerations including the underlying legislation for regulatory agencies and, in some cases, by court decisions on the implementation of the legislation. In the U.S., various statutory approaches to enable governmental programs to protect workers, the public and the environment combined with court decisions have resulted in a patchwork quilt of radiological protection requirements to fit specific circumstances that when taken as a whole can appear to be inconsistent with each other despite sharing a common scientific basis.

This situation does not engender public and political confidence in our scientists and in our policy makers.

PUBLIC CONFIDENCE

Technical matters aside, the ability to achieve substantial progress in the various activities I have described depends on the level of confidence the public has in our actions. The NRC has invested substantial resources over the past several years in an effort to open the regulatory process and improve our efforts at public outreach. In the decommissioning arena, this has meant implementing a number of new activities, including broader participation in public meetings at sites undergoing decommissioning and adopting a new approach to the development of the standard review plan for decommissioning.

I believe these efforts at public outreach demonstrate the NRC's serious commitment to involve the public in our decision making process. After all, we do live in a democratic society. Nonetheless, we recognize that success in communicating our activities to the public is linked to our ability to demonstrate that actions taken, by both licensees and the NRC, are protective of the public health and safety. Accordingly, we will continue to stress the need to build public confidence as a key component of our regulatory outreach program.

FUTURE DIRECTION - A RECOMMENDATION

It has been over a decade since the ICRP promulgated its 1990 recommendations. Although I have just begun a four-year elected term to the 13-member governing body of the Main Commission of the ICRP, I have always been an ardent supporter of the need for the U.S. to more closely follow the system of radiation protection as it was envisioned and recommended by the ICRP. These recommendations, while predicated on the LNT concept, constitute *a more coherent system*. It includes appropriate cautions and warnings that help guard against the liberal application of radiation protection recommendations independent of the origin and purpose of the radiation source, the assumed risk of the radiation, and the costs to mitigate the assumed risks.

The majority of the world has implemented the ICRP system, yet we in the United States have no plans to do so. Perhaps when the next recommendations of the ICRP are available for comment, most likely within the next 5 years, the U.S. will be in a position to actively review and partake in shaping the international system of radiation protection to reflect our needs. While adopting the ICRP's recommendations will not necessarily address all of the present controversies, it will provide a more coherent framework for radiation protection requirements in the U.S. which would also be consistent with international recommendations and with regulatory frameworks accepted elsewhere in the world. Adopting international recommendations also, in my opinion, would enable the U.S. to maintain a radiation protection approach that will be in balance with knowledge of radiation health effects and contribute to our place in the global economy.

The current Main Commission and committees of the ICRP had their last meetings in October 2000 and new committees have been appointed for the next four years. Committee 1 has been invited to provide a summary of the biological basis of the ICRP's policies, to prepare a new text on the health effects of radiation, and to develop a comprehensive report on the biological effects of radiation. In particular, the Committee will review risk factors and LNT.

Such studies as those of the ICRP are essential to address the issues facing the regulators and the regulated community on how to translate our knowledge of radiation health effects into a regulatory framework that is protective of workers, the public and the environment. At the same time, the framework must take into account the uncertainties about that knowledge and be transparent in making assumptions to construct a radiation protection system. The issue is further complicated by the fact that many of the recommended dose limits and constraint levels that are thus derived are comparable to or smaller than background radiation levels. This takes on special importance in the context of developing standards for decontamination and decommissioning of licensed facilities, including those for waste disposal.

As Roger Clarke put it in an opinion letter to a scientific journal, "The real issue to be decided between scientists, regulators and the public is not a threshold for risk but the acceptability of risk. They should join forces to determine acceptability in different circumstances - in work and public environments and under normal and accident conditions."

PUBLIC PERCEPTIONS

If harmonizing radiation protection standards should be a high priority in the next few years, then the public perceptions of the uses of nuclear materials and radiation, what is scientifically known about their potential hazards, and the acceptability of the resulting risks will be critical issues needing attention as well. Why? Because how the public perceives the uses of radiation, its hazards and the

resulting benefits and risks will influence political and social decisions on the role of government in radiation regulation. Influencing public perceptions could be characterized as a challenge as we enter the next millennium but I prefer to see it as a opportunity, in particular, an especially important opportunity for the radiation protection community. This community includes researchers, radiation safety officers and staff, regulators, managers - even Commissioners. We are the radiation protection experts.

In many cases, technical society's activities in reaching out and forming public opinion about radiation have been innovative, credible and frequently successful. This is a credit to individual members, their boards, committees and chapters. That said, in my view, the potential for each of us to engage the public in radiation safety communication is still yet to be fully tapped and needs to be more greatly focused on educating the public about radiation. Much more can be and needs to be done. It is an opportunity that should be seized before it is too late.

The Atomic Energy Act of 1954 fulfilled a need for, and was a product of, its time. It has since been amended numerous times in response to changing public perceptions of needs to govern the use of nuclear materials and radiation and the resulting risks. Surely, as we enter the next decade, and we can anticipate that it will be amended again. And, just as surely, the Commission will be asked to change policy and direction for the agency. The question is, in response to whose voice will these changes be made?

President Truman, it is said, had a sign on his desk that said, "The buck stops here." In its way, it was the ultimate political statement about how U.S. policy-making works. Whatever the scientists' and public's views are on radiation and its risks, it is the political decision making in the White House and in the Congress that fundamentally shapes NRC and other Federal government agency programs that regulate radiation hazards. The U.S. political process is itself a creation, specifically of its public citizens, and it continues to be subject to the public's wishes even as the public's views evolve. In this context, the "public" is every one having an interest and a voice. That broad definition includes not only individuals but organizations. Thus, it includes you as an individual as well as employers, licensees, trade organizations, and professional societies that you may be affiliated with. In other words, you may have more than one voice. If you have an opinion, you can influence the political process and the choices that are to be made and you probably have more than one voice with which to speak that opinion. And, so may others. The important thing is to find those voices and to use them effectively.

IN SUMMARY

NRC is dedicated to revising and refining its regulatory programs to meet current and future needs in as cost effective a manner as possible. As new information on radiation protection become available, NRC radiation regulations can be expected to change and I believe, will improve as a result, in the next decade. Science, public perceptions, and the political process will all have a role in this change. An integral part of these changes is increased stakeholder involvement. And, therein lie opportunities to influence NRC radiation regulation as we move into the future.

In my view, absent persuasive evidence that the science or the ICRP recommendations are faulty, the U.S. should move towards harmonizing its regulatory program with the global ICRP recommendations. I do not have a crystal ball to look into the future to provide you with an idea of what they will look like, but I do intend to devote such time as is necessary to help further the ICRP's and NRC's work in providing sound recommendations and guidance for all aspects concerning

radiological protection. Doing this, coupled with continued support of radiation health effects research and a dynamic outreach program with stakeholders, will, in my opinion, go a long way towards resolving some of the current controversies in the U.S. about radiation protection standards with the desirable end result of strengthening the scientific basis for and increasing public confidence in our regulatory programs.