



NRC NEWS

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THE FUTURE OF ENVIRONMENTAL PROTECTION: A U.S. REGULATOR'S PERSPECTIVE

by

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Good afternoon, ladies and gentlemen. I am very pleased to address this forum on "Radiological Protection of the Environment: The Path Forward to a New Policy?"

My purpose today is to describe the various mechanisms in the United States for achieving and maintaining protection of the environment; why regulatory openness and stakeholder involvement is an integral piece of a successful program for protection of the environment; and how international organizations can make a valuable contribution in providing international consensus in the global arena of environmental protection.

Before Going A Step Forward, Take A Look Behind You . . .

Before one can envision the future of environmental protection, it is important to learn from the lessons and results of the past. I believe we must examine what is currently being done in order to achieve a successful path forward. As you are aware, radiological protection of the environment is being addressed by several recent international initiatives. The International Commission on

Radiological Protection (ICRP) has launched a Task Group (chaired by Dr. Lars-Eric Holm, who is on the Main Commission) to address this issue with the potential of developing new recommendations on environmental protection. As is outlined in your program brochure, the European Commission has established the *Framework for Assessment of Environmental Impact* (FASSET) project. Not to be left behind, the International Atomic Energy Agency (IAEA) has also established a work program to develop safety guidance on the protection of the environment from the effects of ionizing radiation, that will take into account these and other developments.

Industry and regulatory agencies have been assessing the environmental impacts of regulated, as well as unregulated activities, for many years now. This is not a new issue. The basic underlying assumption has generally been that the environment is protected through the protection of humankind. However, I believe that in all of our respective countries, we have awakened to the fact that human impacts on the natural environment can have serious consequences. So while the protection of humankind may protect the environment, how is the environment protected from humankind? This awakening has led to a large number of corrective actions. For the most part, these actions include government intervention, such as laws, regulations, and in some cases, civil or criminal penalties. Today, with over 30 years' experience with environmental regulations, before we strive ahead to make yet additional changes to an existing regulatory framework, we need to ask ourselves the questions: What have we learned over these past few decades? And how well have these regulations worked?

The Good News

The good news is that the condition of the natural environment and how we monitor and protect it has indeed improved. We know from endless studies where societies have focused on these issues that the air is cleaner, the water purer, and the land is treated with greater care than 30 years ago.

As I highlighted at last year's NEA meeting on "Policy Issues in Radiological Decision Making," NRC can very easily point to several items, that have caused the environmental regulatory framework in the U.S. to be re-visited and revised for the better.

1. Executive Policy and a National Regulatory Infrastructure. In the U.S., the National Environmental Policy Act of 1969 (NEPA), as amended, formulated national policy to protect the environment. NEPA also established the Council on Environmental Quality and stated that "major Federal action significantly affecting the quality of the human environment" must be accompanied by a "detailed statement" of the potential impacts of any irreversible commitment of resources. The detailed statement for major Federal actions is called the "Environmental Impact Statement" or EIS. This process allows early participation of interested parties and members of the public in the scoping process for the EIS. Upon completion of the draft EIS, the document is published, and a public comment period begins during which anyone may comment. NEPA has been implemented by NRC's regulations in Title 10, Part 51, Subpart A, and in general, provide specific information as to whether or not an environmental assessment or environmental impact statement is needed in various proposed domestic licensing issues. In addition, in 1994, the President issued an Executive Order mandating that Federal agencies make "environmental justice" part of each agencies mission by addressing disproportionately high and adverse human health or environmental effects of Federal programs, policies, and activities on minority populations and low-income populations.
2. Consultation with other Agencies. The environmental reviews leading to preparation of environmental impact statements may involve interactions with other Federal, State, local,

regional, and affected Native American tribal agencies. In the U.S., agencies that may be consulted include, but are not limited to: the Fish and Wildlife Service and the National Marine Fisheries Service related to threatened and endangered species; State Historic Preservation Offices, and local and affected Native American tribal agencies related to historic and archeological resources that are eligible for listing on the National register of Historic Places; and relevant State agencies in determining that the proposed action conforms to applicable State regulations under the Clean Air Act.

3. The Process and Timetable for Developing Regulations and Supporting Guidance Has Changed. Years ago, complex rulemakings took many years to complete. As an example, our radiation protection regulations in 10 CFR Part 20, that implemented ICRP 26 and 30, took over 13 years to complete! Currently, through an open process and public comment period, we have been able to reduce this time to less than two years in many cases. For some multifaceted rulemakings, workshops held throughout the comment period have assisted interested parties in understanding the technical issues presented. The format of the proposed regulations themselves have changed by prefacing the proposed regulation with a question and answer (Q&A) format which more easily address the questions that are raised by the proposed actions, potentially negating the need for subsequent additional comments or questions. In addition, guidance documents have been developed and issued at the same time as the revised regulation is issued, if not before, for comment. The format for such documents include procedures that are licensee-specific, not regulator-driven. Finally, and most importantly, we have changed our regulatory framework to be more “risk-informed, and performance-based,” thus allowing (in most cases) the licensees, to use detailed knowledge of their facility to determine what level of procedure, surveillance, or licensee intervention is needed for a particular regulation.

I give this brief synopsis of the NRC’s transition in rulemaking from untimely and deterministic, to timely and less deterministic for the following reason. Recommendations forthcoming from forums such as this, in order to be most effective worldwide, should be implemented in a timely manner and with an open process. Countries with more cumbersome implementation processes may find this an ideal opportunity to revise those methods sooner, rather than later.

4. Improved Communications. The NRC has learned over the years that our actions must be transparent. It is imperative that the public, legislative bodies, those most impacted by a pending action, and the media are well-informed and have a meaningful opportunity to participate in the process. By providing more clarity and being timely in our responses to interested parties, we have seen increased effectiveness in the way that we can transmit information and better communicate with the public, Congress, impacted entities, and the media. The result is the ability to resolve difficult issues in an efficient manner. Electronic communication, through the use of our newly redesigned web site (at www.nrc.gov), has proven to be extremely helpful in providing information quickly to those that seek it. I cannot overemphasize the importance of transparency.

Transparency may require a cultural change in perspectives or attitudes concerning the importance of communicating with internal and external stakeholders. Therefore improving our communication skills may be necessary. The NRC has found significantly increased positive feedback from interested parties after the staff has conducted workshops following additional training in communication skills and techniques. While as scientists, we can be extremely competent in our field of expertise, most likely we could find significant improvement in our interactions with the public if we were all able to have periodic training in effective

communication. In today's world, it is just as important, if not more important, as being scientifically competent.

The Not-So-Good News

As you can tell by the number of Federal, State and Tribal organizations involved in the coordination of environmental impacts statements and environmental actions, the U.S. has indeed created a large environmental regulatory morass. I can cite the familiar regulatory "discussions" between the U.S. Environmental Protection Agency (EPA) and our Agency on NRC's License Termination Rule (LTR), issued in 1997. The NRC finalized a regulation for the termination of sites that had previously been used in licensed, radiation activities: be they reactors, industrial, or medical facilities. At the heart of the matter was the appropriate residual radioactivity limits for unrestricted release of the site. The NRC established a 25 millirem (0.25 mSv) all-pathways limit, but EPA established a radiation dose limit of 15 millirem (0.15 mSv), both averaged over a one-year period. NRC, in its analyses for the regulation, relied on the findings of the ICRP and our national counterpart, the National Council on Radiation Protection and Measurements (NCRP) in using the principle of optimization, considering the cost effectiveness of additional dose reduction. After a full review of these recommendations, as well as many thousands of comment received, the NRC adopted the limit of 25 millirem (0.25 mSv) as the value for residual radioactivity at a site under consideration for license termination. Overall, NRC's approach to radiation protection standards is to establish radiological protection regulations based on an all-pathway approach and to incorporate the application of ALARA. Most recently, NRC chose to use the limit of 25 millirem (0.25 mSv) per year limit for our draft Yucca Mountain regulations. However EPA, which has the statutory responsibility to set standards for Yucca Mountain, recently chose a 15 millirem (0.15 mSv) all pathways limit with a separate 4 millirem (0.04 mSv) groundwater standard. As required by law, NRC's final Yucca Mountain regulation adopted the EPA standard.

But what about EPA's dose limit of 15 millirem (0.15 mSv)? Isn't lower always better? Well, EPA's proposed dose limit resulted from a different technical analysis for establishing an acceptable risk to the public. Many of EPA's standard-setting authorities for radiation protection are part of umbrella statutes for environmental protection that address specific kinds of pathways for potential environmental pollution (e.g., the Clean Air Act and the Safe Drinking Water Act). EPA regulations issued under these statutes for pollutants, including radionuclides, set standards to be met and also allow the standards to be exceeded if certain criteria are met. EPA's preference is to set standards for individual pathways, which is, in part, required by its statutes. EPA chose to use a risk level, derived from its interactions and legal court decisions, of between 10^{-4} to 10^{-6} overall level of risk, resulting, in this case, of a dose limit of 15 millirem (0.15 mSv) per year. Risk versus dose. A top-down approach, versus a bottom-up approach. Two agencies with very different, but certainly manageable approaches to regulation. It all depends upon your endpoint.

Questions Raised by Dual Regulation

The first question might be: "Does this mean that all decommissioning and license termination activities in the U.S. have stopped since 1996?" Not at all. Although our two agencies are still working on a Memorandum of Understanding for future decommissioned sites, we continue to work with EPA and its regional offices in ongoing decommissioning activities because, as you might have guessed, NRC licensees are also required to comply with EPA as well as many other regulations related to the liquid effluent discharges to bodies of water. And then, on a case-by-case basis, we work with the

licensee, the interested community, EPA, as well as other State and local government agencies, to safely closeout and decommission the facility under consideration.

A second question might be: “Are we protecting the environment and the public?” The answer emphatically, from probably all agencies involved in the regulatory process, is “YES!” We may get there from different paths, but our end result and agreement in authorizing any site or facility to be released for unrestricted (i.e., unregulated) use, are that the conditions for unrestricted release have been met and that there is scientifically sound evidence present in the environmental assessment or impact statement upon which to make this regulatory decision.

And finally, the third question might be: “Are these regulatory differences considered good regulation?” I am not the first Commissioner to admit that this is not the best way of doing regulatory business, but I can tell you that we are actively working on ways to streamline the process, work with our sister agencies, and to make the process as open as possible, given our scientific differences on this issue.

It is also possible that many of the countries that are represented at this conference also have similar regulatory situations such as having different agencies that are responsible for regulating and protecting the environment. In addition, I would venture that you may also have several different radiation standards to choose from -- all of which contributes to the constant source of confusion and possible annoyance to the public and those we regulate as to how regulators go about performing their work. What we do know is this: There is no one overall consensus as to how to best protect and regulate the environment from radioactive emissions and potential exposure to ionizing radiation. But we do have many paths (i.e., regulations), for achieving our identical desired goals, which are specifically to ensure the protection of the public and the environment we live in.

New Emerging Issues

In light of the growing interest in developing an integrated approach to the management of all environmental risks, the process of developing an overall policy for radiological protection of the environment should not be constrained by current national or international approaches to radiological protection, in general. To date, the U.S. has developed a national approach to issues concerning environmental protection. However, we now face two relatively new issues that have caused us to rethink about how we regulate our national radiation protection programs.

The first issue is the “clearance” or release of slightly radioactive material to the environment or commerce, which may involve the use and integration of global commodities containing small amounts of radioactive material. The second issue is closely related to the first and involves regulatory authorization of radioactive releases to the environment and ensuring that transboundary issues between co-located countries do not arise. For both of these issues, as well as others mentioned, I believe that there is an opportunity for all of us to contribute.

The Track Record

We have a good track record in radiation protection. We should be proud of that and advertise that fact. Although, as regulators we cannot endorse the use of radioactive materials in commodities, we can ensure that its use, if justified, does not negatively impact the public or the environment.

Several years ago, in 1997, I believe, the National Radiological Protection Board (NRPB) contacted many countries and asked each of them to provide input into a survey that they were conducting on the various types of regulations and requirements in radiation protection, environmental regulations included. There was an excellent set of questions posed, and I surmise that it served as a excellent reference for their regulatory framework to see where the United Kingdom “ranked” if you will, with other countries that had passed similar regulatory statutes and regulations. I also understand that the International Atomic Energy Agency (IAEA) conducted a similar study, also within the past few years, perhaps for difference purposes, to gather this type of information from the many countries it interacts with to get an idea of the various levels of regulatory framework for environmental protection in existence today.

As a necessary first step in determining what any possible new system for the protection of the environment would look like, or should be, in addition to identifying what the needs of various countries may be in this arena, I would recommend that we assist the ICRP in formally gathering this information, building on previous surveys. I would recommend that we first look at the similarities and then characterize the differences between the existing various national regulatory approaches for environmental protection around the world. It may not be necessary for all countries to have identical regulations, and in fact, is probably impossible. Such a survey could serve several purposes. Perhaps for the first time, it would summarize and document all of the environmental programs worldwide. It would collect not only the different types of regulatory frameworks in place, explaining perhaps what works best and what doesn’t, but it could provide the technical, scientific, and policy bases for each type (i.e., liquid, air, or solid) of release to the environment. Finally, I note that radioactive regulations need not, nor probably should not be isolated in this survey, and in fact the information collected would assist many, in determining if both chemical and radiological releases are, or can, be regulated similarly. It may also provide options for various environmental regulatory frameworks and may result in harmonization of chemical and radioactive materials regulations.

Such an all-encompassing look internationally may identify disparities, similarities, questionable practices, as well as many good practices and concepts amongst national programs. In any case, baselining what each country does or doesn’t do in environmental protection will tell us if there is a need for harmony (perhaps we are already there?) and whether there is international consensus to support international recommendations in this arena.

Providing perspective and gathering an international consensus on an approach to any new system on environmental protection before any recommendations are developed will go a long way to a successful conclusion. This approach may expedite overall adoption of any recommendation into national regulatory programs and legislative agendas. As an added benefit, this could also provide a sound scientific basis for any proposed changes to each country’s national regulatory framework and a well-documented rationale for proposed programs. Lastly, if the results of this survey determined that very few discrepancies exist amongst the various countries, as far as protection of the environment from the use of radiation is concerned, then these findings should be published as well. It would be beneficial to the public, lawmakers, regulators, and the regulated community to know that indeed the environment is being protected through the various national regulatory radiation protection programs worldwide.

We must keep in mind that it may be that we can have different regulatory schemes, licensing and registrant requirements, but all may be achieving the same desired outcome: the protection of the environment. A general concept that protection of humankind protects the environment. It is that concept however, that we should review. As regulators and scientists we shouldn’t propose

recommendations or take regulatory action that would have little or no safety benefit disproportionate to the cost and impact. Again, it is quite possible that our various approaches to environmental regulation is achieving our desired goals. Is it possible that all roads may indeed lead to Rome, or in this case Taormina?

Summary

The U.S. has the largest number of nuclear installations of any country in the world. This puts us at an extreme end of the spectrum. As a result, I have touched on many issues relative to environmental protection. Therefore in summary, let me list these issues:

- ▶ Before moving ahead, look at what has been done thus far
- ▶ Executive policy and a national regulatory infrastructure
 - Environmental Impact Statements
 - Environmental Justice
- ▶ Standards determined by law or courts
- ▶ Consultation with other national agencies and countries
- ▶ Improving the timetable for issuing regulations and supporting guidance
- ▶ Improved communications and training of staff
- ▶ Transparency and flexibility throughout the regulatory process
- ▶ Differences in regulatory approaches are OK, as long as the end result is to achieve sound national environmental and public health and safety policy

I believe that this series of conferences represents an excellent opportunity to come to resolution about the future of environmental regulations and policies. Having this information will assist us in harmonizing any proposed recommendation(s) for radiological protection of the environment involving commodities containing radioactive materials or unrestricted release of slightly radioactive materials by using the existing environmental radiation protection framework as a starting point. Doing so in an open, encompassing manner will, in my opinion, go a long way towards resolving some of the current controversies about radiation protection standards in the U.S., as well as around the world, with the desirable end result of increasing public confidence in our environmental radiation protection programs.