# NRC NEWS

**U.S. NUCLEAR REGULATORY COMMISSION**

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**"Set Yourself as the Standard"**
***- Chinese Proverb***

by


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## INTRODUCTION

Good morning ladies and gentlemen. As several times in the past, I'm pleased to have the opportunity to be with you today to participate in NRC's 2002 Regulatory Information Conference. We have another great turnout, and the Commission and the staff appreciate your attendance and participation in the Conference. I am pleased to welcome our licensees, consultants, our foreign attendees, state and local government representatives, and members of the public. I hope you take the opportunity to visit our beautiful Nation's Capitol while you are here. We have had a mild winter in the Washington DC area this year. If Mother Nature would have cooperated, the cherry blossoms might have been in bloom by now. It is a spectacular site especially surrounding the monuments and it is a highlight of springtime in this area. With the anticipation of spring, comes the celebration of the Chinese New Year and the beginning of the year of the horse. This ancient culture has a lot to teach us especially since Chinese proverbs are still applicable today. With that, I offer you one of several Chinese proverbs with which I believe we can all relate - "Set yourself as the Standard."

As you are quite aware, our world has changed a great deal since I last spoke at the Regulatory Information Conference 2001. Since the events of September 11th, the NRC and the nuclear industry have faced new challenges in the areas of physical security, radiation protection and public confidence, to name a few. I believe that both the NRC and the nuclear industry have met these challenges. Yet we have many challenges and opportunities ahead.

Much has changed since last year, but much has stayed the same. We are still at a time when commercial nuclear power appears to be on the verge of a significant resurgence in the United States and other parts of the world. So much so, that the Office of Nuclear Reactor Regulation has created the New Reactor Licensing Project Office to support new reactor licensing activities. We are still at a time when aging of existing reactors, power uprates, and license renewal are important issues. We are also at a time when security of our nuclear reactors and material licensees, along with our country as a whole, has never been more important.

Another Chinese proverb states that "a fall into a ditch makes you wiser." This statement is more applicable than one would think. The NRC has been working diligently with its licensees and the Office of Homeland Security to help ensure its licensees are adequately protected against security events. As Chairman Meserve mentioned in a recent speech, the physical protection at nuclear power plants is very strong. For decades, security against radiological sabotage has been an important part of the NRC's regulatory activities and our licensees' responsibilities. These plants are among the most formidable structures in existence and they are guarded by well trained and well armed security forces. The security at nuclear plants is and has always been far more substantial than that at other civilian facilities. And it has been augmented since September 11. However, representatives from Congress, the media and the public have questioned whether we all can do a better job to protect our national interests. Our reaction to these questions should not be made blindly or our decisions made hastily. The consequences of our decisions should be well understood. One should not fill in all ditches to ensure against a fall, but rather, one should watch where they step.

So the question remains - what is normalcy? How do we refocus without losing focus? The NRC continues to work with its stakeholders to develop more risk-informed regulations, to provide guidance to assist State and local governments in making decisions on the role and use of potassium iodide in their site-specific emergency plans, and to increase public confidence. These important activities are enhanced by interactions with our stakeholders and members of the public in general. With these things in mind, I would like to take time with you today to discuss consensus standards. Consensus standards offer an avenue to address the new and existing challenges that the NRC and the nuclear industry face. These include standards which protect public health and safety, support the NRC strategic plan, and provide security for our nuclear reactors and material licensees. As the proverb goes, "if you don't stand for something, you will fall for something."

**WHAT IS A STANDARD?**

So what is a standard? Webster's Third New International Dictionary defines a standard as "something that is established by authority, custom, or general consent as a model or example to be followed." For our purposes, a consensus standard is the product of a standards development organization operating with openness, balance of interests, due process, an appeals process, and consensus, which represents general agreement but not necessarily unanimity. Examples of standards development organizations include such groups as the American Society of Mechanical Engineers (ASME), Health Physics Society (HPS), and American Nuclear Society (ANS).

The development of consensus standards is a significant effort for all the participants of standards development organizations. As the proverb goes, "only when all contribute their firewood can they build up a strong fire." The NRC has been an active participant in the development and use of consensus standards since the NRC's establishment in 1975. The Commission's Strategic Assessment and Rebaselining Initiative in 1996 further increased NRC's focus on the use of standards. For nuclear reactor and nuclear materials safety, the Commission's strategy is to increase the involvement of licensees and others in the NRC regulatory process consistent with OMB Circular A-119, "Federal Participation in the Development and Use of Voluntary Consensus Standards and In Conformity Assessment Activities" and with Public Law 104-113, "National Technology Transfer and Advancement Act of 1995."

Public Law 104-113 requires an agency to use a standard developed by a consensus body unless such use is inconsistent with applicable law or is otherwise impractical. The NRC may use a consensus standard as a mandatory requirement or as a voluntary provision. Mandatory use occurs through incorporation of a consensus standard in a regulation, license condition, order, or technical specification for individual licensees or certificate holders. Regulatory guides, or in the materials area, NUREGs and regulatory guides, that identify an acceptable method for licensees to comply with NRC regulations, are the primary mechanisms for allowing voluntary use of consensus standards by licensees and certificate holders.

In Fiscal Year 2001, the NRC adopted 64 voluntary standards; four ANS standards, three ASME standards, eight American Society for Testing and Materials standards, three Institute of Electronic and Electrical Engineers standards, and forty-six National Fire Protection Association consensus standards.

The NRC's strategic plan incorporates activities that increase public confidence, improve our efficiency and effectiveness, and reduce regulatory burden. It is my opinion that the development of consensus standards is an ideal way of meeting these goals. I would like to discuss three different types of consensus standards that may affect all of us in the future.

**Standards on the Quality of PRAs**

We all know that it is "better to light a candle than curse the darkness" and the development of standards on the quality of probabilistic risk assessments (PRAs) will shed a light on our regulatory process. The Commission has continually noted the importance of high quality PRAs for success of risk-informed regulation. We believe that a PRA consensus standard is an integral part in providing the level of confidence that the risk insights derived from the PRA results are both technically sound and technically defensible. Further, the Commission has stated that development of a PRA standard can provide a level of confidence to the NRC staff regarding the technical quality of a PRA utilized by a licensee to support a risk-informed initiative. Such a standard can, therefore, result in a more focused technical review of the PRA by the NRC staff and thereby make more efficient use of both NRC and industry resources, while still ensuring the safety of the decisions being supported by PRA insights.

The NRC has been actively participating in the consensus standards process to develop standards for PRA that support the implementation of risk-informed regulation in a manner that maintains safety. Currently, there are several PRA standards that are under development by standards development organizations for nuclear power plants. ASME has developed a PRA standard on internal events which includes transients, loss-of-coolant accidents, and floods. ANS is developing PRA standards for low-power and shutdown events, internal fires, and external hazards. These PRA standards and associated industry programs can be used to provide an understanding of the strengths

and weaknesses of a PRA. It is the NRC's intention to endorse these PRA standards, when the final standards are issued, in a single regulatory guide that provides an approach for characterizing the quality of PRA results used in support of regulatory applications. The regulatory guide would provide guidance to licensees on how to use the standard to determine the level of confidence of the PRA insights/results being used. These risk insights can then be appropriately used by the licensee decision maker. The appendix of the regulatory guide would provide staff endorsement of the individual PRA standards. It should be noted that the endorsement of the PRA standards may take exception to or include additional specific criteria to address any identified weakness in the standards to ensure that PRAs used in regulatory decisionmaking will have an adequate technical basis and meet the regulations.

**Standards on the Radiation Protection**

Unlike the consensus standards developed using the standards development organization process where members of the NRC staff participate on the development committees, development of consensus standards for radiation protection has followed a different approach. Historically, the NRC's regulatory approach for radiation protection standards has considered new scientific information on radiation health effects and recommendations for systems of radiation protection. International bodies of experts evaluate the information on radiation health effects and provide the recommendations. After considering recommendations from these scientific bodies, 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 rulemaking 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.

One important consensus standard with regard to radiation protection was developed by the International Committee on Radiation Protection (ICRP). Since 1978, the ICRP has made major revisions to its basic radiation protection recommendations. These were published in ICRP Publication 60 in 1990. This publication has recommendations which supercede those of the ICRP Publication 26. Because of timing and other considerations, NRC adopted only some of the ICRP recommendations into Part 20. As an example, NRC adopted the ICRP-60 recommendation to lower the dose limit for the general public from 5 mSv (500 mrem) per year to 1 mSv (100 mrem) per year. However, with respect to the occupational exposures, even though ICRP-60 recommended a new occupational dose limit of 100 mSv (10 rems) in 5 years with a 50 mSv (5 rem) maximum, NRC believed that a reduction in the annual dose limit was not required since the annual average radiation dose to most occupational workers in 1987 was already well below 20 mSv (2 rem). Furthermore, as a part of the revised regulations, NRC included the concept of maintaining radiation exposures as low as reasonably achievable (ALARA).

Another applicable Chinese proverb states that "when you want to test the depth of a stream, don't use both feet." It is my view that some facts and figures based on recent information must be fully evaluated before considering a rulemaking change to reduce occupational exposure as recommended by ICRP-60. For example, in 1999, out of approximately 150,000 monitored individuals at commercial power reactors, only twenty-four individuals received doses exceeding 20 mSv (2 rems), and only 2 individuals received more than 30 mSv (3 rems). No individual exceeded 50 mSv (5 rems). When you consider the fact that even ICRP-60 allows a maximum of 50 mSv (5 rem) per year, as long as the average over five years is below 20 mSv (2 rems), even if NRC adopts ICRP-60, there would not be any savings of dose. Furthermore, there would be substantial cost for implementing the new regulation, with uncertainty for any added benefit.

**Security Standards**

Security standards and regulations are an island all to their own. In this world of uncertainty, a Chinese proverb would advise "to know the road ahead, ask those coming back." However, in the world of security standards and regulations, the future is not that clear cut. The nuclear industry is unique in that 10 CFR 73.55 requires the physical protection of nuclear power plants against radiological sabotage. Standards development organizations and international bodies of experts that develop security standards which protect against radiological sabotage do not exist. As you well know, due to the generalized high-level threat environment, the Commission has issued threat advisories to our licensees. It is extremely important to note that all of our licensees have voluntarily complied with the intent of the NRC's threat advisories. In addition to the security regulations and threat advisories, the Commission recently issued orders requiring all power reactor licensees to implement interim compensatory measures for the protection of their facilities.

In this case, I believe the applicable Chinese proverb is "a dish of carrot hastily cooked may still have soil uncleaned off the vegetable." The security requirements imposed on our licensees continue to increase. While it is the NRC's responsibility to ensure public health and safety through our regulatory framework, licensees, many of whom are in this room, are of course ultimately responsible for the safety and security of their facility. But it is also the Commission's responsibility to ensure that our requirements are reasonable and technically defensible. So how does one determine how much security is enough? Unlike PRA and radiation protection standards, we do not have the benefit of standards development organizations or international bodies of experts. Therefore, I believe we must proceed deliberately, with caution, to ensure that the additional security requirements have a basis and are defensible. Additionally, we must understand the short-term and long-term consequences that imposing additional security requirements may have on our licensees. To paraphrase a statement made by Albert Einstein, "you cannot solve the problem with the same mind set that created it."

So perhaps it is time to think outside the box regarding security standards and regulations. Should we be more creative in how security is provided rather than providing more security? In the not so distant past, the staff was considering risk-informed performance criteria which would provide flexibility in the design of security programs and response strategies. Such an approach could include the concept of identifying certain systems, structures, and components as vital components that need additional physical protection based on risk insights. I cannot help but think that a risked-informed performance based approach may provide powerful insights and result in improved security requirements. We also need to develop creative ways to provide rapid response to emergencies and better coordination with local authorities.

In closing, I would like to thank you for the opportunity to discuss these issues with you today. Although we are struggling through this time of uncertainty, I remain confident that the health and safety of the public will continue to be protected and that the future for the nuclear industry will continue to be resplendent based on the quality and capabilities of the people entrusted to operate the nuclear reactors safely.