



# NRC NEWS

U.S. NUCLEAR REGULATORY COMMISSION

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**The Honorable Jeffrey S. Merrifield  
Commissioner  
U.S. Nuclear Regulatory Commission**

**at the**

**NSRC Conference  
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## Introduction

As many of you may know, I have dedicated many speeches to encouraging our staff to remain on the cutting edge of innovations in technology in the areas of safety and security. I want to take this opportunity to highlight the need to remain just as vigilant in the area of emergency preparedness. Rudolph Giuliani has said that relentless preparation develops a culture of responsibility and awareness. The Nuclear Regulatory Commission plays a significant role in this country's preparedness and response in the unlikely event of a nuclear emergency. Therefore, we have a responsibility to ensure that we devote the resources and staff effort necessary to ensure that our country is prepared should that unlikely event ever materialize.

## Big Problems Call for Big Solutions

To be clear, our efforts in the area of emergency planning are substantial. Our staff is well informed, dedicated, and does an outstanding job communicating with other federal agencies responsible for coordinating the nation's emergency response. That could not always be said of the NRC. Until the late 1970's emergency preparedness and response activities were fragmented among many federal, state, and local agencies. The NRC was one of them. During the event at Three Mile Island (TMI), however, the Nation became acutely aware of our shortcomings in responding to an event at a nuclear facility. Our communications with the State and media were abysmal and helped make a serious situation even worse. There was so much confusion over whether to order an evacuation that the public became distrustful of our ability to ensure their safety.

After Three Mile Island, the National Governors' Association requested that President Jimmy Carter centralize emergency functions, which he eventually did. Through an executive order he created, among other agencies, a new Federal Emergency Management Agency (FEMA). The NRC coordinated all emergency planning at nuclear facilities with FEMA. Over the years our agencies worked together to ensure that the communities in the areas of nuclear facilities were well prepared to respond to an event at a nuclear facility. Then the events of 9/11 put an even finer point on the need to be prepared. In the aftermath of 9/11 FEMA, along with 22 other federal agencies, programs and offices, became part of the Department of Homeland Security (DHS). With this change, our agency faces new challenges. We enhanced our emergency preparedness capabilities since 9/11, but I believe we should continually ask ourselves whether our emergency preparedness and response capabilities are up-to-date and adequate to respond to a radiological emergency.

Emergency preparedness has been, and will continue to be, an area on which we must maintain our focus. However, at virtually every regulatory body I know, including our own here at the NRC, the number of staff dedicated to this task is typically quite low, and in some cases not elevated to a level of importance equivalent to the technically oriented roles.

It is obvious to me that the level of attention that our Agency has historically directed toward emergency preparedness is not fully commensurate with its vitally important role of protecting public health and safety and the environment. I say this not merely as a regulator, but one whose early career was strongly influenced by this important concern. As a junior staff member for a New Hampshire senator in 1986, I spent more than half of my time on issues surrounding the licensing of Seabrook Station's nuclear power plant. Seabrook, which is located less than ten miles from the border between New Hampshire and Massachusetts, was the subject of significant controversy when then-Massachusetts Gov. Michael Dukakis refused to certify the Massachusetts portion of the ten-mile emergency planning requirements for Seabrook. This controversy nearly led President Reagan to issue an executive order reducing the NRC ten-mile EPZ requirement for Seabrook to two miles. Ultimately, the NRC adopted an alternate approach to certifying the adequacy of the emergency plan—an approach that ultimately eliminated Massachusetts' ability to block the licensing.

### Preparation Boosts Public Confidence

For me, what was most critical about the Seabrook decision was the degree to which the public embraced the importance of emergency planning. It is key to providing the public confidence that the plant is safe. Unlike technical staff, who are more comfortable with discussing the likelihood of core damage frequency based on certain postulated events, most members of the public want to be assured that in the event of a radiological emergency, they and their families can be protected or evacuated.

The lesson borne out of the event at TMI, and following through the more recent concern in New York about the Indian Point site, is that the public is searching for an answer to a very simple question: If something happens, will my family be safe? To answer that simple question, one cannot provide a technically driven answer based on probabilistic assumptions postulating the likelihood of failure of key structures, systems, or components. Instead, robust emergency preparedness is the key to enhancing public confidence, and getting to the one-word answer: "yes."

At the very least, we need to ask ourselves if we have corrected all of the emergency response issues that surfaced during the TMI event. I am not sure that we have accomplished all that we should in this

regard. We must be confident that our processes for making decisions on appropriate protective actions in the event of an emergency are adequate. Otherwise, the public will not follow our instructions and the benefits of the protective measures will be compromised. The TMI experience clearly illustrates this point.

On Friday, March 30, 1979, in the height of the confusion over the conditions at the plant, the NRC staff recommended to Governor Thornburgh an evacuation within five miles of the facility. Concern was in part sparked by radiation measurements taken on site. If properly interpreted, the measurements should not have signaled that there would be significant offsite releases because measurements of this magnitude had been seen in the previous days and did not result in significant offsite releases. Nevertheless, this measurement set off a crisis. While much of the panic can be blamed on a lack of a command and control structure at the NRC, a matter which I am completely confident has been corrected, some of the confusion stemmed from a lack of data, imprecise measurements, and lack of standards for determining when to take certain protective actions.

The public reacted just as one would expect. They distrusted the utility and the NRC as they sensed that there was too much confusion to place any confidence in the government's ability to protect their families. First the Governor had recommended sheltering in place, then evacuation of women and pre-school children. The response was that approximately 3500 pregnant women and pre-school children evacuated, roughly 83% of that population, but in addition 70,000 others evacuated as well.<sup>1</sup>

There will always be panic in the midst of a crisis, but a better, more credible and predictable system for measuring offsite releases would have eliminated some of the factors that fueled the increased panic during the TMI event.

#### Key Initiatives Following 9/11

Earlier this year, following a reexamination of our emergency response capabilities after 9/11, a unanimous Commission agreed to reorganize our emergency preparedness and response programs and enhance our emergency equipment. By almost tripling our staff in this area, and by placing this organization more harmoniously within the Office of Nuclear Security and Incident Response, the Commission has embraced Chairman Diaz's idea that we should be considered a safety, security, and emergency preparedness agency. I heartily believe this was a long-needed and valuable change. I further recommended, and the Commission agreed, to update and modernize our incident response center in Rockville.

Similarly, the federal government initiated a number of activities after 9/11 to better coordinate emergency response and preparedness. Creating DHS was perhaps the most substantial change. DHS has a number of initiatives underway, including responding to the President's direction to develop a new National Response Plan to align the various Federal resources into a unified, all-discipline and all-hazards approach to domestic incident management. This plan ties together the complete spectrum of federal incident management activities, including the prevention of, preparedness for, response to, and

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<sup>1</sup> J. Samuel Walker, *A Nuclear Crisis in Historical Perspective Three Mile Island*, University of California Press 2004, pp. 138-139.

recovery from an act of terrorism, a major natural disaster or other major emergency, such as a radiological release from a nuclear facility.

Nonetheless, I believe for our part that increasing our staff, enhancing our organizational effectiveness, and updating our equipment are merely the first steps to meeting this important public challenge. I believe we need to do more.

### Borrowing and Conducting Research

One of the benefits of my travel abroad is the ability to benchmark NRC capabilities with those of our counterparts. What is clear to me is that we have much to learn in this regard. Earlier this year I traveled to South Korea which included a visit to the Korea Institute for Nuclear Safety. I saw meteorological and plume release information that was more detailed, timely, and realistic than our own. Similarly, in a recent visit to our counterpart HSK in Switzerland, I saw an encapsulation of emergency response actions, including both evacuation and sheltering that were fully protective of public health, presented in a way that was not only useful for regulators, but also easily understandable for the general public.

Clearly we need to learn and share more. We need to work with other federal agencies including DHS, FEMA, and the Department of Energy, to examine whether we can improve our offsite radiation dose data collection systems, models for predicting where a plume may travel, and processes for determining appropriate levels of protective actions.

I believe that further research is needed in this area. Regulators around the world have used their unique experience to develop new, innovative and frequently economical methods of enhancing their effectiveness at protecting public health and safety. For the benefit of the American public, as well as for citizens of countries worldwide, we must more effectively share our best practices in this regard.

Having made that statement, do not mistake it as a call for significantly new levels of research funding. Indeed, my New England Yankee sensibility restrains me from doing so. Instead, at the NRC we need to more effectively utilize our bilateral relationships to identify methods, techniques, models and equipment that will allow us to enhance our emergency capabilities.

Furthermore, like the recent update of our incident response center, we need to identify new readily available off-the-shelf technologies to enhance our response capabilities.

Let me give you some specific examples. Offsite monitoring can be more predictable. In Switzerland, they have offsite monitors in the vicinity of their plants that feed real-time data to centralized computers that can be checked at any time to judge the conditions outside the site boundary. These measurements are publicly released on the Internet. Radiation detection and plume modeling equipment is more effective and cheaper than it was in years past. Approximately 15 years ago widespread use of radiation monitors was expensive, with per unit costs running in the hundreds of thousands of dollars. Today, portable devices can be deployed for significantly less. Similarly, enhancements in modeling using readily available information can provide more site specific determinations of plume dispersion that can more realistically consider the effects of weather and site specific geographical conditions. Many of our counterparts have taken this step and we should follow their lead.

Better real-time data in the event of an emergency would allow for more effective and timely decision-making. Our counterparts in Switzerland relying on these systems that provide precise data have developed dose thresholds for determining when to order a graduated level of emergency responses. For example at a particular dose, the public would be directed to shelter in place, with more significant dose thresholds calling for evacuation. These precise standards are supported by their state-of-the-art dose modeling equipment. What is impressive about this system is that it is easy for the public to understand, which should lead to more rational decisions by the public in response to an emergency. This is especially important when sheltering in place is the recommended response. It is difficult to convince the public to remain in place under changing conditions. We learned this lesson during TMI as 70,000 people decided to ignore the government's recommendation and evacuated anyway.

I am not recommending that we simply implement these programs. What is feasible for a small country with relatively few reactor sites may not be appropriate for our country. Switzerland has four reactor sites, we have sixty-seven. We should consider the approaches of other foreign regulators, especially those with larger nuclear programs, to determine if there are any insights that would be useful. To be consistent with our current regulatory principles, we should consider a risk-informed approach to emergency preparedness and response enhancements. For example, it may be that we should first consider radiation detection enhancements based on the proximity of a facility to a large urban area. Finally, we need to work with other federal and State agencies who may be responsible for implementing any enhancements to emergency preparedness programs.

#### Conclusion

As we meet this week to discuss the results of our past research efforts and seek to identify areas that need further effort, I urge you to look beyond the technical issues with which we may be most comfortable. It is clear to me, and I hope to you as well, that the public believes that we must not only do what is necessary to make certain that the plants we regulate are safe, but that we must also do what is necessary to ensure we are prepared for any contingency. Emergency preparedness, which had long been treated as an afterthought by this agency and others, has been given a full seat at the table with the recent staffing and organizational changes. Now we must make certain that this organization is fed and nurtured in a way that will assure the public that it is a strong and equal member of our public health family. Continued research and benchmarking can and should play a key role in making this happen. The public demands this focus and we must meet it.