



# **NRC NEWS**

## **U.S. NUCLEAR REGULATORY COMMISSION**

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**The Honorable Greta Joy Dicus  
Commissioner  
U.S. Nuclear Regulatory Commission**

### **“Radiological Emergency Planning”**

**Harvard School of Public Health  
August 23, 2000**

Good morning ladies and gentlemen. I am very pleased to be here with you today to provide some of my perspectives on current radiological emergency planning (REP) issues --- and given that I was a former student at the Harvard School of Public Health I think I find it much more comforting to be the lecturer rather than the lectured. Did I mention there would be a test at the conclusion of my session?.....

Back in 1997, I was here to speak on emergency planning (EP) for this course and I'm glad to report that since then the NRC, our other government partners (FEMA, State, and Local governments), and our private sector partners (utilities and industry representatives) have been able to work out improvements in this area and have identified many more opportunities to focus resources in the right areas to make EP more effective, as well as, to inject the risk-informed perspective/mindset into EP. Today, I would like to provide my perspectives as a Commissioner and spend some time discussing the concept of lead Federal Agency and the NRC's incident response focus, our participation in incident response exercises, the NRC's State Outreach program, realism in scenarios, recent events related to EP and some new initiatives in EP such as, the One Voice initiative, the implications of decommissioning, the new reactor oversight program and EP, and the use of potassium iodide in EP.

I have been directly involved in EP for the past 15 years; therefore, my comments are both a product of practical experience as a responder, planner, and a policy maker. Over the past four years as a Commissioner I have gained many insights regarding the issues associated with -- and the importance of EP from a national policy perspective. And I can tell you that because of my unique opportunity to participate in EP activities for the Arkansas Nuclear One power plant as a State regulator and now as a Federal regulator, I have a great interest in involving ALL stakeholders in the Commission decision making process related to EP.

## NRC RESPONSE AND PARTICIPATION IN EXERCISES

### Lead Federal Agency Concept

The nature of the emergency, the licensee, the materials involved, and the facilities involved are determinants utilized in the Federal Radiological Emergency Response Plan to designate the Lead Federal Agency (LFA). The LFA is responsible for leading and coordinating all aspects of the Federal response. The LFA is responsible for providing information on the status of the overall Federal response, specific LFA response activities, and the status of onsite conditions. In situations where a Federal agency owns, authorizes, regulates, or is otherwise deemed responsible for the facility or radiological activity causing the emergency and has authority to conduct and manage Federal onsite actions, that agency normally will be the LFA. Generally, the LFA is expected to: (1) ensure that State's needs are addressed, for example, if requested by the State or local authorities, the LFA may advise them on protective actions for the public; (2) the LFA approves the release of official Federal offsite monitoring data and assessments; (3) the LFA provides other available radiological monitoring data to the State and to the Federal Radiological Monitoring and Assessment Center. There are five federal agencies that could be designated as the LFA in response to an incident originating from the use of nuclear materials; however, the decision is generally based on the organization's normal responsibilities.

The NRC is the LFA for any emergency at a nuclear facility licensed by the NRC or an Agreement State or any emergency involving radioactive materials licensed by the NRC or an Agreement State. The Department of Energy (DOE) is the LFA for any emergency at one of its facilities or involving transportation of DOE materials. The Department of Defense (DOD) is the LFA for any emergency at one of its facilities or involving transportation of DOD materials. NASA is the LFA for emergencies involving domestic satellites that involve NASA space missions. DOD is the LFA for domestic satellites that involve DOD space missions. The EPA is the LFA for those emergencies at a nuclear facility not licensed, owned, or operated by a Federal Agency or an Agreement State or for those emergencies involving materials not licensed or owned by a Federal Agency or an Agreement State. EPA is also the LFA for emergencies resulting from a foreign or unknown source. For example, if a radioactive source is found -- something that we have too much experience with I'm afraid, and ownership is not readily known the EPA would assume the LFA role. In the event of a significant foreign event, the EPA would monitor such an event with the focus of protecting the health and safety of United States citizens. For emergencies other than these, the Federal Agencies would confer to determine the LFA for that particular event. In all of these situations, the Federal Emergency Management Agency (FEMA) is the coordinating Agency.

### NRC Role in Incident Response

Next, I would like to speak to the responsibilities that the Commission faces in its incident response role. The NRC Chairman (and any of the other Commissioners can be delegated this responsibility) is the senior NRC authority for all NRC response activities and is the Director of the NRC's executive team during event response. The Chairman may act alone or on behalf of the Commission in an emergency and the Chairman is responsible to the President for all agency actions.

The NRC's executive team maintains an oversight role during event response and wants to maintain the broad picture of the event assessment and progression --- and in doing so is generally concerned with determining the status in five key areas.

The first question we want to answer is obvious -- how serious is the accident? In making this assessment for a nuclear facility we gather information through our resident staff, automated information systems, and the licensee to determine what has occurred, if there were radiological or chemical releases, when the threat of release is expected to end, and the relative severity of damage if it has occurred. Next, we are interested in knowing how effective the licensee's response is. In reaching this assessment the NRC verifies if the event was classified correctly, if the State and local officials have been notified, what recovery actions have been identified, and what protective actions have been recommended. Third, we are interested in the State's response. So, we are looking to see if the State has issued any protective action decisions, has the implementation of protective actions been effective, and how many people were affected in issuance of the protective actions. We then want to determine the status of the NRC and coordinated Federal response. In making this assessment, we consider the NRC response mode, the status of the NRC site team and interactions with other federal agencies such as the FEMA, the Department of Energy, the Environmental Protection Agency, the Department of Agriculture, the Health and Human Services Administration, and the National Oceanic and Atmospheric Administration depending on the nature of the incident we are responding to. And lastly, we want to determine how information has been disseminated to the public. In making this determination we want to know if press releases have been issued by the NRC, State, local governments, or the licensee, whether the joint information center has been established, and whether the NRC News Center has been activated. I'm sure at times licensees have experienced frustration with the NRC's requests during incidents, and I would encourage active dialogue to ensure our interaction is at the appropriate level, but I would hope that licensees, State, and local governments also see the value in helping us meet our mission while enhancing public confidence in our ability to regulate the nuclear industry in support of the Congressional policy that nuclear-generated power will be part of our energy mix.

### NRC Participation in Exercises

Next, I would like to review NRC participation in exercises. I have been and remain a proponent of significant involvement of Federal agencies in exercises. A number of years ago the NRC revised the exercise rule that eliminated the requirement for the "off year" or annual onsite exercise. While this reduced the required frequency for exercising the licensee's onsite emergency plan from annual to biennial performance, it preserved the requirement for the biennial full participation exercise. This rule requires licensees to ensure that emergency response capabilities are maintained between exercises by conducting drills, at least one of which must involve some of the principal functional areas of onsite capabilities. The rule also requires licensees to continue giving those State and local governments that are in the plume exposure pathway the opportunity to participate in these drills.

With respect to the biennial drill requirement, I would also mention that FEMA has initiated efforts to provide additional flexibility to offsite authorities to improve, streamline, and enhance the efficiency and effectiveness of their emergency preparedness programs by providing an option of foregoing one of the biennial exercises in a 6-year cycle and allow the demonstration of reasonable assurance by alternative means. The NRC is assisting FEMA by initiating efforts to change emergency preparedness regulatory requirements to accommodate this initiative. Right now the thinking is that the alternative demonstrations could be such activities as FEMA evaluated radiological focus drills, functional drills involving some of the key areas of offsite response, and a post plume phase only (ingestion pathway) exercise. As part of the change, offsite authorities would be required to negotiate with FEMA the alternative means to demonstrate reasonable assurance in the biennial period in which

the exercise is not conducted. These efforts were one of the outcomes of a FEMA initiated strategic review of its radiological emergency preparedness program (REP) for commercial nuclear power plants which began in 1996.

While exercises currently will only be evaluated every other year at a site, the NRC remains committed to conduct and participate in emergency exercises. Because of the year 2000 concerns with computer software -- 1999 was a very busy year for the NRC in that we participated in a larger than normal number of exercises -- including a few unique exercises conducted in part so that we could verify our readiness to deal with the possibility of concurrent events stemming from the Y2K problems as we entered the 21<sup>st</sup> century.

In 1999, the NRC participated in five full scale exercises (Dresden, Limerick, San Onofre, and HB Robinson, Y2K Preparedness), five regional-based exercises with three reactor licensees and two fuel facilities, one table top on Y2K readiness (with participation by Calvert Cliffs), and five ingestion team exercises. In 2000, NRC headquarters has participated in two reactor exercises and has one more is scheduled in October. In addition, NRC headquarters also recently participated in a first of a kind exercise at Nuclear Fuel Services fuel facility in Tennessee in cooperation with the FBI.

Finally, I would like to leave you with an opinion that I shared at a recent NRC Y2K table top exercise. I'm sure that those of you who have been intimately involved with the issue have found it to be a challenge. But, I believe, it was also an opportunity. On the Federal level, the coordination and cooperation between Federal agencies on the Y2K issue are a foundation upon which the Federal government is building for future cooperative efforts. Much of the effort being spent on the Y2K problem will help Federal agencies better respond to emerging unconventional threats to the United States, such as terrorist acts. The NRC has purchased satellite phones for all of our nuclear power plants as part of our Y2K contingency plan, and many utilities are also investing in upgraded communications systems. As a result, if a tornado were to destroy the commercial telephone lines into a site, as well as our own direct access lines, as it did last summer during a tornado at Davis Besse, we will still be assured of communications with the site. These are just a few examples of how the Y2K effort will pay off long after we stand down from the increased staffing from our operation centers on New Year's Day.

#### Lost Source Exercise

In 1996, the NRC's Office for Analysis of Operational Data reported (these numbers are for reportable incidents) 130 incidents where there was a loss of control of NRC licensed material, and 133 similar incidents of agreement-state licensed material. More recent data for 1999 was that there were 98 incidents regarding loss of control for NRC licensed material and 116 for agreement-state licensed material. Up to 1996, exercises for these types of incidents had not been conducted, although there had been many incident responses to real incidents, so you can see why the idea for conducting an exercise for recovery of a lost source began to take hold. As a result, in September and October of 1997 the EPA acting as the lead federal agency, NRC Region I, and two States conducted two lost source exercises. These exercises were conducted to demonstrate an emergency response and source recovery operation involving the private sector, county government and State government, and utilizing federal assistance from multiple federal agencies. The results of the exercise are documented in NUREG-1634. After reviewing the report I saw several statements made by participants which confirmed my belief that realism of scenarios is all too important to ensure an effective incident response program in that many participants stated they learned how to deal with managing isolation

and recovery of the source which could not have been achievable through class room exercises or walk throughs. More recently, in 1999 another lost source exercise involving a scrap yard was conducted in North Carolina. All of these exercises involved coordination among agencies that had not occurred previously.

It is also important to note that even in the years since this first exercise, there are still incidents involving lost sources including over exposures, and while we gained valuable experience from these exercises, because of issues like turnover of emergency response personnel, we still need to keep planning and drilling and looking for opportunities to ensure we maintain effective incident response programs at the local through Federal level.

### Outreach and Training

The NRC maintains a comprehensive State Outreach Program for incident response which provides information, training, and opportunities to exchange ideas between State, utility, and Federal agency representatives.

This program was initiated a number of years ago to support an effective incident response program to improve the States' understanding of how the NRC, as a lead federal agency, will coordinate the Federal response to a severe accident at a nuclear facility. In managing this program the NRC annually conducts training with State, utility, and other Federal emergency responders ---- and when scheduling permits attempts to schedule the training close to scheduled site emergency exercises to reenforce and solidify the experience gained. A secondary objective remains to improve and enhance the working relationships among emergency responders to power plant accidents and provide an opportunity for State representatives to develop a greater understanding of the resources available from the Federal government to assist a State. Through this program many States have obtained copies of the NRC's dose assessment software and are also using it for their decision making.

In 1999 emergency response representatives from 15 States, including local authorities and utility staff, participated in training as part of this program. In 2000 the NRC is slated to conduct outreach with representatives from more than 20 States. Right now I'm told there are plans to conduct the next session in Florida around the 20<sup>th</sup> of September. Dates for future sessions can be obtained through the NRC web site. Additionally, in part due to the realization that there is always going to be turnover in the emergency responder organizations, it is my understanding that the NRC will be continuing this program --- and based on my experience working for the State of Arkansas I can attest to the value this kind of effort provides local and State emergency responders.

### Realism in Scenarios

Next, I would like to talk about something I have labored over for several years. Realism in Scenarios.

Over the years that I worked with the emergency response efforts of Arkansas, I came to understand the sequences of events that were necessary to drive an emergency response exercise at a Nuclear Power Plant to the General Emergency classification. These sequences were all too often as extraordinary as they were predictable. However, while my perceptions regarding emergency response scenarios have remained unchanged over the past few years, as a Commissioner, I have gained a greater appreciation regarding the limitations facing drill conductors.

Never-the-less, I still believe that in order to achieve realism in scenarios, realizing there is normally only a short amount of time to run through the whole scenario, it is important to clearly articulate the specific objectives to be accomplished during the exercise. One way to improve realism would be to focus on a smaller number of objectives. However, regardless of the scope of the exercise it is equally important to rigorously test those objectives and make them as realistic as possible. Exercising the radiological emergency response plan is a time and resource consuming activity for all organizations involved. It will not be a small task to improve the utility of these exercises, factor in potential opportunities for success paths, still meet exercise objectives, and observe increasing budget limitations. But I believe this is preferable to ensure emergency responders do not become complacent, question the utility of their efforts, and potentially experience “negative training” as a result of their participation. I strongly encourage the scenario developers to continue to strive for quality in their efforts and the overall safety objective of preparing emergency responders for a, however unlikely but, potential event at a nuclear power plant.

### Indian Point 2

As I'm sure many of you must be aware, in February this year an Alert was declared as a result of a steam generator tube rupture in one of the steam generators at the Indian Point 2 nuclear power plant in New York State. Now this incident has generated a significant level of press coverage and the NRC and the utility, Con Ed, have been interacting very frequently regarding the causes for the tube rupture and the emergency preparedness weaknesses that were manifested during the licensee's response to the event. A significant result of this event has been larger than normal congressional interest. As a result, the Commission has received numerous requests from local, State, and Federal officials to order the plant to remain shut down until its steam generators are replaced. And perhaps a part of this larger than normal interest stems from an NRC internal assessment regarding our approval of tube inspection extension request for the steam generator that experienced the tube rupture. However, I think that the emergency preparedness lesson learned from this event is that conducting exercises which rigorously test drill objectives is proven and effective way to discover if there are areas in need of improvements, and we should strive to diversify our objectives to the extent possible so that we can ensure all aspects of the emergency preparedness programs are thoroughly tested.

### Japanese Fuel Facility Criticality Accident

As you know in September 1999, a criticality accident occurred at the Japanese Tokai-Mura fuel cycle facility. As a result of the Tokai-Mura criticality accident, the President requested the NRC to conduct a review of U.S. commercial nuclear fuel cycle facilities, to ensure that a similar accident could not occur. The NRC has spent a significant amount of resources studying the accident to determine if there were any lessons learned for our fuel facilities and issued its final assessment in April this year. First off, I would just mention cooperation from the Japanese authorities was instrumental to us in completing our assessment. Essentially, the accident occurred because technicians at the plant achieved criticality while working with highly enriched U-235 in an unfavorable geometry. While the NRC staff has concluded that the possibility for a similar event would not be likely in the U.S. because of the regulatory measures established for U.S. fuel facilities, I think there were still some very important emergency preparedness lessons to be learned.

Following the accident the local mayor had to make the hard choice of issuing evacuation orders without the benefit of government guidance or advice. Adding to the resulting confusion from the accident, was the fact that local authorities issued their protective action orders about four hours

after being notified by the company of the accident. The company also took a while to notify the government of the accident, and didn't warn local emergency responders that they were facing a criticality accident. The National Emergency Preparedness for Nuclear Disaster Law in Japan did not include fuel fabrication facilities. Thus, the plant did not have plans regarding communication of general information to the public or emergency responders. Approximately 310,000 people were ordered to remain inside their homes and everyone living within 350 meters were evacuated. And while, the IAEA fact finding mission concluded that the accident did not involve widespread contamination of the environment and that there was little risk off site once the accident was brought under control, the public perception will be a difficult obstacle to overcome for the Japanese. As a result of these difficulties in communicating effectively with the public, the incident got a lot more publicity than expected. TMI taught us a lot about communicating with the public and this recent event shows how important working out the details ahead of time for communicating with the public is essential to maintaining public confidence.

## **NEW INITIATIVES IN EP**

### ONE Voice Initiative

Based upon lessons learned during the Y2K rollover and the Tokai-Mura criticality accident in Japan, the NRC initiated a plan to begin discussions to enhance communication and coordination among the 17 member Federal agencies of the Federal Radiological Preparedness Coordinating Committee (FRPCC) so that the Federal government speaks in a consistent manner following radiological events AND efficiently and effectively disseminates information between Federal agencies regarding these events, especially those occurring in a foreign country. The information is very important because quite frequently, following an international event, the NRC or DOE would be very interested in determining if there were any implications for related U.S. facilities. In approving the plan, the Commission emphasized its belief that the Federal Government needs to speak with "one voice" during international nuclear related emergencies. Initially under the plan, discussions were to occur among the FRPCC concerning improvements in communications and coordination among Federal agencies in responding to peacetime radiological emergencies under the Federal Radiological Emergency Response Plan. Additionally, the initiative will address a broad range of alternatives such as: 1) decentralizing the approach in which each agency responds to inquiries using a common base of information; 2) centralizing the approach in which the Lead Federal Agency is responsible for all external communications; 3) developing an approach in which the White House is responsible for all external communications; 4) establishing an approach in which the FRPCC itself is responsible for all external communications; or 5) establishing a graded approach where responsibility for communication would change as the scope or intensity of the emergency situation changes or as public concerns escalate. Under this initiative it would be desirable that the FRPCC seek routine involvement by a White House agency in its activities and in individual agencies' emergency exercises when the scenario, if real, likely would draw significant media attention. While the NRC's mission is clearly focused on oversight of U.S. nuclear materials and their uses, it is important to remember that international events have a direct reflection on public confidence here; therefore, I would underscore the importance of our involvement in international activities -- which contributes to enhance the public's perception by ensuring accurate and consistent information on foreign events is disseminated.

## Effects on Decommissioning on Emergency Planning Requirements

As more licensee's have decommissioned their nuclear power plants the realization that changes in the emergency preparedness requirements has become more evident . In this regard it has been recognized for some time that EP regulatory requirements do not take into consideration the risk reductions over time for permanently shutdown nuclear power plants. In the past any relief for a decommissioned plant from EP regulatory requirement has been obtained on a case-by-case basis through the exemption process. We know that after a reactor is permanently defueled, the traditional accidents that dominate operating plant risk are no longer applicable. During decommissioning the primary safety concern involves the fuel stored in the spent fuel pool. In particular, if the spent fuel pool water is lost and there is sufficient decay heat, the fuel rods could heat up to where the oxidation of the zirconium fuel cladding becomes self-sustaining and leads to a zirconium fire. Under this scenario, if the accident progressed this far, there could be an offsite release which might lead to offsite evacuation. Because of the potential for the zirconium fire, it is believed that EP requirements are still required until the possibility of such an accident is sufficiently low. The NRC staff has studied this issue and generally concluded after a period of about five years this scenario would be unlikely; however, after one year (because of decay heat of fuel) there are sufficient bases for measured changes to the emergency plans.

For this reason the NRC has been working towards developing a framework which includes a risk-informed integrated rulemaking plan to better focus the requirements associated with a decommissioned nuclear facility and thereby reduce unnecessary regulatory burden -- which has an additional outcome in that it allows for more effective and focused use of NRC and licensee resources in those areas warranting attention. This plan specifically outlines how to make EP regulatory requirements consistent with plant status. Earlier this summer the NRC staff provided the Commission with its recommendations for a generic approach for reducing the unnecessary regulatory burden associated with EP requirements which were developed for operating reactors. I clearly support this effort and have expressed my desire to the staff to aggressively pursue this effort; however, if that is to occur it is important for industry to work with the NRC to support this goal. Therefore, I am looking forward to later this year when the NRC staff forwards further recommendations to the Commission which specifically address comments on the plan from the nuclear industry.

## Reactor Oversight Program

Many of you I'm sure have heard about changes to the NRC's reactor oversight program over the past few years these changes have lead to the creation of performance indicators as an additional tool for measuring licensee performance and allow for more effective and efficient use of NRC and licensee resources. And while I know that Mr. Miller will be covering the performance indicators for emergency preparedness among other insightful topics, I would be remiss if I didn't offer my opinions and thoughts on these changes.

Emergency Preparedness is the final barrier in the defense in depth approach to safety that NRC regulations provide for ensuring the adequate protection of the public health and safety. Emergency Preparedness is a fundamental cornerstone of the Reactor Safety Strategic Performance Area. The objective of this cornerstone is to ensure that actions taken by the emergency plan would provide adequate protection of the public health and safety and the environment during a radiological emergency. And while I am very supportive of this program, I also believe that we should periodically evaluate the appropriateness of the performance band thresholds for the cornerstone as future risk



insights are developed. As the NRC and industry moves towards implementation of a more performance-oriented assessment framework, the success of the process is dependent upon the licensees' implementation of its programs, and the NRC's verification of the licensees's performance. Therefore, I feel it is imperative that the NRC utilize appropriate inspection and evaluation resources and expertise to properly verify and assess by independent means, the effectiveness of licensee performance in this area.

### Potassium Iodide - KI

In June of last year, the NRC issued a proposed rule, on the consideration of KI in emergency planning, to revise the emergency planning regulations to require that the use of KI be considered as a protective measure for the public as a supplement to evacuation and sheltering as appropriate. If you will recall the administration of KI before or very soon after inhaling or ingesting radioiodine will greatly reduce the uptake of radioiodine by the thyroids of children as well as of adults, thus reducing the thyroid dose and the subsequent risk of thyroid cancer and other thyroid diseases. The final rule package is currently being considered by the Commission. The NRC staff is also working with FEMA and other Federal agencies on a revision of the KI Federal policy. The NRC also plans to issue a revised draft guidance document on the use of KI following reevaluation by the FDA of its 1982 guidance on exposure action levels and proper dosage of KI. Also before the Commission is a NRC staff recommendation that KI be distributed through the National Pharmaceutical Stockpile (NPS).

Until, very recently I was the only Commissioner that had voted on these issues. First off, I want to reiterate my belief that evacuation provides the best protection to the public to a large release of radioactive material; however, being a former State emergency responder, I realize that things don't always go as planned and the extra measure of protection from the use of KI provides supplemental protection - defense in depth if you will. Sometime after I had voted to approve the staff's recommendation to use the NPS to distribute KI following emergencies, FEMA's director, Mr. James Witt expressed his disagreement with using the NPS in a letter to the Chairman in June of this year. One other issue that remains part of this debate is funding. That is, who will fund the stockpiling of KI.

Obviously, there is going to be a lot more work before the NRC, FEMA, and the States agree on the use of and the appropriate distribution mechanism for KI. I am optimistic we will get there -- even the Congress is beginning to become more active in this issue as evident by the recent statements made by representative Phil English (R-PA) that he plans to introduce legislation to require the FEMA to develop a plan - in cooperation with NRC - for stockpiling potassium iodide tablets within a 50-mile radius of a nuclear power plant.

### **CONCLUSIONS**

Although much has been done to address the emergency preparedness issues that confront the nuclear industry, we need to continue to look ahead to ensure that regulatory framework reflects the challenges we face regarding our changing missions and budget as well as the economic pressures being faced by the nuclear industry. And we must not lose sight of the fact that while the regulatory requirements are long established in this area we must continually reflect on what we could do better -- work on maintaining through drills the cooperation among emergency responders to ensure that public safety is maintained -- develop realistic scenarios -- work on ensuring our communications with the public is effective. The benefits for doing so are enhanced public confidence which is worth every bit

of the effort. Effective incident response also helps ensure that nuclear energy remains a viable alternative for this Nation as directed by Congressional policy.

In my opinion, the NRC can help with the efforts to maintain a workable framework for emergency preparedness through our regulatory efforts, and achieve a high degree of credibility demanded by the public in arriving at its decisions in a fair and open process.

Thank you for your attention, I would be pleased to answer any questions you might have at this time.