



NRC NEWS

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**Prepared Remarks of Dr. Dale Klein
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Thank you. I am very pleased to be here.

I want to focus on the theme of education today. This is both a personal and a professional interest of mine. When I was Chairman at the NRC, I often mentioned how NRC and DOE need to work with industry and universities to prepare the next generation of nuclear engineers, technicians, and skilled workers. Today, I want to expand on this topic, especially since this is the first opportunity I have had to speak so fully about my individual views on this subject before a large audience.

Here is my first point: the U.S. is risking its future economic and national security if it does not focus on expanding scientific and engineering education, and promoting technological excellence. This is not a new point. We have all heard how countries like China and India are graduating far more engineers every year than the United States, even taking into account their larger populations. But I think there has often been some complacency about this, because policy-makers believed that since U.S. educational institutions were the best in the world, we would not lose our competitive edge. This is a risky gamble. I have often warned about the dangers of complacency in the area of nuclear safety, and I think it is clear that complacency has been at the root of some excellent nuclear plants encountering problems.

Why should we assume that the rest of the world is not already studying our educational programs, and learning from our best practices, in order to surpass us—just as car manufacturers abroad learned from, and then surpassed, America's leadership in the automotive industry?

But I can't think of any recent national debate that has focused on this as a prime concern of the federal government. There has not been a concerted effort to link our educational supply chain, so to speak, to our long-term science and technology needs. Some might question whether this is a proper role for the government. But it seems to me that there is a good argument for ensuring that the United States has the scientific and technical excellence we need to protect our national and economic security. Yet there is no federal agency for that... not that I am calling for one!

To meet the demand for technology expertise, we bring in a lot of educated people from other countries, and Congress periodically has debates about increasing the number of what are called H-1B visas for these high-tech foreign workers. While I am all in favor of allowing talented people from around the world to work here, I do wish there was an equal emphasis on increasing the number of high-tech workers we produce here at home.

Of course, there are programs here and there for funding higher education science and engineering programs – including some grants provided by the NRC. But there is very little consistency and continuity. In FY 2008, the NRC awarded 88 grants totaling \$20 million to 60 different institutions in 26 states, plus Washington, D.C., and Puerto Rico. We appreciate Congress entrusting us with this nuclear education program; and I believe we have done a very good job administering those funds.

This program used to be run by the Department of Energy, but in recent years the Administration had not sought funding for it. A frustrated Congress then provided appropriations to the NRC, with the expectation that this would allow the program to flourish. I understand that some believe all educational funds should be administered through the Education Department. But I believe that this tightly targeted \$15 million dollar program, and the NRC's \$5 million in grants for curriculum development, would not get the necessary attention at the Education Department, which has an annual budget of about \$68 billion. Its focus has been primarily on K-12 programs and undergraduate student loans. In addition, I think it is important to recognize that the vocational training and faculty development elements of our program have purposes and benefits distinct from direct research programs.

In fact, I think the lack of government effort to encourage science and engineering excellence in higher education – at least since JFK was president – is because the focus has been on giant bureaucracies like the Education Department, rather than on smaller agencies like NASA or the NRC. These smaller agencies, I believe, have a much better view of the pipeline – from talented high schoolers to the graduate level. And we have a better understanding the current and future needs of both government and the private sector.

So one of the challenges I would leave you with is to make an effort to explain to students just how many different skill sets are needed in the nuclear energy industry. Your ANS student chapters are great for attracting students who are already interested in nuclear. But what about finding ways to lure some of those electrical engineers away from consumer electronics and into the power sector? I think that in the current economy, the stability of the power sector compared to more transient industries could be very attractive.

Of course, there will also be a need for skilled crafts people, technicians and engineers. So I think more outreach to high school and community college students could be beneficial, especially by explaining that a PhD isn't necessary for a good career in the nuclear field.

Another important avenue for encouraging technical excellence is raising the level of basic scientific literacy in the United States. One of my goals when I was Chairman was to make the NRC a resource for accurate and accessible information about radiation and nuclear issues. There is a lot of misunderstanding about these matters – which is made worse by alarmist,

exaggerated statements by people with an agenda. Unfortunately, the media often contribute to the public's inability to evaluate these statements, because they don't shed light on the technical or scientific merits of these claims.

I am sure you all remember that the 30th anniversary of the accident at Three Mile Island occurred earlier this year. After the accident a blue-ribbon panel, called the Kemeny Commission, was set up to review what happened, and figure out what lessons could be learned to prevent it from happening again. They issued dozens of specific recommendations. One was about the media. The Commission recommended, and I quote – “All major media outlets hire and train specialists who have more than a passing familiarity with reactors and the language of radiation.” If that recommendation had been followed it would have made my job a lot easier; although a minor detail like the First Amendment meant that not even Congress had the authority to implement that suggestion. But all of you can follow up on that idea, and do your part to elevate the public discussion of these issues.

Two years ago I gave a speech to professionals in the field of nuclear medicine, and I pointed out that if more people understood the nature of radiation, and the important role it plays in our everyday lives, they might be less afflicted by what you could call “radiation phobia.”

The Health Physics Society responded by creating a website called *radiationanswers.org*. It's very good – with clear, concise, and accurate information. I am gratified that the Health Physics Society responded to my challenge. And I congratulate them for it. But this is still a drop in the bucket. If you Google “radiation,” you have to scroll through 5 pages of links before you find that site.

People talk about the so-called Nuclear Renaissance. I mostly have stopped using that term because it was becoming over-used. But it is worth remembering that it means “rebirth.” And it does seem like the world is experiencing a rebirth of nuclear power. But the original meaning – as it applied to the Renaissance that centered around 16th century Italy – was a rebirth of *learning*. And I think it is worthwhile to recall that the original meaning still has relevance.

In my opinion, the nuclear renaissance in the United States will only succeed over the long term if there is a rebirth of learning. One hundred years ago, schools taught agriculture because we lived in an agrarian society. Today, we live in a technological society – and this has to be taught as a basic subject, alongside English, history, and the natural sciences.

Addressing all these challenges will be monumental task; but in my view, a necessary one.

Before I close, I do want to mention one more thing, however. I know that tomorrow Pete Lyons will be elected to “Fellow Membership” of the ANS – the highest grade of Membership in the Society. This is a distinct and well-deserved honor, and I want to warmly congratulate Pete, and thank the ANS for recognizing his very notable contributions to nuclear science and technology. Those contributions are too numerous for me to mention here, and I know they will be summarized at the ceremony tomorrow morning. So, once again, congratulations Pete... it has been an honor and a privilege to serve with you at the NRC.

Thank you again for inviting me to share some thoughts with you.