



United States Nuclear Regulatory Commission

Protecting People and the Environment

NRC's Role in Workforce Development and Education

Technical Session: Isotopes for Medicine and Industry

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Program Overview

- **NRC Education Grant Programs: \$5M & \$15M**
 - **Energy Policy Act of 2005 - \$5M**
Curricula Development
 - **FY 2008 Language - \$15M**
Scholarships, Fellowships, Faculty Development and Trade Schools
 - **Focus is on Nuc. Engr., HP, and Rad. Chem.**

Program Authorization –Curriculum Development (\$5M)

- **The Energy Policy Act of 2005 directed NRC to:**
“**support** courses, studies, training, curricula, and disciplines pertaining to nuclear safety, nuclear security, nuclear environmental protection, and other **fields** that the Commission determines to be **critical to NRC’s regulatory mission.**”

Program Authorization - \$15M Program

- Yearly Congressional Language (2008 on) included funding to:
 - “**support education** in nuclear science, engineering, and **related trades** to develop a workforce capable of the design, construction, operation, and regulation of nuclear facilities and the safe handling of nuclear materials.”
- **Benefit the nuclear sector broadly, not primarily NRC**

How do we do what the legislation requires?

- Scholarships – 2 years, \$10,000 per student per year, awarded to institution (\$200,000)
- Fellowships – 4 years, \$50,000 per student per year, awarded to institution (\$400,000)
- Faculty Development – 3 years, \$150,000 per year plus institution match (\$450,000 + \$150,000)
- Trade schools/community colleges – 1 year, \$10,000 per student (\$150,000)
- Curriculum development - ~ \$200,000 over 2 years

HP/Rad. Chem. Awards – 2009 & 2010

- **2009 HP – 25 awards totaling \$3.76M**
- **2009 Rad. Chem. – 4 awards totaling \$.8M**
- **2010 HP – 19 awards totaling \$4.0M**
- **2010 Rad. Chem. – 5 awards totaling \$1.09M**
- **2009: 24% of funding; 28% of awards**
- **2010: 26% of funding; 25% of awards**

Significant Developments

- **Support over 500 students annually**
- **FY 2007-2010; support 108 institutions in 33 states, DC and Puerto Rico**
- **Re-emphasized participation of:**
 - **Trade schools and community colleges**
 - **Minority serving institutions**
 - **Health physics and radiochemistry**
- **Continued cooperative work with DOE and NNSA on the Integrated University Program**

What's Happening

- **Student population growing**
- **New university nuclear programs beginning**
- **Government grant funds leveraged**
- **Partnering occurring**
- **Increasing interest by trade schools and community colleges**

Observations

- **Grant Applications far exceed available funds**
- **Currently, the greatest near-term workforce needs appear to be in the trade and craft areas**
- **Outreach to pre-college students is essential to enable students to make informed decisions about pursuing the study of nuclear technology**
- **Success may depend, for the foreseeable future, upon continued government investment in nuclear education**

Education - Not Promotion

- **As a regulator, NRC's educational reach is more limited than other agencies, such as DOE**
- **Congress has provided NRC funding for workforce development but not necessarily physical infrastructure support**
- **NRC dilemma: Balance educational needs of the nuclear sector with regulatory mission**
- **NRC is unable to fund an educational program that will satisfy all of the Nation's nuclear education infrastructure needs**

Examples of Other Education Areas that Require Support

- **University research reactors**
- **Internships for students – gov't, labs and industry**
- **Nuclear engineering/science research grants**
- **International – students, faculty, and curriculum**
- **Pre-college outreach programs – i.e., DOE's "Harnessed Atom"**
- **Cooperative programs among universities, Federal agencies and private sector**
- **A nationwide survey to gauge the expected demand for nuclear trained workers (engineers, health physicists, radio-chemists, the trades, etc.), and the demographics of the current workforce**

Pitfalls - Lessons Learned

- **Funding discontinuity undermines program**
- **Loss of funding = loss of interest**
- **Regulatory body can educate but not promote**
- **Coordination among government, industry, and universities is essential for best use of limited resources**
- **Balance workforce supply with demand to avoid over-populating the field**
- **Outreach efforts are important**

Hurdles

- **Scope limitations of current NRC program**
- **Annual funding uncertainty**
- **Better understanding of the workforce in terms of personnel and physical infrastructure needs**
- **Building relationships among universities to avoid duplication of effort**
- **Within NRC, efficiency in processing grants and responsiveness to stakeholders**

Possible New Directions

- **University Faculty exchanges with NRC (FD recipients), national labs, and internationally**
- **Summer internships at national labs and international facilities**
- **Regional university partnerships to include minority institutions and smaller schools**
- **Focused research on topics “relevant” to industry and NRC – not “mission-related” more “problem-related”**
- **Outreach to pre-college students on nuclear safety/technology education**
- **Increased funding**

What Can NRC Offer Students?

- **“Best place to work” in the Federal Government**
- **Scholarships and fellowships**
 - **\$10,000 to \$50,000 per year for up to four years**
- **Student internships (usually summer)**
- **Student Career Experiences Program (Co-ops)**
 - **Upon completion (640 hours) student is eligible for non-competitive appointment**
- **Nuclear Safety Professional Development Program**
 - **Two year program for exceptional recent grads**
 - **Three tracks, Engr., HP, and Scientific**
 - **Two 90 rotational assignments**
 - **Promoted each year and placed in career ladder position**

Conclusions

- **Federal nuclear education programs, in cooperation with other entities, appear to be developing a sufficient pipeline of personnel to meet U.S. needs**
- **Funding discontinuity may undermine confidence in Federal commitment to nuclear education**
- **Absent retirements and new builds, oversupply *could* occur in some areas**
- **“Supply and Demand” survey being conducted by DOE should help identify where education resources should be focused**
- **While NRC grant program has been successful and well received, broader mission scope would enable increased assistance to un-served and underserved**

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