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REACTIONS

FROM THE AMERICAN NUCLEAR SOCIETY TO TEACHERS INTERESTED IN THE NUCLEAR SCIENCES

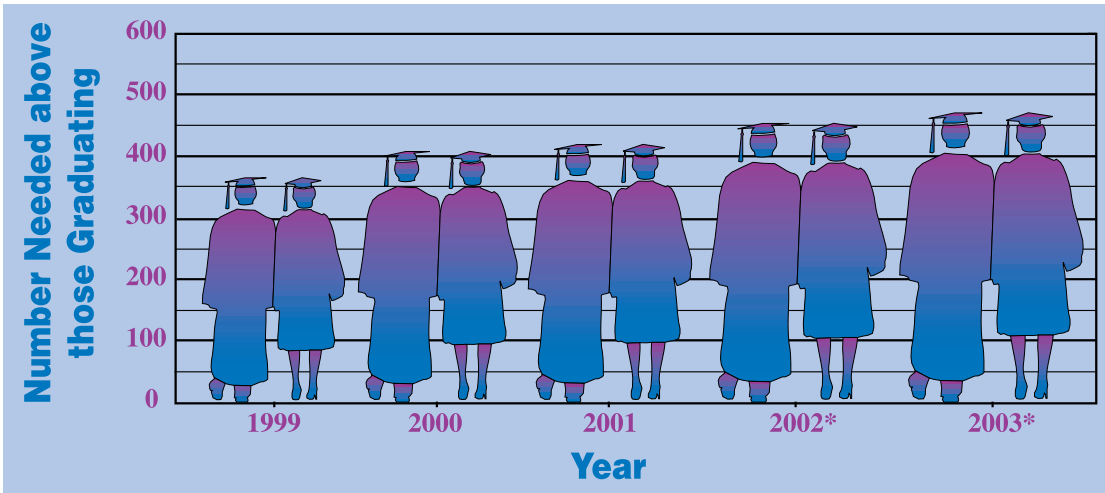
Career Opportunities

Nuclear Science and Technology: Demand for Grads Exceeds Supply

There is a high demand for graduates of nuclear engineering programs with either B.S. or M.S. degrees. In fact, many industry experts have been concerned about the shortage of graduates and are eagerly working to increase recruitment of students.

A study for the American Society of Engineering Education, completed in 1999, found a significant gap between the number of BS/MS trained workers needed by the fission nuclear power industry and those graduated. The study projected that the gap would increase in coming years. That study concerned itself only with the "fission nuclear power industry"; clearly the demand for workers extends to other areas.

At the 1999 Winter Meeting of the American Nuclear Society, a special workshop addressed the supply and demand imbalance affecting the nuclear industry workforce. Speakers detailed how the number of graduates has declined and demand is growing. One speaker noted the enthusiasm with which companies contact nuclear engineering departments seeking graduates and the fact that many graduates receive multiple job offers.



**2002/03 supply proj. at max. for 1999-2001.*

Expected excess demand for B.S. and M.S. graduates in nuclear engineering for the period 1999-2003.

Data Source: *Manpower Supply and Demand in the Nuclear Industry*, a publication of Nuclear Engineering Department Heads Organization (NEDHO), 1999.

Supply and Demand Imbalance

This imbalance may come as a surprise to some. They may think, "No power reactors have been constructed in the United States for over twenty years. So, why is there a growing demand for workers with nuclear degrees?"

Sadly, that perspective has contributed to the growing shortage of trained workers. Because no new reactors were being built, college students considering engineering education have assumed that nuclear engineering didn't offer much of a career opportunity. As a result, fewer students have pursued nuclear engineering education, shrinking the supply of potential workers.

But, other factors have also played a role. One is the aging of our nuclear workforce. Many of the people who pioneered development of commercial nuclear power plants have retired. Others are at or near retirement age.

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Demand for Grads... continued from page 1.

Power Industry

The 103 operating nuclear power plants in America continue to contribute nearly 20 percent of the nation's electricity. Utilities and generating companies are applying to extend the operating licenses of existing plants. There will clearly be a need for engineers to maintain and operate these plants for the duration of these extended licenses. In those cases where plants are decommissioned rather than operated longer, there will be a need for nuclear engineering graduates to manage the decommissioning process.

Non-Power Needs

Power plants are not the only place where specialists trained in nuclear science find employment. Engineers using nuclear technology skills are needed in industry for applications which include gauging techniques, food irradiation, medical sterilization, and chemical processing, to name a few.

The growing utilization of nuclear science and technology in medicine has created a whole range of opportunities. Companies which manufacture diagnostic equipment require people with special knowledge of nuclear science and technology to design, manufacture, and maintain the equipment. Medical technicians and medical specialists need knowledge of nuclear science and technology in order to complete their diagnostic and treatment tasks. Health physicists are needed to assure safety for medical personnel and patients when these technologies are applied.

Research in the basic sciences, pharmacology, and many other fields utilizes nuclear technology. Highly skilled workers with knowledge of nuclear science and technology are needed to accomplish that research at universities, national laboratories and private companies.

America's highly regarded national laboratories continue to conduct research in the basic sciences (see the January 2001 issue of *REACTIONS* for an example), environmental topics, energy, waste disposal and remediation, national security applications, etc.

Recent Developments

The recent and continuing electricity crisis in California (see our April 2001 issue) has contributed to a changing attitude about the use of nuclear power for electricity generation. National leaders have begun talking about the need to include nuclear in the mix of power sources for electricity generation. Recent surveys of public opinion show significant support for nuclear power. Several power generating companies have shown renewed interest in construction of nuclear powered generating plants. There is discussion of new plant designs which can be built in less time and at lower cost than earlier designs. This changing public arena suggests the possibility of an expanding market for nuclear engineering graduates.

Summary

There is a demand for nuclear engineering graduates. The demand is greater than the current supply. That demand is projected to continue as our application of nuclear science and technology grows. Nuclear engineering is an attractive field with opportunity for your students, now and in the years ahead.

What You Can Do

Evaluating the career opportunities in nuclear science and technology will be easier for students who have learned some basic information about the field.

Students need to know that there are many applications of nuclear science and technology, that nuclear science and technology is environmentally friendly, that this specialty makes a contribution to the health and well-being of people throughout the world, and that there is a future for them in this field.

Want to know more about the many applications of nuclear science and technology? Find a full-day ANS Teacher Workshop near you and attend. ■

Related Career Resources

http://stats.bls.gov
see Career Guides - Occupational Outlook Handbook; this is a Bureau of Labor Statistics publication with guidance on how to search for job information

http://www.ans.org/pi/teachers/reactions/pdfs/2000-02.pdf
The February 2000 issue of *REACTIONS* contains suggestions on how students might go about investigating career options

http://www.ans.org/pi/teachers/reactions/pdfs/2000-09.pdf
The September 2000 issue of *REACTIONS* contains an activity (based on content of that issue) to stimulate thinking about careers

http://energy.gov
A DOE site with career opportunities listed

http://www.energy.gov/aboutus/org/natlabs.html
A list of national labs with links where additional employment info may be found

http://www.nei.org/index.asp?catnum=1&catid=7
Nuclear Energy Institute career information ■