

Teaching Safety and Security Cultures

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Training and Education

- Training and education are not the same thing
- Dogs, parrots, seals, elephants, etc. can be trained
- Only human beings can be educated
- One purpose of education is to inculcate* an understanding of fundamental principles so that an individual can later make proper decisions when confronted with new situations.

* To teach by frequent repetitions or admonitions

The MIT Department of Nuclear Science and Engineering

Nuclear science and engineering is concerned with nuclear reactions and radiation, their applications, and their consequences. We generate, control and apply nuclear reactions and radiation for the benefit of society and the environment.

Our mission is to help develop the next generation of leaders of the global nuclear enterprise while providing technical leadership in energy and non-energy applications of nuclear technology.

Today our Department is working to make nuclear power the safest, most economical, and most environmentally benign source of energy, while also laying the foundations for exciting new applications of nuclear radiation science and technology. As one of the world's leading academic departments in our field, we also have a responsibility to inform public debates on the wise, humane uses of nuclear science and technology.

NSE's Educational Triad:

Science. Systems. **Society.**

NSE's Primary Application Areas

- **Nuclear fission**
 - advanced reactor design and innovation
 - Fuel cycle/waste technology and economics
 - CANES- Center for Advanced Nuclear Energy Systems
- **Nuclear fusion**
 - NSE faculty and students, working at PSFC, conduct experimental research on reactor –prototypical magnetically-confined plasmas
- **Nuclear security**
 - Control, detection, and protection of nuclear materials and prevention of nuclear weapons spread

MIT Experience with Executive Education in Nuclear Energy

- Nuclear Plant Safety Course (1 week)
 - MIT's longest-running summer program
- Reactor Technology Course for Utility Executives (3 weeks)
 - with INPO
 - now in 23rd year
- Nuclear Energy for ENEC Executives (2 weeks)
- International Nuclear Leadership Education Program (INLEP)

The Need

- Despite Fukushima many countries are still planning to launch, restart, or rapidly grow a nuclear power program.
- With little or no nuclear experience, these countries need guidance on how to properly prepare and build programs.

How to develop the governance structures, business strategies, operational practices, and technologies needed for a successful, safe, and secure nuclear energy program?

What was Missing?

- Most programs target young professionals
- Some programs have age restrictions
- Some programs require prior technical degree
- Some programs are very technical or narrowly focused

No program was designed specifically for senior management and policy leadership!

INLEP Goal

To provide leadership education and training in the governance structures, business strategies, operational practices, and technologies needed to develop a successful, safe, and secure nuclear energy program.

Attendees:

- Senior executives of nuclear operating companies
- High-level government officials
- Senior regulators
- Opinion leaders (journalists, academics, NGOs)

How To Do It

- Presentations by practitioners (those who have real world experience) not just academics
- Reinforce with regular safety messages
- Distribute INPO Pocket Guide on *Traits of a Healthy Safety Culture*
- Innovative case studies of real accidents and situations with active role-playing.

INLEP

Course Wrap Up

1. What is the most important consideration regarding use of nuclear power?

2. What are some features of nuclear power that make it unique?

3. What is more important for a successful nuclear power program? Technology or people?

4. What are some of the features of an effective nuclear regulatory regime?

5. In putting together a nuclear power program, what is more important – schedule, cost, safety or public acceptance?

6. Who in a nuclear organization has primary responsibility for safety?

And last but not least.....

Have a safe trip home, and when you get there,
never relax your focus on safety!

Questions?