



SAND2008-5262P

The Chemical Security Engagement Program:

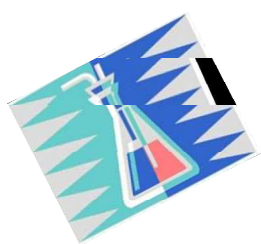
Improving Practices in Chemical Safety and Security

Pauline Ho
Sandia National Laboratories



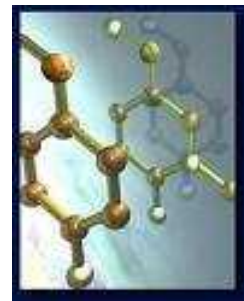
SAND No. 2008-????C
Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin
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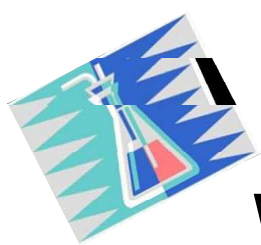




CSP Program Objectives

- Raise awareness about chemical threat, dual-use nature of chemicals.
- Foster national and regional dialogue.
- Identify chemical safety & security gaps.
- Promote and strengthen scientific collaboration among chemical professionals.
- Provide assistance to improve chemical security and safety best practices.
- Reduce the chemical threat while promoting beneficial chemical R&D.

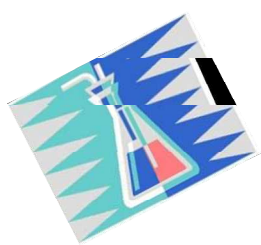




Why? The Global Chemical Threat

- **Prevent** disasters, protect the public & workers
 - December 1984: Bhopal, India
- **Deter** those that seek to:
 - Obtain and use chemical weapons;
 - Recruit scientific experts;
 - Use industrial chemicals as low-cost alternatives to conventional attacks.



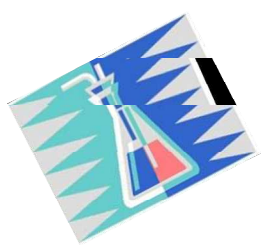


Chemical Threat Example

Dr. Chaos - Chicago:

- Targeted university laboratories and abandoned warehouses to steal chemicals.
- Chemicals included mercuric sulfate, sodium cyanide, potassium cyanide, and potassium chlorate
- Kept stolen chemicals in the Chicago subway.
- Convicted and sent to prison for possessing chemical weapons and other crimes.

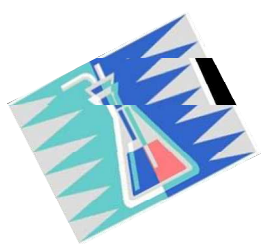




CSP Approach

- **Work with host countries** to assess priorities and gaps in chemical security and safety
- **Bring together experts** to identify chemical security assistance needs
- **Partner with**
 - Host governments
 - International, regional, and national professional chemical societies
 - Chemical professionals
 - International efforts to improve chemical safety and security

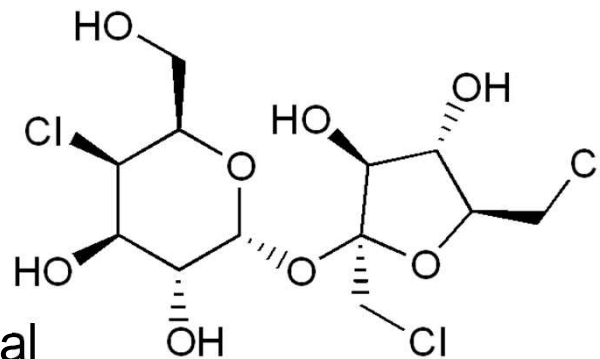




Where CSP will work

Countries with:

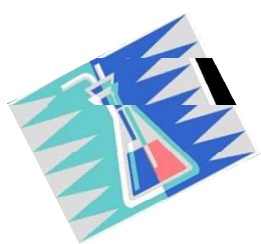
- Growing chemistry capabilities
- Growing chemical industry
- Regional security concerns
- Active producers/exporters of industrial chemicals



Regional Approach:

- South and Southeast Asia
- Middle East
- Expanding to other areas

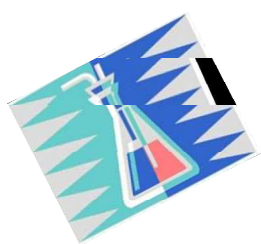




Workshop: Chemical Safety and Security in the 21st Century

- Held in Kuala Lumpur following the 12th Asian Chemical Congress, August 26, 2007
- 65 attendees from 12 countries
 - **Malaysia**
 - **Pakistan**
 - **Indonesia**
 - **Philippines**
 - **Australia**
 - **US**
- Speakers from 7 countries
- Sponsors
 - **Institut Kimia Malaysia**
 - **International Union of Pure and Applied Chemists (IUPAC)**
 - **U.S. Department of State, supported by Sandia National Laboratories**





Risks and Gaps Identified: *Universities*

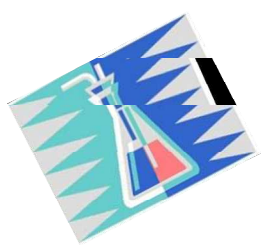
- Lack of safety practices
- Dual use of chemicals
- Improper chemical management
- Improper storage of chemicals;
- No inventory management
- Lack of enforcement of rules/laws regarding safety
- Lack of funding to support safety and security practices



Potential Consequences

- Injury or death
- Expenses for disposal, spills and other incidents
- Potential liabilities and law suits
- A single chemical incident (spill or explosion) can break the trust of the community





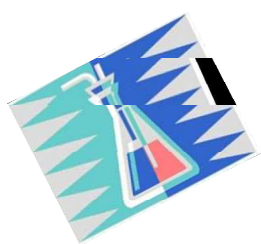
Risks and Gaps Identified: *Industry*

- Theft of unsecured chemicals
- Improper chemical management
- Improper disposal of chemicals
- Lack of safety rules/law enforcement
- Lack of recognition/awareness of the business case for security
- Lack of available training
- Lack of resources, especially for small and medium-size firms



Potential Consequences:

- Loss of \$\$\$, lower profits
- Loss of IP, competitor gains
- Injury or death to workers and nearby residents
- Expenses from incidents, spills, disposal
- Loss of trust with community

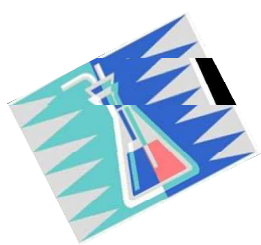


Chemical Safety and Security Training (CSST) Needs

Universities and laboratory facilities

- Fundamentals of laboratory safety
- Chemical dual use awareness
- Chemical management best practices
- Secure handling of toxic chemicals from cradle to grave

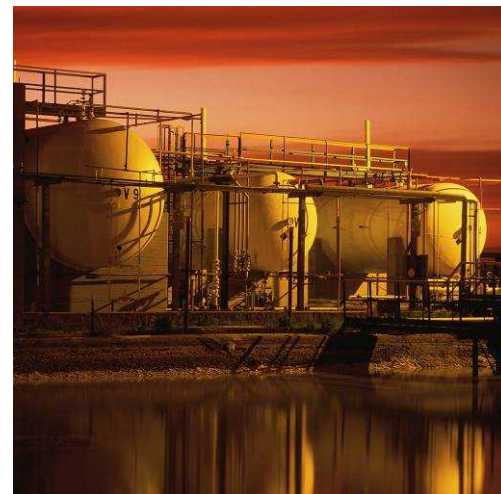


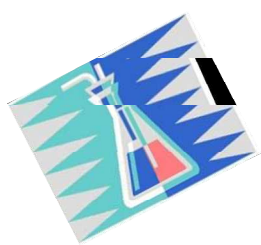


Chemical Safety and Security Training (CSST) Needs

Chemical Industry Facilities

- Responsible Care Security Code®
- Facility and transportation security
- Fundamentals of laboratory safety
- Chemical Weapons Convention and dual use awareness
- Chemical management best practices
- Secure handling of toxic chemicals from cradle to grave





CSST Awareness Training

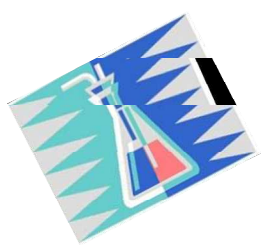
Course Goal:

- Increase awareness of the importance of chemical safety and security
- Increase awareness of methods for improving chemical safety and security
- Determine needs for future training/actions

Safety vs. Security:

- Chemical Safety: Protecting people from chemicals
- Chemical Security: Protecting chemicals from people (i.e., terrorists or thieves)





Chemical Safety and Security Training Philippines, March 2008



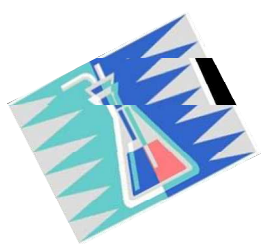
Who was trained?

- Philippine universities, small companies, government labs, law enforcement
- Three sessions in Manila, one in Cebu City

What were the training topics?

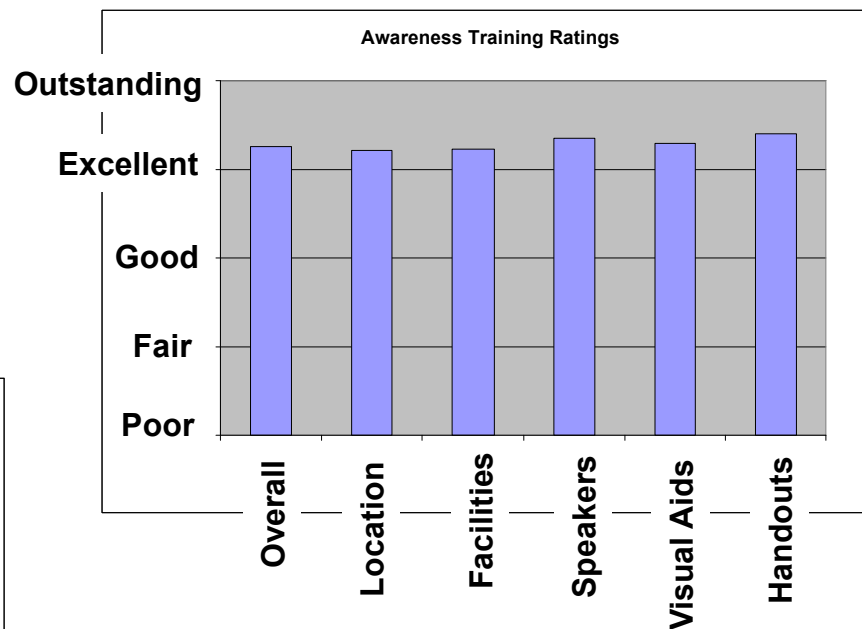
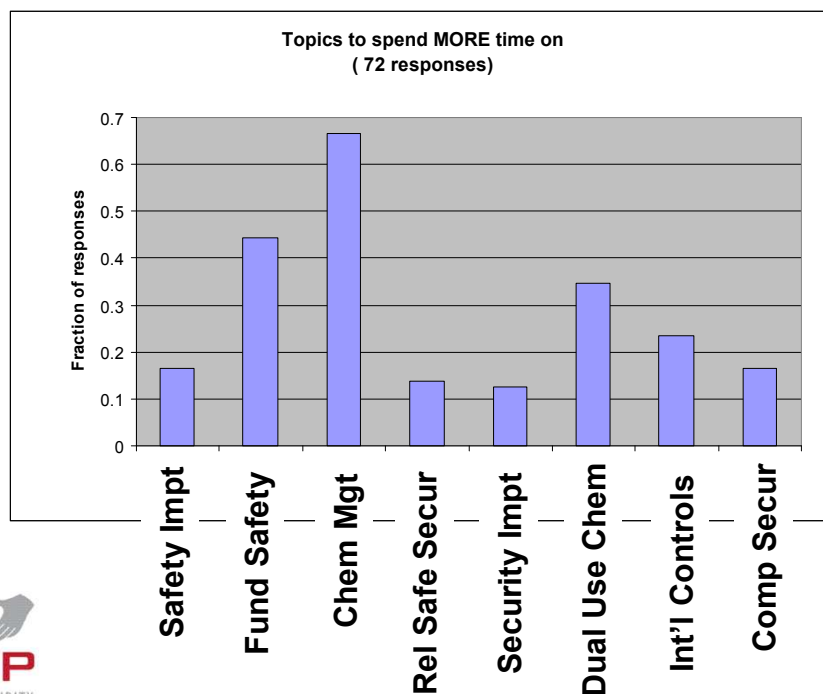
- Fundamentals of laboratory safety
- Chemical dual use awareness
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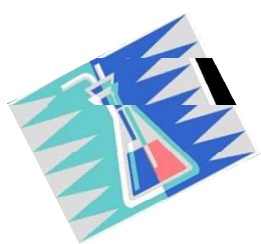
Feedback: Seminar at Ateneo de Manila University

- Morning of Monday, March 10, 2008
- ~80 chemists from academia and industry



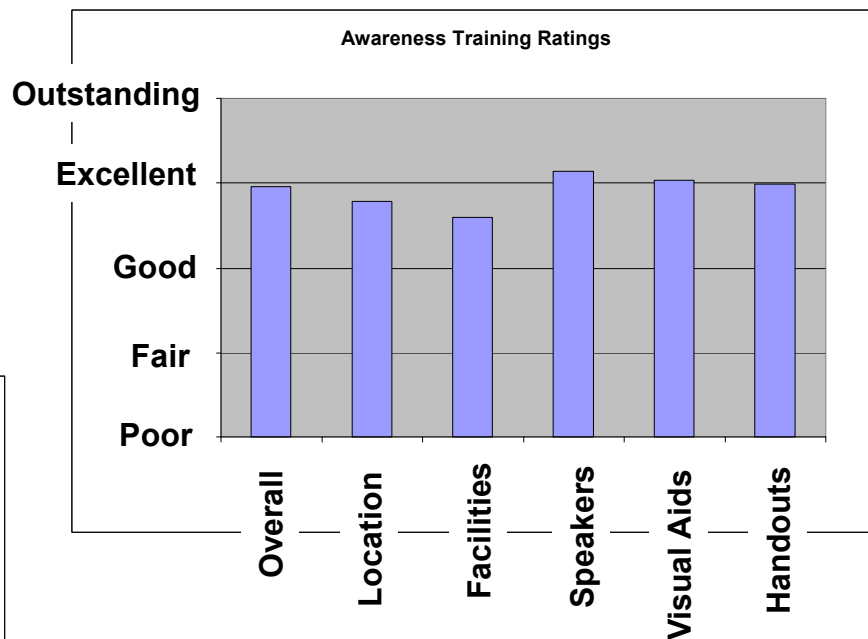
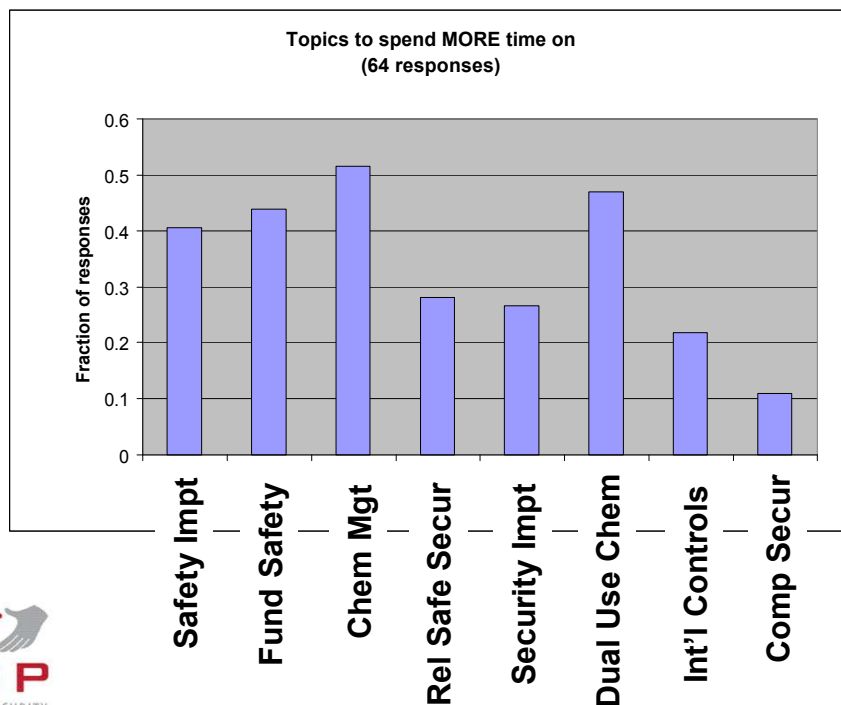
- 72 feedback forms returned
 - 69 would recommend seminar to colleagues
 - 70 want future in-depth seminars
- Many comments, suggestions





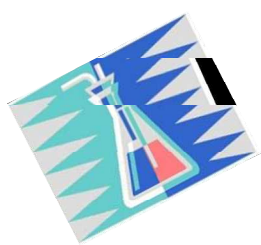
Feedback: Seminar for Philippine National Police - Chemists

- Morning of Wednesday, March 12, 2008
- ~130 chemists from government labs and industry



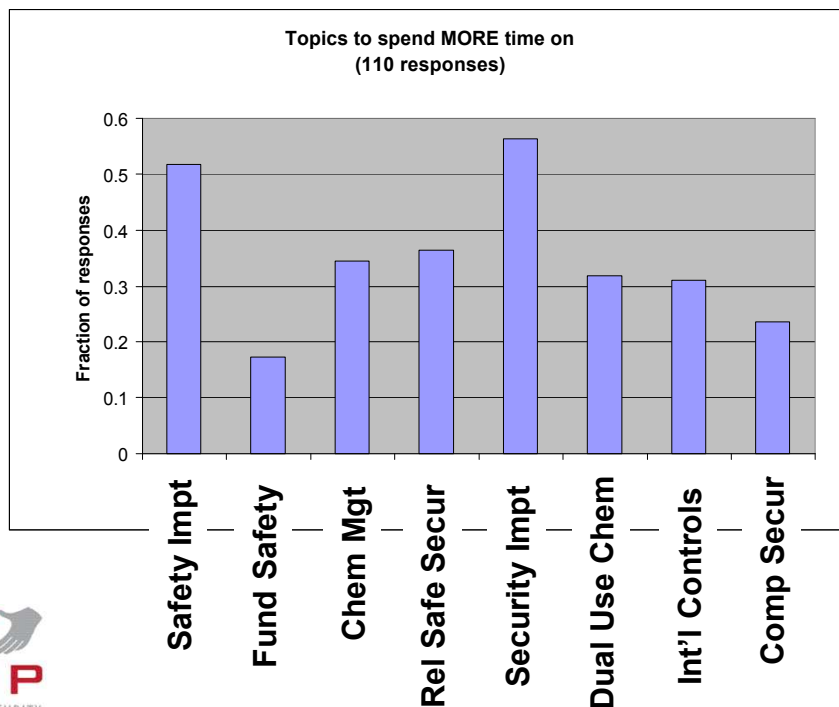
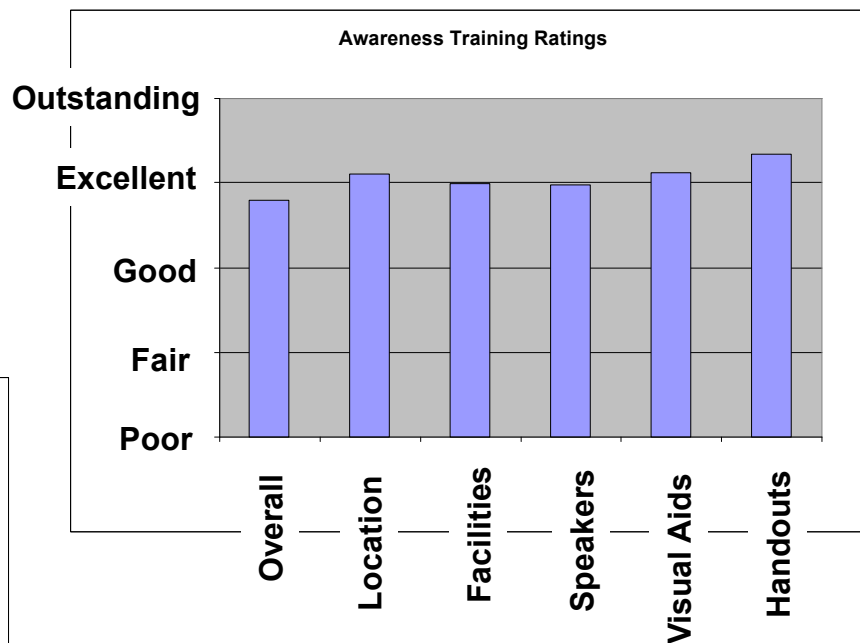
- 64 feedback forms returned
 - 53 would recommend seminar to colleagues
 - 56 want future in-depth seminars
- Many comments, suggestions





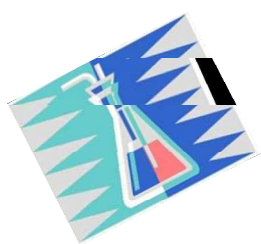
Feedback: Seminar for Philippine National Police – Criminal Investigators

- Afternoon of Wednesday, March 12, 2008
- ~160 Police Officers



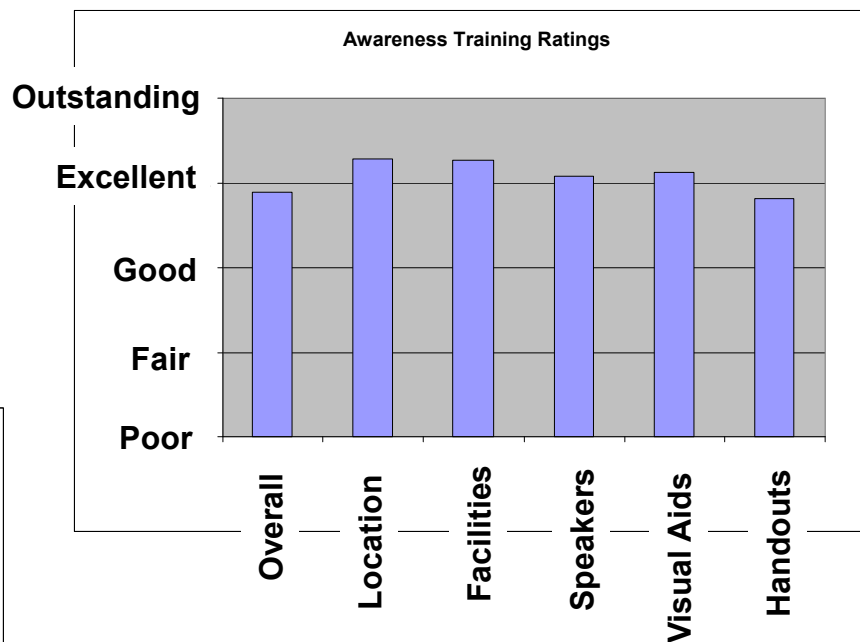
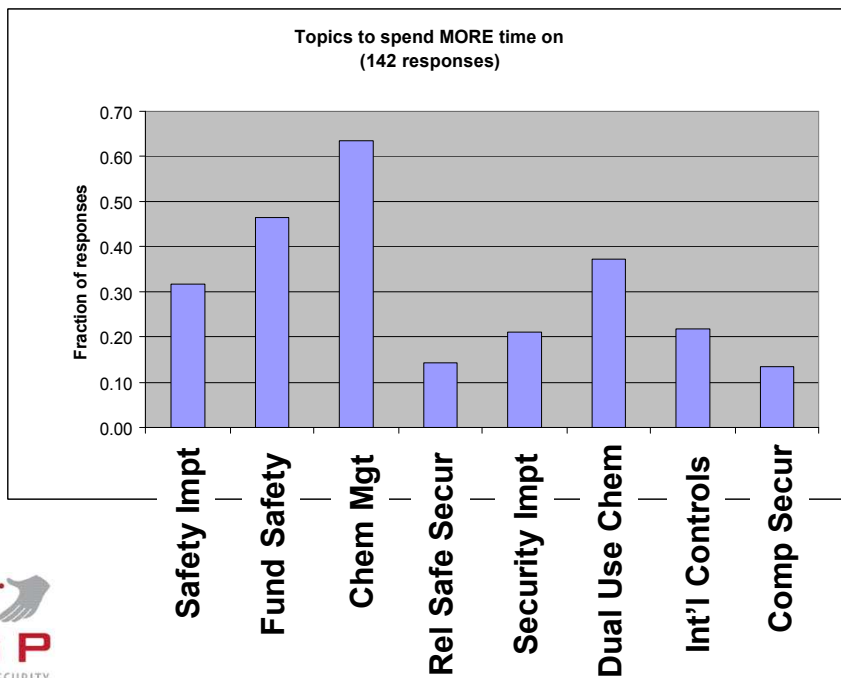
- 110 feedback forms returned
 - 87 would recommend seminar to colleagues
 - 90 want future in-depth seminars
- Many comments, suggestions





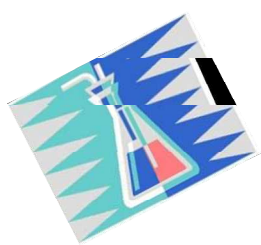
Feedback: Seminar at Univ. of San Carlos, Cebu City

- Afternoon of Thursday, March 13, 2008
- ~200 chemists from Universities, Government Facilities, Industries



- 142 feedback forms returned
 - 115 would recommend seminar to colleagues
 - 121 want future in-depth seminars
- Many comments, suggestions





Chemical Safety and Security Training Bangkok, June 2008



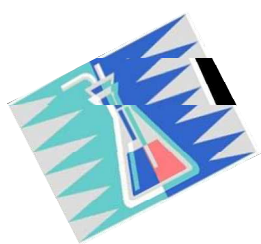
Who was trained?

- Pakistani and Afghani scientists from universities and government labs

What were the training topics?

- Fundamentals of laboratory safety
- Chemical dual use awareness
- Chemical management best practices
- Secure handling of toxic chemicals from cradle to grave
- Responsible Care Security Code®

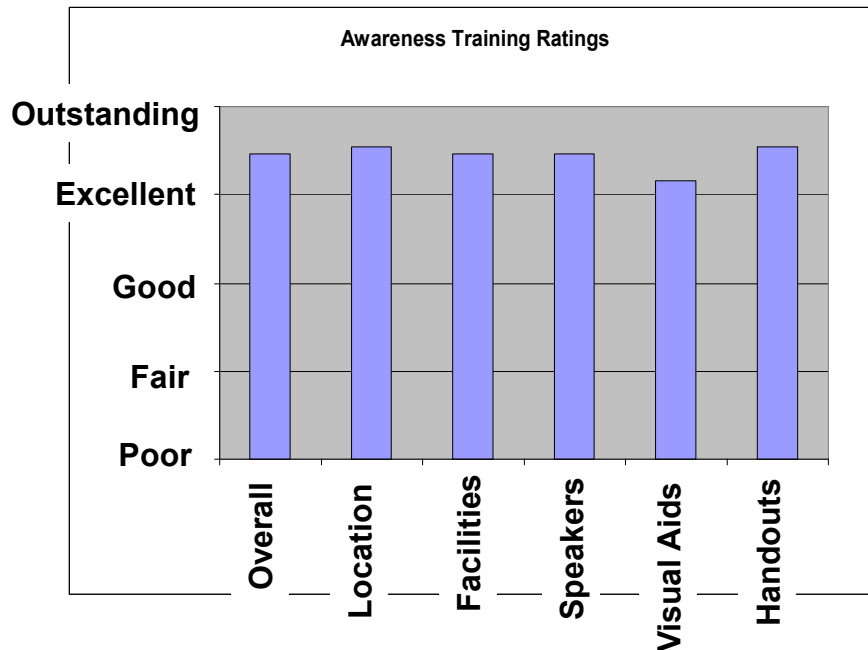


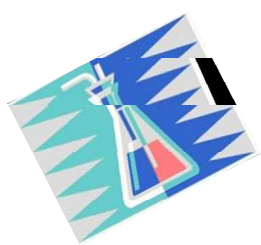


Feedback: Bangkok Workshop

Participant comments:

- Chemical safety and security is an international problem.
- (Want) Training workshops for students in different universities on safety and disposal of waste products.
- The workshops may also be conducted in other developing countries.

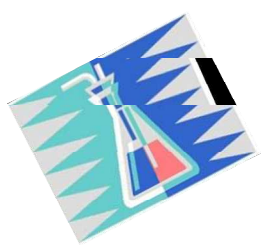




Chemical Safety and Security Training Upcoming

- **Bali, 26 August 2008**
 - **One-day workshop in association with the Annual Seminar of the Indonesian Chemical Society (Himpunan Kimia Indonesia, HKI).**
 - **Expect ~100 chemists from University, government and Industry**
- **Kuala Lumpur, 29-30 October 2008**
 - **One and a half-day workshop organized by Malaysian Chemical Society (Institut Kimia Malaysia, IKM).**
 - **Expect ~150 chemists from University, Government, Law Enforcement and Industry.**

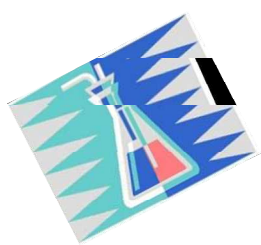




Chemists in developing nations want better safety practices, but...

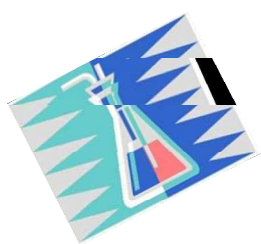
- **Laws**
 - Differ from US/Europe
 - Differ from each other
- **Attitudes**
 - Compliance less important
- **Costs**
 - Labor vs. materials
- **Chemicals may be hard to acquire**





Prudent Practices in the Laboratory

- **The Standard Reference** for US Chemical Safety
 - especially in Academia
- **Covers relevant topics for R&D laboratories**
- **Tailored to US regulatory requirements**
 - 1995 version more so than 1981 version
 - Less useful in international work



Chemical Security Engagement Program (CSP)

Learn more: <http://www.csp-state.net>

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