Emerging Non-Proliferation and Security Challenges In Nuclear Energy: Near and Long-Term Solutions

The 3rd UC Forum on the Future of Nuclear Energy

David McCallen
Lawrence Berkeley National Laboratory
UC Berkeley Nuclear Research Center

June 11, 2009
The second UCOP Forum: Asia-Pacific Forum on Integration of Sustainability, Safety and Security of Nuclear Technology

UC Berkeley Faculty Club, June 2008

Participants from:
United States
Japan
South Korea
China
India
DOE
NRC
IAEA
Westinghouse
Areva
GE
The second forum covered all topics related to the long-term sustainability of the nuclear energy enterprise.

**Resource extension**
- Uranium Market
- U3O8 Production vs Demand
- GENIII / GENIV reactors

**Waste disposition**
- Projected Spent Nuclear Fuel Accumulation from Nuclear-Generated Electricity* 2100 – 10 Yucca Mountains

**Security and nonproliferation**
- Nuclear Plant Security Zones

---

REPORT
FROM
THE UCOP ASIA-PACIFIC FORUM ON INTEGRATION OF SUSTAINABILITY, SAFETY AND SECURITY OF NUCLEAR TECHNOLOGY

A second in a series of the UCOP-sponsored forums on Nuclear Energy and Nuclear Technologies
Held on
Thursday, June 12 and Friday, June 13, 2008
In Berkeley, California

September 2008
The topics of security and nonproliferation generated the most passionate discussion and debate

Areas of consensus

• The importance of effective physical protection measures to prevent theft and sabotage

• The importance of effective IAEA safeguards to detect diversion of material and misuse of facilities

Areas of debate

• Some felt arguments of nonproliferation were being used by some nations to deny legitimate nuclear technology access for developing nations that were judged “untrustworthy”

How to move forward

• Value to using a common framework for discussion and comparison of options, such as evaluation methodologies developed under GENIV and the IAEA INPRO organization
Those concerned with policymaking understand the potential implications of the nuclear energy / nuclear security nexus

“There is a flashing yellow light for nuclear energy – proceed with caution. Security issues must be taken very seriously. There may be a clash between the needs of energy, which are vast and important, and the needs of security that could greatly restrict the role of nuclear energy”

Michael Nacht
Nominee for Assistant Secretary of Defense for Global Security Affairs
Challenges now: The ultimate outcomes of immediate nonproliferation issues could impact the nonproliferation regime far into the future.

“What I do believe is that Iran has legitimate energy concerns, legitimate aspirations”
Challenges coming: The international expansion of nuclear energy is well underway.

China – 12 new
India – 6 new
Japan – 3 new
S. Korea – 6 new
An expansive international nuclear energy enterprise will create new pressures on the international safeguards regime.

More reactors and potential new material forms

Meeting accountancy goals at bulk enrichment & reprocessing facilities

Detecting undeclared nuclear activities

Sodium fast reactor
To promote wide-open discussion, we are invoking “modified” Vegas rules

“What goes on in Vegas, stays in Vegas”

“What goes on in Forum III, stays anonymous in Forum III”