

***INDIA-U.S. COOPERATION ON GLOBAL SECURITY: A WORKSHOP ON  
TECHNICAL ASPECTS OF CIVILIAN NUCLEAR SECURITY***

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**Organised by**

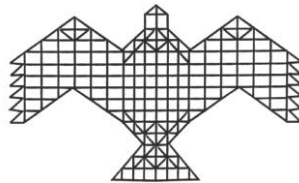
U.S. NATIONAL ACADEMIES OF SCIENCE

**THE NATIONAL ACADEMIES**

*Advisers to the Nation on Science, Engineering, and Medicine*

AND

**THE NATIONAL INSTITUTE OF ADVANCED STUDIES**



**October 29-31, 2012**

**J R D Tata Auditorium**

**INTERNATIONAL STRATEGIC AND SECURITY STUDIES PROGRAMME**

**National Institute of Advanced Studies**

**Indian Institute of Science Campus, Bangalore**

**URL: [www.nias.res.in](http://www.nias.res.in)**

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## **GOALS AND OBJECTIVES OF WORKSHOP**

This India-U.S. workshop on the technical aspects of civilian nuclear security has been convened jointly by the U.S. National Academy of Sciences (NAS) and the National Institute of Advanced Studies (NIAS) in Bangalore. The goals and objectives of this joint workshop are:

- To build mutual understanding of how experts in India and the United States approach issues of civilian nuclear materials management and security;
- To establish contacts among and Indian and US scientists and experts on nuclear materials security in order to explore future areas of cooperation relating to nuclear security issues;
- To identify potential areas of cooperation in scientific and technical fields between the experts and institutions in India and the United States.

Given these goals and objectives, NIAS and NAS encourage open and frank discussion during the workshop, and urge all participants to be actively engaged and seek specific opportunities for further collaborative scientific efforts.



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**OCTOBER 29-31, 2012**

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***AGENDA***

**DAY ONE**

- 9:30 – 10:00**                      **Introductory Remarks**
- V.S. Ramamurthy, Director, NIAS
- Raymond Jeanloz, Professor, University of California Berkeley.
- Session I:**                              **Overview of Civilian Nuclear Security: A Systems Approach**  
*Session Chair: Dr. V.S. Ramamurthy*  
*Rapporteur: Dr Arun Vishwanathan*
- 10:05 – 10:25                      M.R. Srinivasan, Former Chairman, Atomic Energy Commission
- 10:25 – 10:45                      Robert Kuckuck, Former Director, LANL
- 10:45 – 11:30                      Discussion
- 11:30 – 11:50                      Coffee Break
- Session II:**                              **Securing Nuclear Materials**  
*Session Chair: Dr Raymond Jeanloz*  
*Rapporteur: Dr Nabeel Mancheri*
- Overview of Nuclear Materials*
- 11:50 – 12:10                      R. Rajaraman, Emeritus Professor, JNU
- 12:10 – 12:30                      Ravi Grover, Director, Strategic Planning Group, BARC
- 12:30 – 12:50                      Peter Santi, Scientist, Safeguards Science and Technology Group,  
LANL
- 12:50 – 13:30                      Discussion
- 13:30 – 14:30                      Lunch
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**Session III:**

**Nuclear Forensics**

*Session Chair: Dr. Philip Gibbs*

*Rapporteur: Ms Ila Gupta*

- 14:30 – 14:50 V. Venugopal, Dr.Raja Ramanna Fellow, Radio Chemistry and Isotope Group, BARC
- 14:50 – 15:10 Ian Hutcheon, Deputy Director, Glenn Seaborg Institute
- 15:10 – 15:55 Discussion
- 15:55 – 16:15 Coffee Break

**Session IV:**

**Cyber Security for Civilian Nuclear Materials Security**

*Session Chair: Dr Surinder P Singh, Oak Ridge National Lab*

*Rapporteur: Ms Ila Gupta*

- 16:15 – 16:35 Suresh Babu, Computer Division, BARC
- 16:35 – 16:55 Cliff Glantz, Senior Scientist, Pacific Northwest National Lab
- 16:55 – 17:40 Discussion
- 17:40 Adjourn
- 19:00 Dinner

**DAY TWO**

**Session V:**

**Technologies and Physical Security of Nuclear Materials**

*Session Chair: Dr Robert Kuckuck*

*Rapporteur: Dr Arvind Kumar*

- 9:30 – 9:50 G.P. Srivastava, Director, E&I Group, BARC
- 9:50 – 10:10 Jordan Parks, Member, Sandia National Laboratories
- 10:10 – 11:00 Discussion
- 11:00 – 11:20 Coffee Break
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**Session VI:**

**Nuclear Security at Civilian Facilities**

*Session Chair: Dr V.S. Ramamurthy*

*Rapporteur: Dr Arun Vishwanathan*

*Reactor Facilities*

- |               |  |
|---------------|--|
| 11:25 – 11:45 | G.P. Srivastava, BARC                          |
| 11:45 – 12:05 | Michael Browne, Los Alamos National Laboratory |
| 12:05 – 12:50 | Discussion                                     |
| 12:50 – 13:50 | Lunch  |

*Non-Reactor Facilities*

- |               |  |
|---------------|--|
| 13:50 – 14:10 | A.R. Sundararajan, Former Head, Radiological Safety Division, AERB |
| 14:10 – 14:30 | Michael O'Brien, Associate Program Leader, LLNL                    |

*Safety, Security, Safeguards*

- |               |   |
|---------------|---|
| 14:30 – 14:50 | Paul Nelson, Professor Emeritus, Texas A&M University |
| 14:50 – 15:40 | Discussion  |
| 15:40 – 16:00 | Coffee Break  |

*Training on Nuclear Materials Security*

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|---------------|-----------------------|
| 16:00 – 16:20 | G.P. Srivastava, BARC |
| 16:20 – 16:40 | Michael O'Brien, LLNL |
| 16:40 – 17:20 | Discussion            |

**SPECIAL LECTURE**

*Chair: Dr Arcot Ramachandran,*

*Rapporteur: Prof KP Vijayalakshmi*

- |             |                                     |
|-------------|-------------------------------------|
| 17:45-19:15 | Anil Kakodkar, Former Chairman, AEC |
| 19:30       | Dinner                              |
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## DAY THREE

### **Session VII:**

#### **The Human Factor in Nuclear Materials Security**

*Session Chair: Dr. Stephen Cohen, Brookings Institution*

*Rapporteur: Dr M Mayilvaganan*

#### *Insider Threats*

09:30 – 09:50

Hormis Tharakan, Former Director, R&AW

09:50 – 10:10

Phil Gibbs, Safeguards R&D Manager Brookhaven, National Lab

10:10 – 10:50

Discussion

10:50 – 11:10

Coffee Break

### **Session VIII:**

#### **A Systems Approach to Civilian Nuclear Security:**

#### **A Summary**

*Session Chair: Dr. Stephen Cohen*

*Rapporteur: Dr M Mayilvaganan*

11:10 – 11:30

Baldev Raj, Former Director, IGCAR

11:30 – 11:50

D.V. Rao, Executive Advisor, LANL

11:50 – 12:30

Discussion

### **Session IX:**

#### **General Discussion and Suggested Future Actions**

12:30 – 13:10

Session Chair Summaries

13:10 – 13:30

#### **Closing Remarks**

Raymond Jeanloz

BV Sreekantan, Visiting Professor, NIAS

**13:30**

**Adjourn and Lunch**

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