

*Workshop Announcement /
Call for extended abstracts*

**9th INMM/ESARDA/INMM-Japan Joint Workshop
Tokyo, Japan
7-10 October 2019**

The Institute of Nuclear Materials Management (INMM), the European Safeguards Research and Development Association (ESARDA), and the INMM Japan Chapter are pleased to announce the workshop: Future Challenges for the Enhancement of International Safeguards and Nuclear Security. This is the ninth joint workshop with INMM and ESARDA and the third joint workshop in Tokyo, Japan. Extended abstracts are due on 31 August 2019; see below for details.

Workshop Program

The program will feature an opening plenary with invited speakers, 4 working groups, and a closing summary plenary. The working groups for the 2019 workshop are:

- WG-1:** International Safeguards
- WG-2:** Nuclear Security
- WG-3:** Nonproliferation and Arms Control
- WG-4:** Nuclear Knowledge Retention

Working groups 1, 2, and 3 will have concurrent sessions running throughout the workshop and the chairs of these working groups will provide a summary of the outcomes during the closing plenary. Working group 4 on nuclear knowledge retention will be conducted as a special plenary session for all participants.

In addition to the technical sessions, the program will include an opening reception and a banquet.

Working Group Descriptions

Working Group 1: International Safeguards

Technological advancements pose challenges and create opportunities in planning for and implementing international safeguards. This working group will facilitate discussions among technology developers, safeguards practitioners and policy makers in three key areas of current and dynamic change: 1) data handling; 2) advanced reactors and new fuel cycles; and 3) facility decommissioning and waste management. Data handling and automation are changing the way analysts interact with information and are enabling new insights to be gleaned through better integration and processing. Novel reactor designs and new fuel cycles, as well as increased facility decommissioning activities and first-of-a-kind encapsulation plants and deep geologic repositories, will require innovative approaches to design information verification, monitoring and inspections. The sessions will consist of moderated, participatory panel discussions, organized into the following thematic areas:

1. Data handling and information management for international safeguards
 - Automation in safeguards data collection, analysis and transmission; machine learning/AI to support analysts; and trends in safeguards information management
 - Applications of data science to safeguards effectiveness, including detection of undeclared nuclear material and activities
2. Safeguards preparedness for new types of reactors and fuel cycles
 - Experience with safeguards-by-design and interactions with stakeholders (developers, regulators and future users) of small modular reactors and other advanced reactors and fuel cycles
 - Safeguards technologies and advancements relevant to new reactor types
3. Effective and efficient safeguards for facility decommissioning and long-term waste management
 - Safeguards planning and implementation associated with facility decommissioning, including Fukushima Daichi
 - Safeguards concepts and technologies for long-term waste management and disposition, including geological repositories

Extended Abstract Topics for Working Group 1:

For this working group, authors are invited to submit an extended abstract within the three thematic areas described above. Selected authors will then be invited to frame discussion topics within one of the sessions by presenting their remarks.

- a. Systems used to support safeguards information management at facilities and States
- b. Transmission of safeguards information
- c. Connections between data and information in the strategic trade controls and safeguards domains
- d. Software and applications used for information collection, processing and analysis
- e. Emerging and advanced technologies in data science, such as distributed ledger technologies, artificial intelligence and machine learning, image recognition, etc.
- f. Mechanisms and outcomes of stakeholder engagement in 3S for new reactor designs; lessons learned and prospects for testing new safeguards technologies and techniques
- g. Safeguards concepts and approaches for new reactor deployment modalities
- h. Challenges and opportunities for planning and implementation of safeguards during decommissioning, waste management and long-term disposition
- i. Safeguards issues associated with nuclear material in waste, termination and long term storage
- j. Enhancing communication on international safeguards for engaging new partners and industries

Working Group 2: Nuclear Security

The IAEA defines nuclear security as "The prevention and detection of and response to, theft, sabotage, unauthorized access, illegal transfer or other malicious acts involving nuclear material, other radioactive substances or their associated facilities" (from IAEA Nuclear Security Series publication). This covers nuclear power plants and all other nuclear facilities, the transportation of nuclear materials, and the use and storage of nuclear materials for medical, power, industry, and military uses. Given the broad nature of this definition, this working group will focus on the following three thematic sessions:

1. Emerging technical challenges/opportunities in nuclear security
2. Insider threats/Security culture
3. Cyber security and information security

Extended Abstract Topics for Working Group 2

For this working group, authors are invited to submit an extended abstract within the three thematic areas described above. Selected authors will then be invited to frame discussion topics within one of the sessions by presenting their remarks.

- a. Emerging technologies and their implications to/application in nuclear security
- b. Nuclear security for emerging nuclear technologies
- c. Drones/unmanned aerial vehicles (UAVs)
- d. Improved detection technologies
- e. Threats (state and non-state actors) and countering the threat
- f. Experiences and lessons learned in implementing a nuclear security culture
- g. The role of modeling and simulation in nuclear security
- h. Virtual reality as training tool
- i. Addressing cyber hazards
- j. Innovative approaches in support of nuclear security
- k. Radioactive materials security
- l. Physical protection
- m. International security issues
- n. Nuclear security and safeguards interface

Working Group 3: Nonproliferation and Arms Control

One of the key challenges in international nuclear security over the long term is how to develop a comprehensive, non-discriminatory verification regime for the control of nuclear weapons in a multilateral environment. One approach may be to develop a regime based on accountancy and control processes analogous to safeguards. Participants of this working group will explore the common verification challenges and look at how to exploit technical opportunities to improve verification practices in support of arms control, non-proliferation and safeguards. The sessions will consist of moderated, participatory panel discussions, organized into the following thematic sessions.

1. Arms control and Safeguards systems of accounting and control: similarities and differences
2. New/emerging verification methods, technologies and techniques
3. The integration of strategic export controls data
4. Data analytics and integration of information

Extended Abstract Topics for Working Group 3

For this working group, authors are invited to submit an extended abstract within the four thematic areas described above. Selected authors will then be invited to frame discussion topics within one of the sessions by presenting their remarks. Specific technologies and techniques of interest in this working group are:

- a. Accountancy and control of nuclear weapons
- b. Data analytics
- c. Inspection system modelling
- d. Statistical sampling
- e. Acquisition path analysis
- f. Inspection planning
- g. New/emerging technologies
- h. Strategic trade controls
- i. The State Level Concept
- j. Data integration
- k. Challenge inspections and access under the AP
- l. Boundary/perimeter control

- m. Unattended/remote monitoring
- n. Environmental sampling

Working Group 4: Nuclear Knowledge Retention

The working group on nuclear knowledge retention for nuclear safeguards and non-proliferation aims to use the collective intelligence of all INMM/ESARDA workshop participants to discuss, establish and start to fill out a reference structure for collecting, storing, accessing and updating knowledge and experience with respect to real, historical, nuclear proliferation “crisis cases” such that this essential knowledge is retained, available for and embraced and practiced by future generations.

Crisis cases could include North Korea, Iran, Libya, Syria, AQ Kahn, South Africa and many others, but for the sake of this WORKING GROUP in Tokyo we will WORK on the Iraq case to develop a new and strongly needed **knowledge retention methodology and structure** with the aim to develop a product that can be used in future training, educational and capacity building initiatives. While the specificities of the Iraq case are obvious, particularly the time (last century) and international context are specific, focus will be on the generic value of the lessons learnt from a case now closed on all aspects.

The overall scope is to agree (and structure) the elements of knowledge and insights that must absolutely be preserved for future generations, proposed to be organized according to the three typical phases of each crisis: pre, during and post crisis situation. This should allow developing insights in the origin/causes, the way to address the problem and the lessons learned for the future.

In each phase, several types of knowledge from multiple disciplines will be analyzed & collected:

- Legal (international treaties, national/regional agreements, IAEA mandates etc.)
- Technical (inspection tools, available technologies, safeguards approaches, competence, etc.)
- International context (geopolitical situations, geographical influences, perceived threats, ...)
- Other influencing/specific factors (economy, culture, history, rhetoric, relational (human factor), ...)

The workshop participants will be split in separate groups, each of them addressing a specific discipline, with the task to debate the knowledge available (or to be dug-up) on the specific crisis:

- BEFORE (when the problem/crisis was not (fully) known, not recognized or not addressed)
- DURING (possibly with a special mandate, dedicated tools, new practices/approaches etc.)
- AFTER (lessons learned, new safeguards approaches and tools etc. but also with focus on those aspects that ideally would have been implemented for international safeguards but which were not or only partially – most likely for a variety of reasons – the latter also being a valuable part of the knowledge base to be established and passed to future generations)

The mapping of the knowledge, per discipline, in these three phases, with a qualifier “on the challenging nature” of that knowledge / situation (e.g. using red, orange, yellow and green to represent a critical, problematic, possible to address and already addressed respectively) will in addition allow to illustrate (visually, e.g. using the fault-tree type of approach) the evolution over time (pre; during; post). Ideally, in the “post” situation, no “red fields” should be present anymore, i.e. no single elements of the different disciplines that could lead to a high chance that similar nuclear proliferation cases could re-appear in the future.

In the introduction of WG4, several more general presentations on nuclear knowledge retention, management, education and training, impact, sustainability, certification and multi-disciplinarity can be accommodated. Depending upon the amount of extended abstract submissions, the length of the WG4 session will be decided e.g. half a day for the discussion on nuclear knowledge retention from historic “crisis cases” described above and half a day for the presentations submitted on the topics below.

Extended Abstract Topics for Working Group 4:

- a. Nuclear knowledge management: successes and challenges
- b. Knowledge retention: best practices and implementation
- c. Educational initiatives in nuclear safeguards and non-proliferation
- d. Training and capacity building in nuclear safeguards and non-proliferation
- e. Impact and sustainability assessment of training courses

- f. Certification of training courses: ideas, proposals, experience
- g. How to attract effectively the younger generation?
- h. How to assure a truly multi-disciplinary approach?
- i. How to engage with non-traditional partners?

Extended Abstract submissions

- Extended abstracts should be e-mailed to the INMM-Japan Chapter: jimukyoku@inmmj.org and Whitakerjm@ornl.gov.
- Abstracts should be 1-4 pages in length and should address the one of the topics addressed by the working groups.
- Identify preferred working group and topic using the abstract submission form.
- The deadline for submission is **31 August 2019**

The working group sessions are being designed to provide an interactive exchange among all the participants. Designated facilitators will moderate the discussion using a combination of invited speakers to set the stage for the discussion and an integration of the submitted abstracts. As such, the authors of accepted abstracts should not expect to make a presentation on their topic, rather they should be prepared to provide an oral description of their contribution when called upon by the facilitator as part of the integrated discussion.

Information on registration and lodging can be accessed @ IMMM website: www.inmm.org/Events/9th-INMM-ESARDA-INMMJ-Joint-Workshop-in-Tokyo

Registration

Speakers, working group chairs and workshop attendees are required to pay the registration fee for the workshop. You are encouraged to register online as soon as possible but no later than **31 August 2019**, so that your space at the workshop will be reserved.

Registration type	Registration Fee
INMM and ESARDA members	US\$325
Sustaining member	US\$375
Non-member	US\$400
Student	US\$50
Banquet ticket for companion	US\$30

Registration fee includes the following:

- welcoming reception,
- workshop banquet, and
- coffee breaks.

Accommodation

We are encouraging you to make your own hotel reservations. Hotels around the meeting place.

Optional Tour

INMM Japan Chapter has arranged for 3 optional overnight tours, with an additional fee on adjourning the workshop. The optional tour will begin the afternoon of October 10 from meeting facility and will adjourning in the evening of October 11 at downtown Tokyo. More information can be obtained from the website

For Details Contact The Following Persons

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Workshop Registration Form

(Attendance is limited – early registration is recommended)

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Full Name: (②companion's name who would like to attend the workshop banquet)

①

②

Company:

Address:

City:

Phone:

FAX:

E-mail:

Payment

- Check (Make payable to INMM)
- American Express
- Diners Club
- Master Card
- VISA

Card #

Exp.Date

Signature

Fees

- US\$325 for INMM or ESARDA Members
- US\$375 for Sustaining member
- US\$400 for non-member
- US\$50 for student
- US\$30 for companion' banquet ticket

Send payment and registration form to INMM Headquarters

Remember, Japan residents should send their registration form to:

jimukyoku@inmmj.org

Extended Abstract Form

9th INMM/ESARDA/INMMJ Joint Workshop
7-10 October 2019, Tokyo Japan

Name: _____

Organization: _____

E-mail: _____

Abstract title: _____

Preferred Working group:

- WG-1: International Safeguards
- WG-2: Nuclear Security
- WG-3: Nonproliferation and Arms Control
- WG-4: Nuclear Knowledge Retention

Preferred Working group theme/topic:

Attached extended abstract (the extended abstract may indicate collaborators and their affiliation, as applicable).

(1-4 pages in length)

Submit extended abstracts should be e-mailed to:

- the INMM-Japan Chapter: jimukyoku@inmmj.org and
- Whitakerjm@ornl.gov.

Submission deadline: **31 August 2019**

