



**International Conference on  
Advances in Nuclear Forensics:  
Countering the Evolving Threat of  
Nuclear and Other Radioactive Material  
out of Regulatory Control**

**IAEA Headquarters**

**Vienna, Austria**

**7–10 July 2014**

**Announcement and Call for Papers**

## A. Introduction

Nuclear forensics is an essential component of national nuclear security infrastructure which can help to address the threat of nuclear and other radioactive material that is out of regulatory control as well as to assess nuclear security vulnerabilities. Recognizing the benefits of nuclear forensics in the establishment and maintenance of national nuclear security regimes, the International Atomic Energy Agency (IAEA) organized, in October 2002, the International Conference on Advances in Destructive and Non-Destructive Analysis for Environmental Monitoring and Nuclear Forensics in Karlsruhe, Germany. That three-day conference, attended by experts and State officials from 37 Member States, the European Union, and the European Police Office, discussed the role of nuclear forensics in the prevention of acts of nuclear terrorism and in combating illicit trafficking in nuclear materials. Special technical sessions of the conference focused on capabilities for the identification of illicit nuclear materials, the relevant analytical techniques, case studies, and scientific and legal challenges in the field of nuclear forensics. The conference was a useful starting event for including nuclear forensics support activities in IAEA nuclear security plans and projects.

In light of the outcomes of the 2002 conference and continuous cooperation with, and feedback from, Member States, the IAEA from 2003 to 2011 implemented three coordinated research projects (CRPs) dealing, respectively, with the improvement of technical measures to detect illicit trafficking in nuclear and other radioactive materials, the development of instruments and methods for the detection of nuclear and other radioactive material outside of regulatory control, and the application of nuclear forensics to prevent and respond to nuclear security events. Moreover, during the period 2003–2012 the IAEA prepared a number of nuclear forensics guidance documents and outreach materials. In cooperation with the Nuclear Forensics International Technical Working Group (ITWG), the IAEA published in 2006 a Reference Manual entitled *Nuclear Forensics Support* (IAEA Nuclear Security Series No. 2). The latter is currently under revision and new Implementing Guides in the area of nuclear forensics are being considered. Through a programme of human resource development during the period 2010–2013, the IAEA organized and conducted 12 international, regional and national introductory and expert training courses on nuclear forensics, based on the available nuclear security guidance documents and the results of the above-mentioned CRPs. A new CRP on nuclear forensic signatures has recently been approved.

Resolutions on nuclear security adopted by the IAEA General Conference emphasize the importance of nuclear forensics as a component of a Member State's nuclear security infrastructure. The 2012 General Conference resolution on nuclear security noted the IAEA's work in developing training courses and providing guidance to assist Member States in the conduct of nuclear forensic examinations. Nuclear forensics also featured in the President's Summary of the International Conference on Nuclear Security: Enhancing Global Efforts organized by the IAEA in Vienna, Austria, from 1 to 5 July 2013. That conference included a technical session on nuclear forensics where 15 oral and poster presentations as well as an expert panel described the important role of nuclear forensics in support of law enforcement and the assessment of nuclear security vulnerabilities.

The Nuclear Security Plan 2014–2017, which the IAEA is currently working on, expects to reflect the importance of nuclear forensics for the effectiveness and sustainability of national nuclear security measures. Recognizing the importance of international collaboration in nuclear forensics, the IAEA cooperates with the Global Initiative to Combat Nuclear Terrorism (GICNT) and the ITWG in providing various forms of assistance, including enhancement of awareness, guidance and training. The international community increasingly recognizes the role of nuclear forensics as a deterrent and as a support tool in the response to nuclear security events. Through this international conference on nuclear forensics, the IAEA seeks to facilitate a comprehensive exchange of information on relevant

new technologies and techniques, as well as to address other achievements in the application of nuclear forensics.

## **B. Objectives of the Conference**

The objectives of the conference are to:

1. Review the role of nuclear forensics as an essential element of a national nuclear security infrastructure;
2. Present recent scientific achievements and exchange experience and lessons learned related to the application of nuclear forensics;
3. Review current practices in nuclear forensics and identify advances in analytical tools;
4. Discuss ways of strengthening nuclear forensics capabilities and capacity building in order to ensure the implementation and sustainability of national nuclear forensics programmes;
5. Propose and discuss mechanisms for achieving further international and regional cooperation in the area of nuclear forensics; and
6. Enhance IAEA support to Member States that request assistance in developing nuclear forensics capabilities.

## **C. List of Topics**

The following is a provisional list of the topics to be addressed at the conference:

### **Opening Session: The Historical Evolution of Nuclear Forensics**

#### **1. Nuclear Forensics within a National Nuclear Security Infrastructure**

- 1.1. The role of nuclear forensics
  - a. Threat of nuclear and other radioactive materials out of regulatory control: nuclear smuggling, orphan sources
- 1.2. The IAEA's Incident and Trafficking Database (ITDB) findings and lessons learned
- 1.3. Nuclear forensics awareness and understanding
- 1.4. National framework for implementing nuclear forensics capabilities
- 1.5. International instruments and national legislation and regulations bearing on nuclear forensics

#### **2. Implementing Nuclear Forensics in Support of Criminal Investigations**

- 2.1. Model Action Plan for Nuclear Forensics and Nuclear Attribution
  - a. Organizational structure: administrative, technical and human capital
- 2.2. Radiological crime scene management
- 2.3. Nuclear forensics laboratory

- 2.4. Interpretation and attribution
  - a. Utilization of a national nuclear forensics library
- 3. Applications of Nuclear Forensics in Nuclear Security**
  - 3.1. Examination of nuclear and other radioactive materials
  - 3.2. Handling of evidence contaminated with radioactive material
  - 3.3. Interactions with other investigating agencies
  - 3.4. Synergies and utilizing existing resources — national experiences
- 4. Nuclear Forensics Science — An Emerging Discipline**
  - 4.1. Signatures
  - 4.2. Methods
  - 4.3. Data interpretation
  - 4.4. The effect of radiation on forensic evidence
  - 4.5. Future of nuclear forensics (panel discussion — capacity building)
  - 4.6. Synergies with other scientific disciplines (e.g. geology, materials science, etc.)
- 5. Nuclear Forensics Findings**
  - 5.1. Confidence in nuclear forensics findings (e.g. procedures, standards, demonstrated competencies, national nuclear forensics library)
  - 5.2. Reporting and communication of findings
- 6. Nuclear Forensics Capacity Building**
  - 6.1. Awareness, training and exercises
  - 6.2. Research and development
  - 6.3. Education and development of expertise
- 7. International and Regional Coordination and Cooperation to Provide Assistance in Nuclear Forensics**
  - 7.1. IAEA nuclear security recommendations and guidance and the relevant national experience
  - 7.2. Nuclear Forensics International Technical Working Group (ITWG)
  - 7.3. Global Initiative to Combat Nuclear Terrorism (GICNT)
  - 7.4. Other initiatives
  - 7.5. Current and future role of the IAEA in nuclear forensics
- 8. Conclusions**

## **D. Conference Structure**

The conference programme will consist of an opening plenary session, a general plenary session, technical sessions, a poster session, a panel discussion and a closing plenary session.

The opening plenary session will include welcoming addresses by representatives of the IAEA, cooperating organizations and other relevant organizations, and high level keynote presentations. The general plenary session and the technical sessions will continue with a combination of invited presentations, submitted papers and discussions. The panel discussion will focus on the path forward

in nuclear forensics and the poster session will provide an opportunity for discussion and interaction with colleagues. The closing plenary session will be dedicated to conclusions and recommendations.

## E. Synopses, Papers and Proceedings

All papers submitted — other than invited keynote papers — must present original work and should not have been published elsewhere.

Persons who wish to present a paper at the conference — either orally or in the form of a poster — must submit a synopsis of 800 words maximum on one of the topics listed under Section C. The synopsis should give enough information on the contents of the proposed paper to enable the Programme Committee to evaluate it. Including too many introductory and general matters should be avoided. The accepted synopses will be reproduced in unedited form in the electronic *Book of Extended Synopses* which will be distributed to all participants at the conference.

### E.1. Submission of synopses

Persons who wish to present a paper or poster at the conference must submit a synopsis **in electronic format** (no paper copies) directly to the IAEA. Instructions on how to upload the synopsis to the conference's web browser-based file submission system (IAEA-INDICO) will be available on the conference web page (see Section M) as of **16 September 2013**. The synopses **must** be submitted through this system by **15 December 2013**. No other submission route will be accepted.

In addition, authors must submit the following two forms to their appropriate governmental authority (see section F) for transmission to the IAEA. These forms must be received by the IAEA no later than **15 December 2013**.

- Participation Form (Form A)
- Form for Submission of a Paper (Form B)

**IMPORTANT:** The electronically received synopses will be considered by the Programme Committee only if these two forms have been received by the IAEA through the established official channels (see Section F).

### E.2. Acceptance of synopses

Given the number of synopses anticipated and the need to provide ample time for discussion, the number of papers that can be accepted for oral presentation is limited. Authors who prefer to present their papers as posters are requested to indicate this preference on Form A.

Authors will be notified by **14 February 2014** whether their papers have been accepted for oral presentation or poster presentation.

### E.3. Submission of full papers

Only authors of papers selected for oral presentation are requested to submit a full paper. Full papers must also be submitted through the IAEA-INDICO file submission system. Specifications for the layout and electronic format of the full papers will be available on the conference web page. The deadline for electronic submission of the full papers as PDF files is **2 June 2014**.

**IMPORTANT:** The system for electronic submission of papers, IAEA-INDICO, is the sole mechanism for submission of regular papers. Authors are encouraged to submit papers as early as possible.

#### **E.4. Conference Proceedings**

The proceedings containing summaries of the plenary and technical sessions as well as full papers presented at the conference will be published by the IAEA as soon as possible after the conference. The proceedings can be ordered, at a special discounted price, during or after the conference.

### **F. Participation and Registration**

All persons wishing to participate in the conference are requested to **register online in advance** through the conference web page. **In addition**, they are required to send a completed Participation Form (Form A) and, if applicable, the Form for Submission of a Paper (Form B) and the Grant Application Form (Form C) to their competent national authority (e.g. Ministry of Foreign Affairs or National Atomic Energy Authority), or to one of the organizations invited to participate, for subsequent electronic transmission to the IAEA ([official.mail@iaea.org](mailto:official.mail@iaea.org)).

A participant will be accepted only if the Participation Form is transmitted through the competent national authority of a Member State of the IAEA or by an organization invited to participate.

Participants whose official designations have been received by the IAEA will receive further information on the conference at least three months before the opening of the conference. This information will also be posted on the conference web page.

### **G. Expenditures and Grants**

No registration fee is charged to participants.

The IAEA is generally not in a position to bear the travel and other costs of participants in the conference. The IAEA has, however, limited funds at its disposal to help meet the cost of attendance of certain participants. Such assistance may be offered upon specific request to normally one participant per country provided that, in the IAEA's view, the participant on whose behalf assistance is requested will make an important contribution to the conference.

If governments wish to apply for a grant on behalf of one of their specialists, they should address specific requests to the IAEA to this effect. Governments should ensure that applications for grants are:

1. Submitted by **15 December 2013**;
2. Accompanied by a completed and signed Grant Application Form (Form C); and
3. Accompanied by a completed Participation Form (Form A).

Applications that do not comply with the above conditions cannot be considered.

Approved grants will be issued in the form of a lump sum payment that usually **covers only part of the cost of attendance**.

## **H. Working Language**

The working language of the conference will be English. All communications and papers must be sent to the IAEA in English.

## **I. Conference Venue and Accommodation**

The conference will be held at the IAEA's Headquarters in Vienna, Austria. Detailed information on accommodation and other relevant matters will be sent directly to all designated participants approximately three months before the opening of the conference. This information will also be made available on the conference web page as soon as possible.

## **J. Visas**

Designated participants who require a visa to enter Austria should submit the necessary application to the nearest diplomatic or consular representative of Austria at least four weeks before they travel to Austria. Since Austria is a Schengen State, persons requiring a visa will have to apply for a Schengen visa. In States where Austria has no diplomatic mission, visas can be obtained from the consular authority of a Schengen Partner State representing Austria in the country in question.

## **K. Key Deadlines and Dates**

Submission of Form for Submission of a Paper (Form B) and synopsis:	<b>15 December 2013</b>
Submission of Grant Application Form (Form C):	<b>15 December 2013</b>
Notification of acceptance of papers:	<b>14 February 2014</b>
Submission of accepted full paper (10 pages max.):	<b>2 June 2014</b>

## **L. Conference Secretariat**

### **General contact details of the Conference Secretariat:**

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### **Scientific Secretary of the conference:**

**Mr David Kenneth Smith**  
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### **Administration and organization:**

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Subsequent correspondence on scientific matters should be sent to the Scientific Secretary and correspondence on administrative matters to the IAEA's Conference Services Section.

## **M. Conference Web Page**

Please visit the IAEA conference web page regularly for new information regarding this conference:

[http://www-pub.iaea.org/iaeameetings/46088/International\\_Conference\\_on\\_Advances-in-Nuclear-Forensics-Countering-the-Evolving-Threat-of-Nuclear-and-Other-Radioactive-Material-out-of-Regulatory-Control](http://www-pub.iaea.org/iaeameetings/46088/International_Conference_on_Advances-in-Nuclear-Forensics-Countering-the-Evolving-Threat-of-Nuclear-and-Other-Radioactive-Material-out-of-Regulatory-Control)