



Technical Meeting on Nuclear Forensics: From National Foundations to Global Impact

**Vienna International Centre, Vienna, Austria
11-14 April 2022**

PROGRAMME

All sessions to be held in Board Room A unless stated otherwise

Monday, 11 April 2022

Time ¹	Topic	
09:00 – 11:30	Registration for in-person participants	
11:30 – 11:50	Opening Remarks	<p>Ms Elena Buglova, Director, Division of Nuclear Security, IAEA</p> <p>Mr John Buchanan, INTERPOL (Technical Meeting co-chair)</p> <p>Ms Ruth Kips, Lawrence Livermore National Laboratory, USA (Technical Meeting co-chair)</p>
11:50 – 12:00	IAEA Activities in Nuclear Forensics and Radiological Crime Scene Management	Ms Eva Szeles, CFS Unit Head, Division of Nuclear Security, IAEA (Technical Meeting scientific secretary)
12:00 – 12:30	Keynote Remarks	Mr Simon Minks, Ministry of Justice and Security, Netherlands
12:30 – 13:00	Keynote Remarks	Mr Jay Tilden, National Nuclear Security Administration, USA

¹ All times listed in Central European Daylight Time (UTC+2)

13:00 – 13:30	Panel Discussion #1 – Legal Framework and the CPPNM/A	Mr Jonathan Herbach, Office of Legal Affairs, IAEA Ms Anita Nilsson, Sweden Ms Maia Silagadze, Chancellery Department, Georgia Mr Frank Wong, Lawrence Livermore National Laboratory, USA Mr Kevin O’Prey (moderator)
13:30 – 14:00	<i>Break</i>	
14:00 – 14:30	Case Study #1 – Joint Effort to Respond to a Case of Sealed Co-60 Sources Found Outside of Regulatory Control	Mr Jens-Tarek Eisheh, Federal Office for Radiation Protection, Germany Mr Jose Garcia Sainz, Division of Nuclear Security, IAEA Mr Kilian Smith, Incident and Emergency Centre, IAEA Mr Saiyadi Imam Sulaiman, Nigerian Nuclear Regulatory Authority, Nigeria Mr Ed van Zalen, Netherlands Forensic Institute, Netherlands
	Oral Session #1 – Legal Framework and the CPPNM/A	Mr Vitaly Fedchenko, Stockholm International Peace Research Institute, Sweden (session chair)
14:30 – 14:42	Use of Nuclear Forensics Capacities to Support National Enforcement of and Demonstrate Compliance with International Nuclear Counter-Terrorism Legal Instruments	Mr Jerry Davydov, Los Alamos National Laboratory, USA
14:42 – 14:54	The Australian Nuclear Science and Technology Organization (ANSTO) and the Philippine Nuclear Research Institute (PNRI) Collaboration on Nuclear Forensics and Border Protection	Ms Vallerie Ann Samson, Philippine Nuclear Research Institute, Philippines
14:54 – 15:06	Overview of criminal legislation and nuclear forensics capabilities in Western Balkan countries	Ms Jovana Nikolov, University of Novi Sad, Serbia
15:06 – 15:18	Challenges in establishing and maintaining a national nuclear forensics support framework and importance of international cooperation	Mr Ababacar Sadikhe Ndao, Institut de Technologie nucléaire appliquée (ITNA), Université Cheikh Anta Diop, Dakar, Senegal
15:18 – 15:30	Regulatory authority activities in support to nuclear forensics	Mr Ramin Pashavyev, State Agency on Nuclear and Radiological Activity Regulations, Azerbaijan

15:30 – 15:45	Nuclear Security Response Framework	Mr Nigel Tottie, Division of Nuclear Security, IAEA
15:45 – 16:00	Question and Answer Session	Mr Vitaly Fedchenko, Stockholm International Peace Research Institute, Sweden (session chair)
	Poster Session #1	Mr Gary Eppich, International Atomic Energy Agency (session chair)
16:00 – 16:30	Iterative method combined with HRGS for physical characterization of uranium materials in the frame of nuclear forensics investigations	Mr Dmytro Kutniy, NSC Kharkov Institute of Physics and Technology, Ukraine
16:00 – 16:30	Evaluation of different software codes for the analysis of gamma spectra for the potential use in nuclear forensics	Ms Jovana Nikolov, University of Novi Sad, Serbia
16:00 – 16:30	Characterization of uranium bearing material using HPGe gamma detector for nuclear forensics purposes	Ms Naomi Dikeledi Mokhine, North-West University, South Africa
16:00 – 16:30	Investigation of sealed Cm-244 sources from nuclear forensics aspect using non-destructive methods	Mr Krisztian Soos, Centre for Energy Research, Hungary
	Oral Session #2 – Capability Development and Sustainability	Mr Peter Völgyesi, Centre for Energy Research, Hungary (session chair)
16:30 – 16:42	Building and Maintaining an Enduring Nuclear Forensics Capability – UK Case Study	Ms Karen Kennedy, Atomic Weapons Establishment, United Kingdom
16:42 – 16:54	Using a National Nuclear Forensics Library to Address Gaps within a Nuclear Security Infrastructure	Mr Jerry Davydov, Los Alamos National Laboratory, USA
16:54 – 17:06	Current Status and Future Prospects on Nuclear Forensics Capability Building and Technology Development by the Integrated Support Center for Nuclear Non-proliferation and Nuclear Security at the Japan Atomic Energy Agency	Mr Yoshiki Kimura, Japan Atomic Energy Agency, Japan
17:06 – 17:18	Nuclear Forensics Expert Pipeline Sustainability as a Key Component of Nuclear Security	Mr Adam Stratz, National Nuclear Security Administration, USA
17:18 – 17:30	The IAEA Residential Assignment Programme	Mr Gary Eppich, Division of Nuclear Security, IAEA
17:30 – 17:45	Question and Answer Session	Mr Peter Völgyesi, Centre for Energy Research, Hungary (session chair)

17:45 – 18:15	Panel Discussion #2 – Nuclear Forensics During the COVID-19 Pandemic	Ms Puck Brandhoff, National Institute for Public Health and the Environment, Netherlands Ms Ruth Kips, Lawrence Livermore National Laboratory, USA Ms Jovana Nikolov, University of Novi Sad, Serbia Mr David Smith, Lawrence Livermore National Laboratory, USA Ms Erica Wolf, National Nuclear Security Administration, USA Mr Jeremy Edwards, National Nuclear Laboratory, United Kingdom (moderator)
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Tuesday, 12 April 2022

Time	Topic	
11:30 – 12:00	Keynote Remarks	Ms Maria Betti, Director, European Commission, Joint Research Centre
12:00 – 12:25	Panel Discussion on Nuclear Forensics within a Nuclear Security Framework	Ms Tegan Bull, Australian Nuclear Science and Technology Organization, Australia Mr Michael Curry, Department of State, USA Ms Anita Nilsson, Sweden Mr Kevin O’Prey (moderator)
12:25 – 12:30	Keynote Remarks	Mr Mikhail Kondratenkov, Ministry of Foreign Affairs, Russian Federation
12:30 – 13:30	Interactive Video-Based Activity	Mr Frank Wong, Lawrence Livermore National Laboratory, USA (facilitator)
13:30 – 14:00	<i>Break</i>	
	Oral Session #3 – Radiological Crime Scene Management	Mr John Simm, Metropolitan Police Service, United Kingdom (session chair)
14:00 – 14:12	Radiological Crime Scene Management Training provided at the European Nuclear Security Training Centre (EUSECTRA): hybrid remote-hands-on training to efficiently complement in-person trainings	Mr Jean Galy, European Commission, Joint Research Centre, Karlsruhe
14:12 – 14:24	Hungarian Procedure for Radiological Crime Scene Management	Mr Csaba Tobi, Centre for Energy Research, Hungary, and Ms Izabella Kakuja, Hungarian Police, Hungary
14:24 – 14:36	Radiation Protection Concerns for Radiological Crime Scene Management	Mr Elder Magalhaes de Souza, Instituto de Radioproteção e Dosimetria IRD-CNEN, Brazil
14:36 – 14:48	Nuclear forensic science support to a nuclear security event	Mr John Simm, Metropolitan Police Service, United Kingdom
14:48 – 15:00	Advancement in Australian CBRN training facilities giving frontline responders a realistic awareness of working in the ‘hot zone’	Mr Jack Goralewski, Australian Nuclear Science and Technology Organization, Australia

15:00 – 15:15	Sustaining the US Conventional Forensic Examination on RN Contaminated Evidence Capability	Mr James Blankenship, FBI Laboratory, USA
15:15 – 15:30	Question and Answer Session	Mr John Simm, Metropolitan Police, United Kingdom (session chair)
15:30 – 16:00	Panel Discussion #3 – From Crime Scene to Courtroom	Ms Puck Brandhoff, National Institute for Public Health and the Environment, Netherlands Ms Melanie Fraser, Australian Federal Police, Australia Mr Elder Magalhaes de Souza, Institute of Radiation Protection and Dosimetry, IRD-CNEN, Brazil Ms Maia Silagadze, Chancellery Department, Georgia Mr John Buchanan, INTERPOL (moderator)
	Poster Session #2	Ms Eva Szeles, CFS Unit Head, Division of Nuclear Security, IAEA (session chair)
16:00 – 16:30	Investigation of the lanthanides pattern for uranium attribution in nuclear forensics environment	Mr Tebogo Kupi, North-West University, South Africa
16:00 – 16:30	Preparation and validation of Pu age dating materials for nuclear forensics	Mr Zsolt Varga, European Commission, Joint Research Centre, Karlsruhe
16:00 – 16:30	Nuclear Forensic Characterization of Uranium Ore Concentrates by Fourier-transformation Infrared Spectroscopy	Mr Csaba Tobi, Hevesy Gyorgy Phd School of Chemistry, Faculty of Science, Eotvos Lorand University, Hungary
16:00 – 16:30	Nuclear Smuggling Detection and Deterrence Radiochronometry: Past, Present, and Future - Review of Radiochronometry Collaborations and Challenges	Ms Theresa Kayzar-Boggs, Los Alamos National Laboratory, USA
16:30 – 17:30	Demonstration #1 – Nuclear Security Response	Republic of Austria Federal Ministry of Interior Special Intervention Unit COBRA Directorate for Special Units Department 3

17:30 – 18:00	Case Study #2 – “Operation Vegas”; a Case Study on the Trafficking of Radioactive Material	Republic of Austria Federal Ministry of Interior Special Intervention Unit COBRA Directorate for Special Units Department 3
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Wednesday, 13 April 2022

Time	Topic	
11:00 – 12:00	Demonstration #2 – Radiological Crime Scene Management	Hungarian Police Hungarian Centre for Energy Research Mr Kevin Kelly, Division of Nuclear Security, IAEA (narrator)
	PARALLEL ORAL SESSIONS Oral Session #4 – International Cooperation and Exercises Location: Board Room A	Mr Chris Cochrane, Canadian Nuclear Safety Commission, Canada (session chair)
12:00 – 12:12	Celestial Skónis: the 6th Collaborative Materials Exercise of the Nuclear Forensics International Technical Working Group	Mr Jon Schwantes, Pacific Northwest National Laboratory, USA
12:12 – 12:24	Nuclear forensics in the Republic of Kazakhstan and role of international cooperation in its development	Mr Viktor Gluchshenko, Institute of Nuclear Physics, Kazakhstan
12:24 – 12:36	The Joint Romania – U.S. Nuclear Forensics Examination of Legacy High Enriched Uranium (HEU) Materials	Mr Andrei Apostol, Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering (IFIN-HH), Romania
12:36 – 12:48	Capacity building for nuclear forensics through participation to the Collaborative Material eXercises (CMX) organized by NF-ITWG	Mr Hubert Schoech and Mr Hubert Schoech, Commissariat à l'énergie atomique et aux énergies, France
12:48 – 13:00	Experience in the application of forensics examination techniques in the IAEA regional exercises on nuclear forensics	Mr Kirill Zhizhin, Laboratory for Microparticle Analysis, Russian Federation
13:00 – 13:15	Spectral Flavor of the Month: Spectroscopic challenges for technical experts	Ms Mansie Iyer, National Nuclear Security Administration, USA
13:15 – 13:30	Question and Answer Session	Mr Chris Cochrane, Canadian Nuclear Safety Commission, Canada (session chair)

	<p>PARALLEL ORAL SESSIONS</p> <p>Oral Session #5 – Analytical Methods for Analysing Radiological and Nuclear Evidence</p> <p>Location: Press Room</p>	Ms Harinate Mungpayaban, Office of Atoms for Peace, Thailand (session chair)
12:00 – 12:12	30 years Nuclear Forensic Analysis at the JRC Karlsruhe – Support provided to EU Member States and Other Partner Countries	Ms Maria Wallenius, European Commission, Joint Research Centre, Karlsruhe
12:12 – 12:24	A novel methodology for Nuclear Forensic Examination: Positron Annihilation Spectroscopy	Mr Csaba Tobi, Hevesy Gyorgy Phd School of Chemistry, Faculty of Science, Eotvos Lorand University, Hungary
12:24 – 12:36	Analysis of UOC for nuclear forensics fingerprinting using Scanning Electron Microscope	Mr Manny Mathuthu, North-West University, South Africa
12:36 – 12:48	Origin assessment of sealed neutron sources with X-ray radiography, a new method for nuclear forensic investigations	Mr Peter Völgyesi, Centre for Energy Research, Hungary
12:48 – 13:00	Non-destructive assay of industrial gamma radiography devices: Case Study	Mr Alexandru-Florin Berevoianu, Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering (IFIN-HH), Romania
13:00 – 13:15	The IAEA Incident and Trafficking Database	Mr Jose Garcia Sainz, Division of Nuclear Security, IAEA
13:15 – 13:30	Question and Answer Session	Ms Harinate Mungpayaban, Office of Atoms for Peace, Thailand (session chair)
13:30 – 14:00	<i>Break</i>	
14:00 – 14:30	<p>Panel Discussion #4 – Success Stories in Nuclear Forensics Capacity Building</p>	<p>Ms Liz Dallas, National Nuclear Security Administration, USA</p> <p>Mr Viktor Gluchshenko, Institute of Nuclear Physics, Kazakhstan</p> <p>Mr Ivalyo Ivanov, Bulgarian Institute for Nuclear Research and Nuclear Energy (INRNE), Bulgaria</p> <p>Mr Manny Mathuthu, North-West University, South Africa</p> <p>Mr David Smith, Lawrence Livermore National Laboratory, USA (moderator)</p>

	Oral Session #6 – Novel Techniques Applied to Nuclear Forensic Examinations	Ms Maria Wallenius, European Commission, Joint Research Centre, Karlsruhe (session chair)
14:30 – 14:42	Development of a FIB-SEM-ToF-SIMS microanalysis method for potential applications in the investigation of nuclear forensics samples and safeguards	Ms Masturina Kracica, Australian Nuclear Science and Technology Organization, Australia
14:42 – 14:54	Nuclear Forensics Capacity Building: New Technologies, Research & Development and Signature Research in Nuclear Forensics	Mr Greg Brennecke, Lawrence Livermore National Laboratory, USA
14:54 – 15:06	Application of Artificial Intelligence in Nuclear Forensics: Findings of a Dedicated Workshop	Mr Klaus Mayer, European Commission, Joint Research Centre, Karlsruhe
15:06 – 15:18	Development of a Method for Image Analysis for Nuclear Forensic Examinations	Ms Ruth Kips, Lawrence Livermore National Laboratory, USA
15:18 – 15:30	ONIX: An open-source depletion code with nuclear forensic applications	Mr Julien de Troullioud de Lanversin, Harvard University, USA
15:30 – 15:45	Question and Answer Session	Ms Maria Wallenius, European Commission, Joint Research Centre, Karlsruhe (session chair)
15:45 – 16:00	<i>Break</i>	
	Poster Session #3	Mr Kevin Kelly, Division of Nuclear Security, IAEA (session chair)
16:00 – 16:30	Optically stimulated luminescence and thermoluminescence dosimetry for nuclear forensics	Mr Andras Kovacs, Centre for Energy Research, Hungary
16:00 – 16:30	Forensics Detection of Nuclear Materials by Machine Learning Microphotonic Techniques	Mr Hudson Kalambuka Angeyo, Department of Physics, University of Nairobi, Kenya
16:00 – 16:30	Development of capability on nuclear forensics signature investigation to establish a national nuclear forensics library	Ms Areerak Rueanngoen, Office of Atoms for Peace, Thailand
16:00 – 16:30	Nuclear Forensic Analysis Laboratory Capability in the Integrated Support Center for Nuclear Non-proliferation and Nuclear Security at the Japan Atomic Energy Agency	Mr Yoshiki Matsui, Japan Atomic Energy Agency, Japan
16:00 – 16:30	Conducting virtual exercises for nuclear forensics capacity building during the pandemic	Ms Kalaya Changkrueng, Office of Atoms for Peace, Thailand

16:30 – 17:00	Panel Discussion #5 – Experiences with the GICNT Self-Assessment Tool	<p>Mr Andrei Apostol, Horia Hulubei National Institute of Physics and Nuclear Engineering, Romania</p> <p>Mr Ali El-Jaby, Canadian Nuclear Safety Commission, Canada</p> <p>Ms Harinate Mungpayaban, Office of Atoms for Peace, Thailand</p> <p>Mr Kevin O’Prey (moderator)</p>
17:00 – 18:00	Nuclear Forensics Drama Theatre (Mock Trial)	<p>Mr James Blankenship, FBI Laboratory, USA</p> <p>Ms Ruth Kips, Lawrence Livermore National Laboratory, USA</p> <p>Mr Simon Minks, Ministry of Justice and Security, Netherlands</p> <p>Mr Kevin O’Prey (moderator)</p>

Thursday, 14 April 2022

Time	Topic	
11:30 – 12:00	Keynote Remarks	Mr John Buchanan, INTERPOL
12:00 – 12:30	Panel Discussion #6 – International Assistance and Partnerships in Nuclear Forensics	<p>Mr Andrei Apostol, Horia Hulubei National Institute of Physics and Nuclear Engineering, Romania, co-chair of Nuclear Forensics Working Group of the Global Initiative to Combat Nuclear Terrorism (GICNT)</p> <p>Mr John Buchanan, INTERPOL</p> <p>Mr Michael Curry, Department of State, USA, co-chair of the Nuclear Forensics International Technical Working Group (ITWG)</p> <p>Mr Talgat Toleubayev, United Nations Interregional Crime and Justice Research Institute</p> <p>Mr Ed van Zalen, Netherlands Forensic Institute, Netherlands (moderator)</p> <p>Mr Daming Liu, Section Head, Materials Outside of Regulatory Control Section, NSNS, IAEA</p>
12:30 – 13:00	Panel Discussion #7 – The Future of Nuclear Forensics	<p>Ms Tegan Bull, Australian Nuclear Science and Technology Organization, Australia</p> <p>Mr Ike Dimayuga, Canadian Nuclear Laboratories, Canada</p> <p>Ms Naomi Marks, Lawrence Livermore National Laboratory, USA</p> <p>Ms Alina Nitrean, Forensic and Legal Expertise Center, General Police Inspectorate of the Ministry of Internal Affairs, Moldova</p> <p>Mr Kevin O’Prey (moderator)</p>
13:00 – 13:30	<i>Break</i>	
13:30 – 14:00	ITWG 25th Anniversary	<p>Mr Michael Curry, Department of State, USA</p> <p>Mr Klaus Mayer, European Commission, Joint Research Centre, Karlsruhe</p>

14:00 – 15:00	Interactive Session – ITWG Mini-Exercise on National Nuclear Forensic Libraries	Ms Naomi Marks, Lawrence Livermore National Laboratory, USA (facilitator)
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	Poster Session #4	Ms Anna Selezneva, Division of Nuclear Security, IAEA (session chair)
15:00 – 15:30	Implementation of traditional forensics methods and procedures within the nuclear forensics laboratory of Romania	Ms Doina Stanciu, Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering (IFIN-HH), Romania
15:00 – 15:30	Analysis of biological samples contaminated by NRM for forensics examination	Mr Kirill Zhizhin, Laboratory for Microparticle Analysis, Russian Federation
15:00 – 15:30	Application of alpha-autoradiography for detection and identification of alpha-emitting contamination in nuclear forensics examination	Ms Mariia Ryabochenko, Laboratory for Microparticle Analysis, Russian Federation
15:00 – 15:30	Joint Examination of Hair Fragments, Spores and Uranium Particles Using SEM-PMA	Ms Alina Nitrean, Forensic and Legal Expertise Center, General Police Inspectorate of the Ministry of Internal Affairs, Moldova
	PARALLEL ORAL SESSIONS Oral Session #7 – Signature Research on Isotopic Signatures and Age-Dating Location: Board Room A	Mr Csaba Tobi, Centre for Energy Research, Hungary (session chair)
15:30 – 15:42	Signature research on isotopic composition and age dating	Mr Eyal Elish, Analytical Chemistry Department, Nuclear Research Center Negev (NRCN), Israel
15:42 – 15:54	Measurement and validation of the isotopic composition in inhomogeneous samples by LA-MC-ICP-MS	Mr Zsolt Varga, European Commission, Joint Research Centre, Karlsruhe
15:54 – 16:06	LG-SIMS oxygen isotope and impurity distribution characterization of U-O-bearing particles as signatures of process history	Mr Travis Tenner, Los Alamos National Laboratory, USA
16:06 – 16:18	The oxygen isotopes composition of uranium oxides in the nuclear fuel cycle as a new signature for process attribution	Mr Maor Assulin, Analytical Chemistry Department, Nuclear Research Center Negev (NRCN), Israel
16:18 – 16:30	A Cooperation to Improve ²³¹ Pa/ ²³⁵ U Age Dating Measurements of Uranium for Nuclear Forensics	Ms Theresa Kayzar-Boggs, Los Alamos National Laboratory, USA
16:30 – 16:45	Question and Answer Session	Mr Csaba Tobi, Centre for Energy Research, Hungary (session chair)

	<p>PARALLEL ORAL SESSIONS</p> <p>Oral Session #8 – Laboratory Capabilities</p> <p>Location: Press Room</p>	Mr Gary Eppich, Division of Nuclear Security, IAEA (session chair)
15:30 – 15:42	Research, Education and Training activities at Nuclear Physics Lab, AUTH	Ms Alexandra Ioannidou, Nuclear Physics Department, Aristotle University of Thessaloniki (NPL-AUTH), Greece
15:42 – 15:54	Thailand’s Challenges of Becoming an ISO/IEC 17025 Accredited Nuclear Forensics Laboratory: A Scope of Qualitative Analysis of Uranium and Thorium in a Geological Sample Using Gamma-Ray Spectroscopy	Ms Haruetai Kasiwattanawut, Office of Atoms for Peace, Thailand
15:54 – 16:06	Development of Nuclear Forensics Capabilities at CNL	Mr Ike Dimayuga, Canadian Nuclear Laboratories, Canada
16:06 – 16:18	The INSSP: a tool to strengthen Nuclear Forensics and Radiological Crime Scene Management	Ms Valerie Rouillet-Chatelus, Division of Nuclear Security, IAEA
16:18 – 16:30	Nuclear Security Support Centres: Role of Nuclear Forensics in Scientific Support	Ms Quillan Rose, Division of Nuclear Security, IAEA
16:30 – 16:45	Question and Answer Session	Mr Gary Eppich, Division of Nuclear Security, IAEA (session chair)
16:45 – 17:00	<i>Break</i>	
17:00 – 17:30	Panel Discussion – Nuclear Forensics Findings	<p>Ms Kathleen Heppell-Masys, Canadian Nuclear Safety Commission, Canada</p> <p>Mr Jay Tilden, National Nuclear Security Administration, USA</p> <p>Ms Erica Wolf, National Nuclear Security Administration, USA</p> <p>Mr Kevin O’Prey (moderator)</p>
17:30 – 18:00	Closing Remarks	<p>Mr John Buchanan, INTERPOL (Technical Meeting co-chair)</p> <p>Ms Ruth Kips, Lawrence Livermore National Laboratory, USA (Technical Meeting co-chair)</p> <p>Mr Daming Liu, Section Head, Division of Nuclear Security, IAEA</p>