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International Workshop on Basic Nuclear Forensic Methodologies for Practitioners

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The IAEA describes nuclear forensics as "…the analysis of intercepted illicit nuclear or radioactive material and any associated material to provide evidence for nuclear attribution…"with the goal of identifying forensic indicators in interdicted nuclear and radiological samples or the surrounding environment (e.g., the container or transport vehicle). These indicators provide important clues to the process history and ultimate origin of the material.

While access to advanced nuclear forensic analysis is available globally through technical collaborations facilitated by the Nuclear Forensics International Technical Working Group, every country should retain some basic capabilities for categorizing suspect nuclear and radioactive materials outside of regulatory control. To further that goal, the International Atomic Energy Agency, in cooperation with the National Nuclear Security Administration and hosted by Pacific Northwest National Laboratory, has developed a training course on basic nuclear forensic methodologies for practitioners.

In all, 26 representatives from 10 countries including Algeria, Bulgaria, Czech Republic, Indonesia, Malaysia, Mexico, Pakistan, Singapore, Thailand, and Vietnam participated in the second-of-its-kind international workshop on nuclear forensics methodologies from October 28 - November 8, 2013. The workshop utilized the unique training and laboratory assets at the Pacific Northwest National Laboratory and the Volpentest HAzardous Materials Management and Emergency Response (HAMMER) Training and Education Center, both located in Richland, Washington state. A mix of hands-on and classroom education was used to teach basic nuclear forensic methodologies to practitioners from around the world. Course content was developed and taught by a cadre of internationally recognized experts in nuclear forensics from the United States0, United Kingdom, IAEA, European Commission, and Australia.

The framework of the ten-day workshop was developed around a scenario based exercise of a seizure of special nuclear and radioactive materials detected at a fictitious border crossing. Participants were expected to apply specific skills they had been taught from a mix of both classroom and laboratory-based instruction during the scenario based exercise. Acting as nuclear forensics laboratory experts, teams of participants were asked to support law enforcement in their investigation, from inventorying contaminated evidence to conducting basic analyses to categorize materials to carrying out more advanced analyses and helping investigators interpret results.

Nuclear forensics is a valuable tool for combatting nuclear smuggling and ensuring that nuclear material is used for only peaceful purposes. When illicit nuclear trafficking occurs, experts can use nuclear forensics to help identify the point that control of that material was lost, and then work with responsible officials to ensure the event is not repeated. This presentation describes the outcome of the second International Workshop on Nuclear Forensics Methodologies for Practitioners, summarizing the successes and recommending aspects of that could be improved in the future.

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