Nuclear Forensics: How it has Grown

- Nuclear Security Summits
- The IAEA
- The International Technical Working Group (ITWG)
- JRC Outreach
- US Outreach
- Changing focus
  - Radiological Sources
  - Forensics as part of a process
  - Basic component of state nuclear security infrastructure

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Objective 1: Build Global Nuclear Forensics Awareness
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- Raise awareness of nuclear forensics in the global community
- Support the development of international recommendations and implementing guidance
- Develop international trainings for the sharing of nuclear forensic best practices
Objective 2: Build confidence in foreign forensic analyses through direct capacity-building efforts

Incident Response

Crime Scene Analysis

Forensic Examination Plan

Traditional Forensics

Nuclear Forensic Analytical Plan

Nuclear Forensic Analysis

Nuclear Forensic Interpretation

Nuclear Forensic Findings

Radiological Crime Scene Management

Nuclear Forensics
Objective 2: Build confidence in foreign forensic analyses through direct capacity-building efforts

Engage with certain states with moderate level of fuel cycle capabilities to support the development of technical nuclear forensics capacity

South Africa

- Enhance development of analytical capabilities
- Renovate laboratory space
- Support development of a National Nuclear Forensics Library

Ukraine

- Assist in the establishment of a nuclear forensics database of Ukrainian-origin nuclear UOC samples
- Support development of a National Nuclear Forensics Library
Objective 3: Expand the understanding of nuclear attribution and signatures
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Bilateral projects of interest to the international nuclear forensics community

Partners Engaged
- China
- France
- Japan
- EURATOM
- Canada
- Australia
- South Korea

Radiochronometers provide insight into separation date and quality

Areas for improvement
- Certified Reference Materials
  - Development of $^{229}\text{Th}$
- Measurement and interpretation of multiple parent-progeny pairs
  - $^{230}\text{Th}/^{234}\text{U}$ and $^{231}\text{Pa}/^{235}\text{U}$

Current Focus: Uranium Chronometry
- Work with partners to increase precision and accuracy in uranium age dating
- Focus on a single topic to maximize INFC’s investment
Nuclear Smuggling Detection and Deterrence: Nuclear Forensics Partner Organizations

- ASEAN
  - Various Agencies
- Algeria
  - Commissariat à l’Energie Atomique
- Argentina
  - Autoridad Regulatoria Nuclear
- Armenia
  - Armenian Nuclear Power Plant – Nuclear Forensics Laboratory
- Australia
  - Australia Nuclear Science and Technology Organization
- Canada
  - Canada Nuclear Safety Commission
- China
  - China Institute for Atomic Energy
- European Commission
  - Joint Research Center-Institute for Transuranium Elements
- France
  - Commissariat a l’Energie Atomique
- Georgia
  - Ministry of Internal Affairs – Criminalistics Division
- Global Imitative to Combat Nuclear Terrorism
  - Nuclear Forensics Working Group
- International Atomic Energy Agency
  - Division of Nuclear Security
- Nuclear Forensics International Technical Working Group
- Japan
  - Japan Atomic Energy Agency
- Kazakhstan
  - Kazakhstan Atomic Energy Commission
- Republic of Korea
  - Korea Atomic Energy Research Institute
  - Korea Institute of Nuclear Nonproliferation and Control
- South Africa
  - Nuclear Energy Corporation of South Africa
- Ukraine
  - Kyiv Institute for Nuclear Research
  - Kharkiv Institute of Physics and Technology