



60 Years

Atoms for Peace and Development



Nuclear Security

CAPACITY BUILDING

Nuclear Forensics

Why is this important?

Nuclear forensics and interpretation have become increasingly important tools in the fight against illicit trafficking in nuclear and radiological material. Nuclear forensics can provide insight into the origin and history of nuclear or other radioactive materials, and potentially link samples to people, places and events. It can help to answer questions like: What material is it? Does it pose a threat? Who is responsible for the loss? Where did the material originate? Have national laws been broken? To answer these questions, it is in a State's interest to have an awareness and understanding of nuclear forensics in support of law enforcement and nuclear security investigations.

What do I need to know?

Nuclear forensics is the analysis of intercepted illicit nuclear or radioactive material and any associated material. It can assist law enforcement in investigation as well as assessments of the potential vulnerabilities associated with the use, production and storage of these materials as part of a nuclear security infrastructure. It is an important tool in the fight against illicit trafficking in nuclear or other radiological material.

Nuclear forensics requires the ability to measure data characteristics or 'signatures' of nuclear and other radioactive materials — including isotopic content, chemical composition and physical attributes — with the ability to present this evidence in a court of law in support of a criminal prosecution.

Research in nuclear forensics focuses on identification of priority signatures bearing on the origin and history of nuclear and other radioactive materials. Better knowledge of the 'science of signatures' is particularly important for the development of a national nuclear forensics library as one way to determine whether seized material is or is not consistent with nuclear or other radioactive materials used, produced or stored by the State.

By providing clues to where and when illicit materials were manufactured as well as potential points of division and trafficking routes, nuclear forensics helps States to make informed decisions about improvements to their nuclear security regime.

By potentially providing information on those responsible for unauthorized acts involving nuclear or other radioactive materials, nuclear forensics may serve as a preventive measure to deter future nuclear security incidents.



What actions are recommended?



Member States desiring nuclear forensics services should send a request to the IAEA Division of Nuclear Security



Member States should consult with the IAEA to develop an Integrated Nuclear Security Support Plan (INSSP) for building a sustainable nuclear security framework.



Member States should consult with the IAEA to assist in determining recommended capacity building services.



For a list of IAEA nuclear security training courses and workshops, check the current online IAEA Meeting Schedule.

Who should request services?

This programme is intended for government organizations, regulatory bodies and facilities with a need to develop nuclear forensic capabilities.

What services are provided?

The IAEA, upon request, provides assistance to States to develop a national nuclear forensics capability through a programme of, for example: developing and publishing guidance, delivering introductory and applied training, and conducting research through technical contracts. The IAEA also develops technical guidance to assist States to use internationally recognized laboratory techniques and analytical approaches to strengthen nuclear forensics practices.

IAEA SERVICES FOR NUCLEAR FORENSICS

- Technical assistance, including, upon request, application of the 'model action plan' to guide a nuclear forensics investigation (Nuclear Forensics Support, IAEA Nuclear Security Series No. 2-G (Rev. 1));
- Training to raise awareness of nuclear forensics, to assist practitioners in state-of-the-art nuclear forensics methodologies, and to orient responders to radiological crime scene management, including evidence collection for nuclear forensics;
- A research programme (through IAEA coordinated research projects) to address the science of nuclear forensics signatures and improve the technical confidence of participants;
- Development of national nuclear forensics libraries, under the control of the State, to enable nuclear forensics in interpretation.

Resources

Nuclear Forensics in Support of Investigations, IAEA Nuclear Security Series No. 2-G (Rev.1)
<http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1687web-74206224.pdf>

IAEA Meeting Schedule <http://www-pub.iaea.org/mtcd/meetings/PDFplus/current.pdf>

IAEA Learning Management System portal. elearning.iaea.org/m2/

Email: NuclearSecurity@iaea.org

Visit: the IAEA Nuclear Security Information Portal (NUSEC) at <https://nusec.iaea.org>

