



# NUCLEAR FORENSICS IN SUPPORT OF THE CPPNM/A

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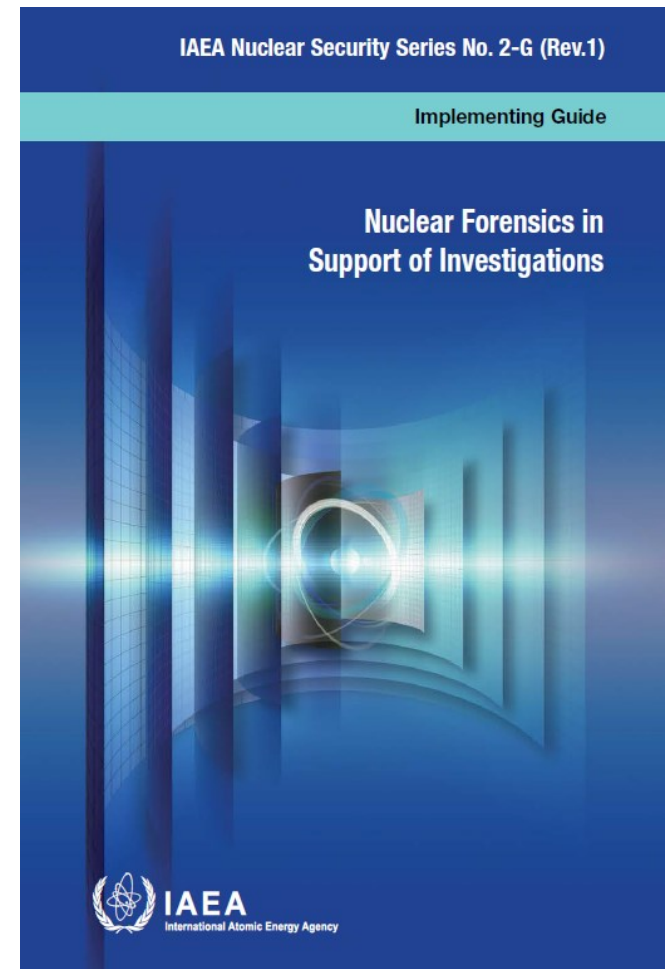
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# What is Nuclear Forensics?

*Nuclear forensics (NF) is the “examination of nuclear or other radioactive material, or of evidence, that is contaminated with radionuclides, in the context of legal proceedings under international or national laws related to nuclear security”*





# Benefits of Nuclear Forensics



Enhances States' collaboration with investigations and prosecutions

Develops investigative leads and helps determine the material's process history

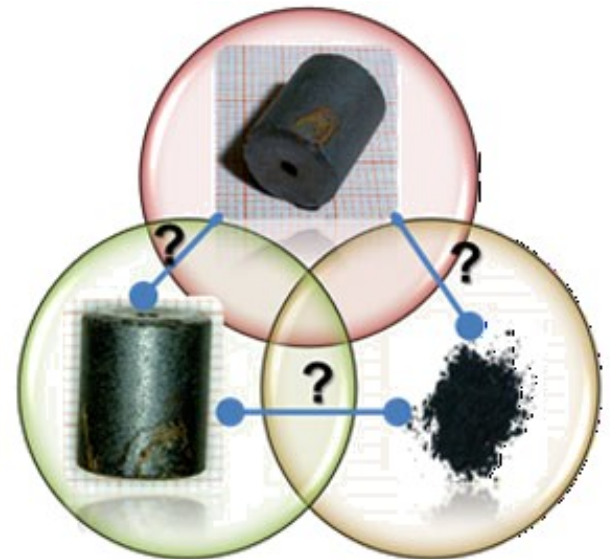
Links illicitly used R/N materials with people, places, and events in support of criminal prosecutions



# Materials Out of Regulatory Control (MORC)



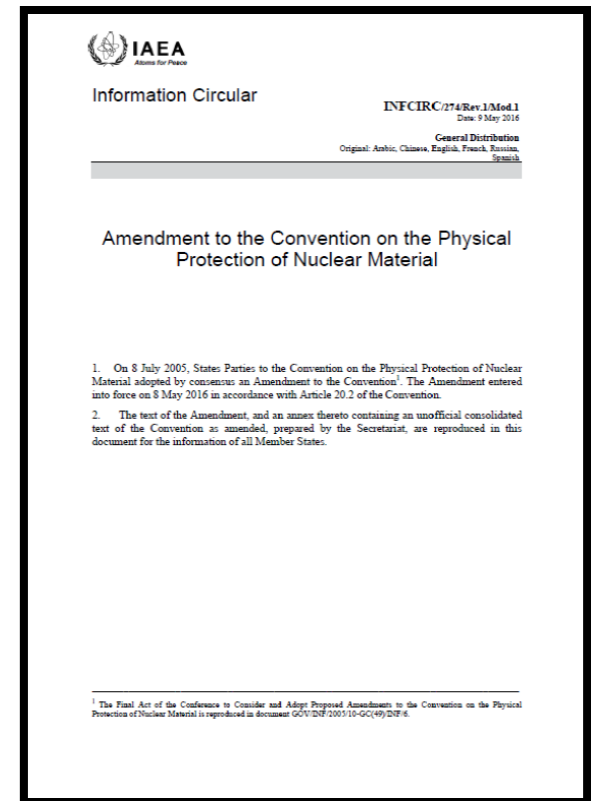
- Terrorists can exploit MORC
- Incidents of MORC have been widely reported
  - IAEA ITDB reported 2734 incidents as of 31 December 2014
- Information sharing is vital when investigating MORC



# CPPNM/A Article V



2. In the case of theft, robbery or any other unlawful taking of nuclear material or credible threat thereof, States Parties shall, in accordance with their national law, provide co-operation and assistance to the maximum feasible extent in the recovery and protection of such material to any State that so requests. In particular:
  - b. in doing so, as appropriate, the States Parties concerned shall exchange information with each other, the International Atomic Energy Agency and other relevant international organizations with a view to protecting threatened nuclear material, verifying the integrity of the shipping container or recovering unlawfully taken nuclear material and shall:
    - iii. ensure the return of recovered nuclear material stolen or missing as a consequence of the above-mentioned events.



# CPPNM/A Article V 2b(iii)

## Obligations & Nuclear Forensics



- Augments efforts to return stolen or missing nuclear material to its owner
- National nuclear forensics libraries (NNFLs) help determine if the intercepted material is consistent or inconsistent with its material holdings
- NNFL queries can help identify an owner when material is found in one country but originated in another



# NF Capabilities: Characterization

- Characterization:
  - Is the evidentiary collection and forensics examination of illicitly used R/N materials
  - Includes physical measurements, isotopic analysis, and/or the determination of enrichment levels
- The measurements would assist States determine the origin of R/N material
- The capabilities may be inherent to the country or secured/supplemented through cooperation

# National Nuclear Forensics Libraries



- A national nuclear forensics library (NNFL):
  - Is an inventory pertaining to the nuclear and other radioactive material produced, used, or stored within a State
  - Supports the comparative evaluation of unknown R/N materials
  - Enhances a State's ability to make timely and confident assessments of provenance for MORC

**A national nuclear forensic library is a collection of information, relevant to nuclear forensic investigations, about nuclear or other radioactive material that either resides in, or was manufactured by a particular country.**





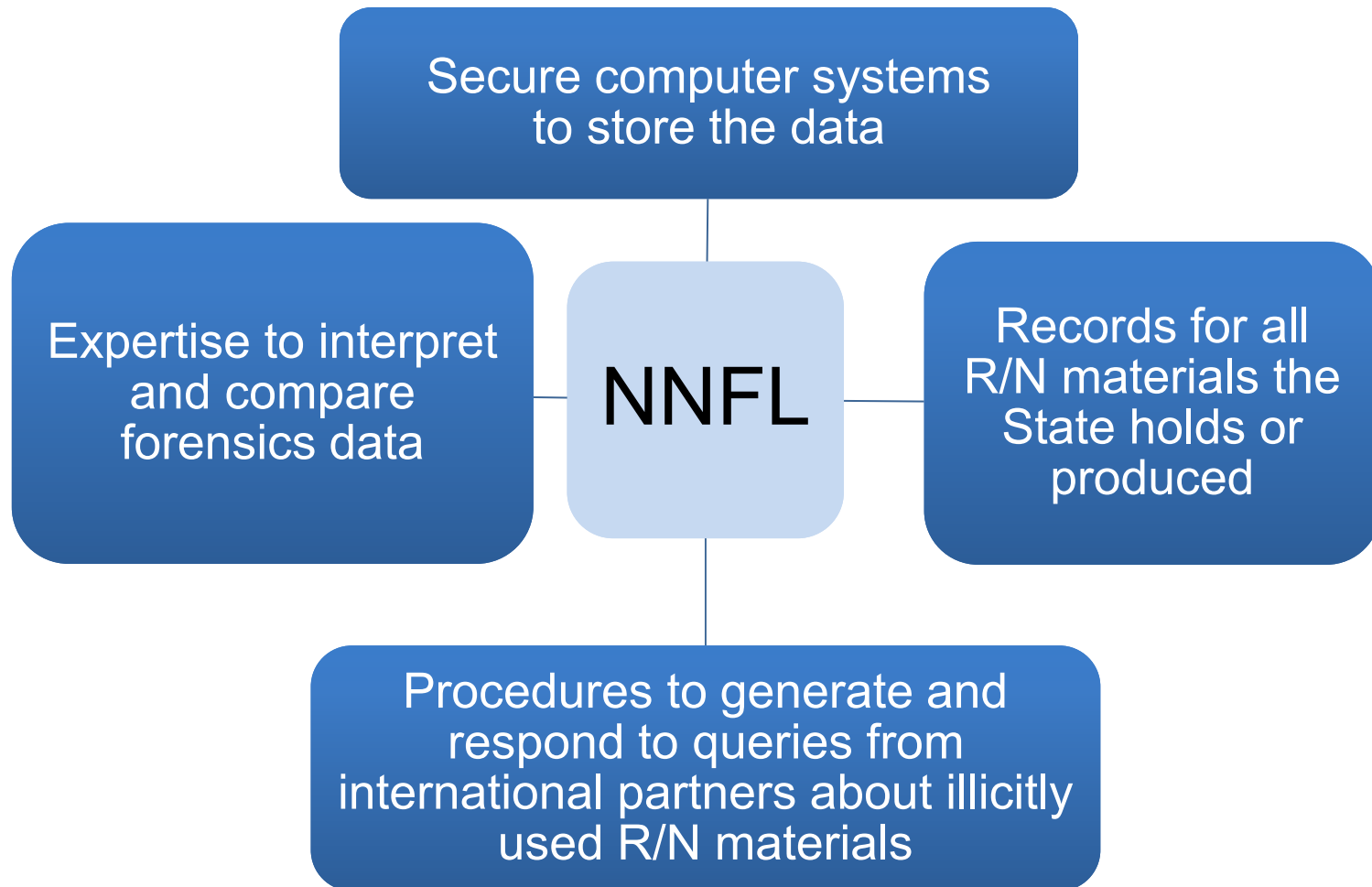
# CPPNM/A Obligation

*In the context of returning MORC to its owner, the ability to include or exclude likely origins of material using nuclear forensics provides a State with the information it needs to meet its Article V, 2b(iii) obligation.*





# What should an NNFL include?





# What is a Bilateral NNFL Query?

- A government-to-government inquiry
- Determines if MORC is consistent with the content of a State's NNFL
- Involves submitting information and/or characteristics about the MORC
- Facilitate bilateral information sharing

**Querying does not mean that one country is granted access another country's NNFL**





# NNFL Query Benefits

Provides situational awareness and a data-driven approach to investigate the origin of MORC

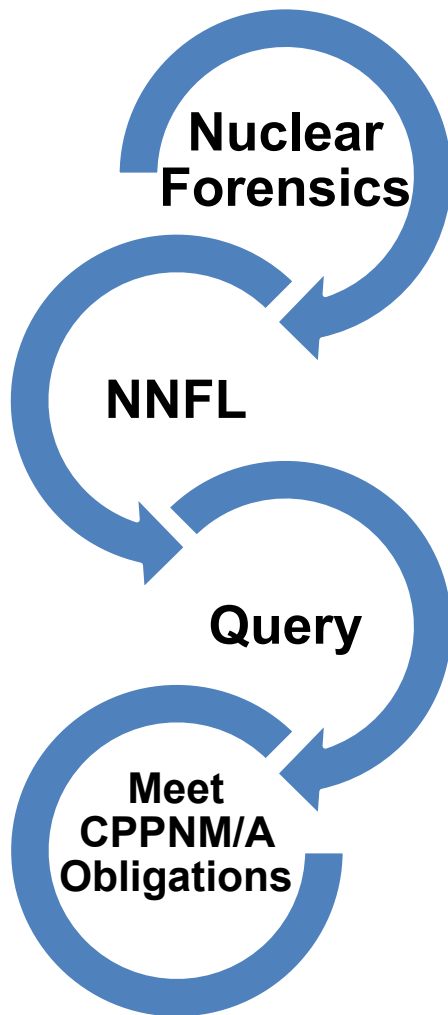
Allows for proactive coordination and outreach to determine the specific nature of the incident

Helps identify lessons learned and areas of improvement

Strengthens nuclear material security



# Summary



*Nuclear forensics and associated processes can help governments meet CPPNM/A commitments to return nuclear material to its owner.*



# Questions?

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