

原子力平和利用と核不拡散・核セキュリティに係る国際フォーラム2025
@イイノカンファレンスセンター Room A



“備えの技術”で守る核セキュリティ：核鑑識と協力強化による核・RIテロ抑止の取組

初動対応と核鑑識

First Response and Nuclear Forensics

警察庁 科学警察研究所 物理研究室

Physics Section, National Research Institute of Police Science (NRIPS)

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NRIPS (科警研)



Location:
Kashiwanoha, Kashiwa-shi, Chiba

► National Research Institute of Police Science (科学警察研究所) Comprehensive Research Institute for Criminal (Forensic) Science

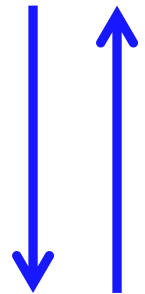
NRIPS
@ National Police
Agency
(NPA : 警察庁)

► Activities of NRIPS

- ① **Research & Development of forensic science (研究)**
- ② Analysis & Identification of criminal evidence (鑑定)
- ③ Training for staff in prefectural FSL (研修)

※ **RN** (Radiological, **N**uclear)

• Training
• Advice
• Novel
methods



• Request of investigation
reports
• Needs

47 Forensic Science
Laboratories
(FSL : 科捜研)
@ 47 prefectures

► Activities of FSL

- ① Research & Development
- ② **Analysis & Identification**
- ③ Training for prefectural police officer

Physics Section (物理研究室)

R&D in forensic science using **applied physics**
(**物理学を応用**した捜査鑑識技術の研究開発及び鑑定)

- R&D for **RN counter terrorism** (on-site activities)
- Analysis and identification (**Nuclear Forensics**)
- Training for first responders



Nuclear Forensics Process

► Investigation

← CBRNE threat (Chemical, Biological, Radiological, Nuclear, Explosive)

① Sampling
(試料の採取)

On-site Activity

- Protection (Neutron & Gamma-ray)
- Collect g~kg of radiological residue



DETECT



APPROACH



SAMPLING

② Categorization
(試料の分類)

On-site Analysis

- Gamma-ray spectroscopy
 - ➔ Identify nuclide (Nuclear/Other Radioactive material or not ?)
- Dose measurement for Safety (Neutron & Gamma-ray)

Transport
(試料の搬送)

③ Analysis & Characterization
(分析と特性評価)

Laboratory Analysis

Nuclear Forensics : 核鑑識

- Gamma-ray or Alpha-ray spectroscopy
- ICP-MS, SEM, TEM etc.

Traditional Forensics : 伝統的鑑識

- Fingerprints (指紋)
- Trace evidence (微物)
- DNA etc.

+

← Data base of
Nuclear Forensics Library

④ Interpretation & Conclusion
(解釈と結論)

Safekeeping of contaminated
samples (試料の保管)

Identification of **Material Origin**
(RN物質の起源・履歴の特定)

Identification of **Criminals**
(犯罪者個人の特定)

Needs from Investigation Side

① Rapid and Safe On-site Forensic Activities

- ▶ Visualization of contaminated areas (field, samples)
- ▶ Detection and collection utilizing robots, drones, etc.
- ▶ Minimization of radiation exposure
- ▶ Low cost, High dose tolerance, Portability, etc.

② Integrating Nuclear Forensics with Traditional Forensics

- ▶ Separate nuclear forensic samples from traditional forensic samples (DNA, fingerprints, etc.) at the crime scene and collect only the necessary amount.

③ Human Resource Development

- ▶ Attracting young people's interest in nuclear forensics and nuclear security
- ▶ Active participation in institutions (Research, Government, International, Industry)