

The deterrent effect of nuclear forensics: the case of Hungary

By Laura Gil

A State capable of identifying the origin and history of intercepted nuclear or radioactive material can have a deterrent effect. This is why nuclear forensics — the examination of nuclear and other radioactive material as part of criminal or nuclear

security investigations — is an important tool.

“A country with strong nuclear forensics capabilities is not the best target for terrorist groups,” said Éva Kovács-Széles, Head

“We have 20 years of real experience in investigating confiscated nuclear material and radiological crime scenes. We have an increasing scientific knowledge. And we have a good and strong connection with the IAEA, a connection that goes back to the 90s.”

— Éva Kovács-Széles, Head, Nuclear Security Department, Centre for Energy Research, Hungarian Academy of Sciences



of the Nuclear Security Department at the Hungarian Academy of Sciences' Centre for Energy Research.

But establishing a nuclear forensics programme is not an easy task. The case of Hungary — whose forensics laboratory was recently designated as the first IAEA Collaborating Centre in nuclear security — is a good example for the region and for the world, said David Smith, nuclear security coordinator (forensics) at the IAEA.

Scientists specialized in nuclear forensics examine samples of nuclear and other radioactive materials using a variety of analytical techniques. The results of the examination provide information on the potential use, manufacture and age of the materials, which helps law enforcement officials make informed decisions regarding a potential criminal prosecution.

Hungary, which operates a nuclear power plant, a research reactor and a training



(Photo: D.Calma/IAEA)

How nuclear forensics supports national nuclear security



Nuclear or Radioactive Material Evidence



Transport Sample Safely and Securely



Examination Plan and Laboratory Analysis

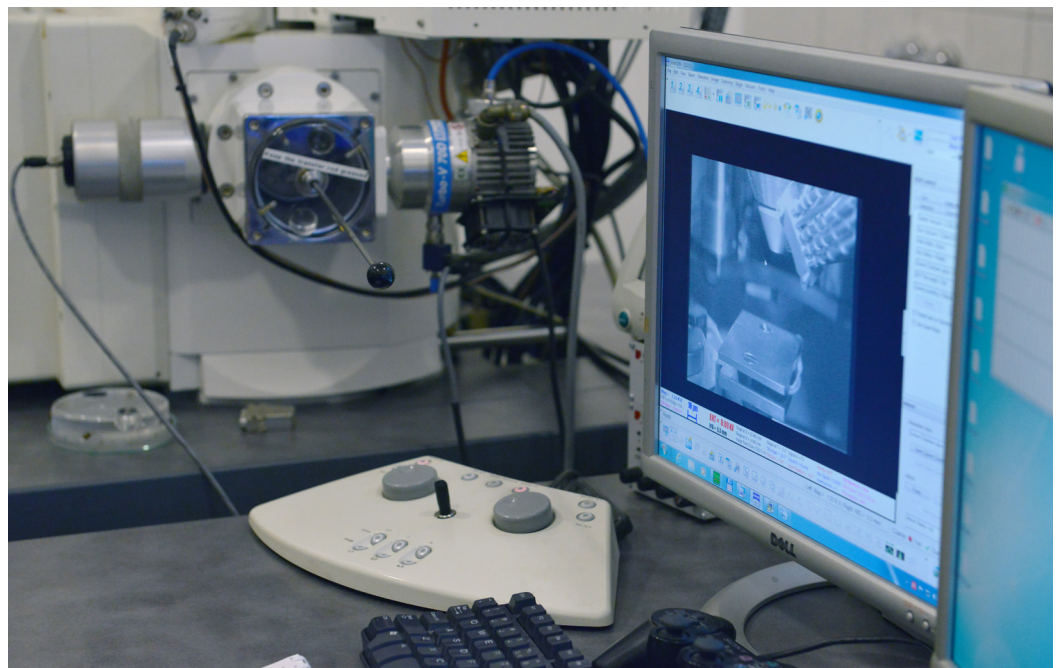
reactor, started working on nuclear forensics in the 1990s as a response to a series of illicit trafficking events. Today, it has a well-equipped centralized national Nuclear Forensic Laboratory with a team of specialists who conduct research and perfect their methods. These ensure that all material is secured, documented and protected, and all appropriate precautions are taken to preserve the evidence.

The country has also established the prototype of a national nuclear forensics

library, a database that contains information about all its nuclear material. Having a record of all materials is useful, Kovács-Széles said, because when something goes missing, authorities can easily identify it through comparisons.

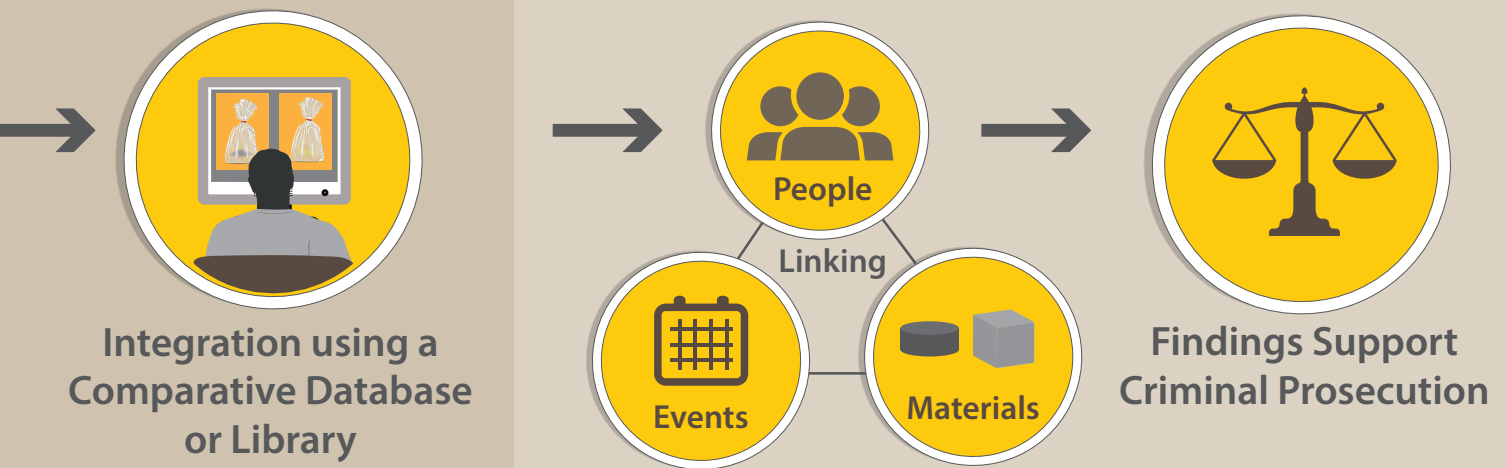
But none of this infrastructure would have an impact without a properly trained team to operate it, Kovács-Széles added.

“We’ve established a nuclear security working group in Hungary where all the



(Photo: D.Calma/ IAEA)

ports criminal prosecution near security regime



(Infographic: R.Kenn/IAEA)

responsible authorities sit to think and consult together: the Hungarian police, the bomb disposal unit, the traditional forensics institute, the counter terrorism centre, law enforcement agencies and so on.”

Close cooperation between law enforcement officials and nuclear scientists can be a key tool to prevent radiological terror attacks or to solve radiological crimes, Kovács-Széles said.

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An example to follow

The working group serves as an example to other countries trying to make relevant stakeholders work together to face threats in a coordinated manner, said Smith from the IAEA.

“Hungary’s journey in nuclear forensics reflects IAEA guidance, technologies, methodologies and approaches,” Smith said.

The IAEA has provided Hungary with training, guidance and technical assistance on nuclear forensics through research and scientific programmes for the past eight

years. It has involved Hungary in the IAEA’s coordinated research programme, facilitated the exchange of scientists to share practical experience through expert missions and fellowships, and provided guidance on the establishment of the Nuclear Forensic Laboratory.

While Hungary’s forensics experts are already collaborating with neighbouring countries such as Croatia and Romania, they plan to share their experience, laboratory equipment and improved techniques with all Central and Eastern European countries and others further afield. In July 2016, the IAEA designated the Hungarian Academy of Sciences’ Centre for Energy Research as a Collaborating Centre in nuclear forensics.

“The idea is to have Member States rely on nuclear forensics routinely as a tool they can readily utilize to fulfil their nuclear security responsibility,” Smith said. “We help them answer critical questions. How do you collect the evidence? How do you establish a chain of custody? Where do you take the material? What analytical capabilities do you need? Do you have a national nuclear forensics database or library for interpretation?”

The IAEA assists countries in identifying the plans, procedures and advisable steps to take. “Nuclear forensics is not a contingency, it’s not hypothetical,” Smith said. “It’s something States can use now.”