

# Safe nuclear materials for peaceful purposes only

The European Union helps to monitor that Europe's nuclear power plants remain safe and secure. JRC scientists play a crucial role to help ensuring that no radioactive material is diverted from nuclear installations and in verifying that such materials are used for peaceful purposes only. Whenever illegal nuclear materials are seized inside Europe or at its borders, a team of JRC scientists is available to determine its composition and origin.



## DID YOU KNOW:

- That 31% of Europe's electricity supply comes from nuclear energy.
- That there are 146 nuclear power reactors in operation within the EU.

### Keeping nuclear materials under control

The European Commission's Joint Research Centre (JRC) supports nuclear inspectors in verifying that nuclear materials for use in reactors are used on-site for their intended purpose and not diverted illicitly for sale or criminal use. Together with the Euratom Inspectorate, the JRC also cooperates closely with the International Atomic Energy Agency (IAEA), the United Nation's nuclear 'watchdog'. For nearly three decades it has provided technical assistance and equipment the IAEA uses to verify that nuclear materials are used for peaceful purposes only.

For example, the JRC has developed a new automated system for IAEA nuclear inspectors for checking if a complex nuclear installation has been built according to its declared design. Based on 3D laser technologies and software, the system is accurate to within one millimetre.

### Combating the trafficking of nuclear materials

Combating illicit trafficking in nuclear materials led to the development of a new discipline called nuclear forensic science. Scientists at the JRC are key contributors in this field: they have developed methods for investigating seized materials and prepared response plans for incidents involving radioactive materials. To improve the security at Europe's borders, training is given to national border guards on how to identify radioactive material and prevent its trafficking.

The European Commission also has a team on stand-by at all times to respond immediately in case of a seizure. A first analysis of the sample can be delivered to the appropriate authorities within twenty-four hours of a sample arriving at the JRC. For instance, when fourteen uranium pellets that had been hidden in a garden in north-western Germany were discovered in 2007, investigators from the JRC assisted the German authorities in their investigation by establishing the source of the material.



Unpacking of sample.



Detecting illicit nuclear material: exercise.



Radioactively contaminated scrap metal.



Scientist analysing seized nuclear material.

Want to know more: [www.jrc.ec.europa.eu/research4u](http://www.jrc.ec.europa.eu/research4u)