



Nuclear Forensics Research and Development Prospective Directions in Azerbaijan.

Deputy Director of the Institute of Radiation Problems of
Azerbaijan National Academy of Sciences

Dr. Gabulov Ibrahim

OUTLINE

- Introduction
- Main points for fight against illegal nuclear trafficking, nuclear terrorism and nuclear proliferation
- The current level and prospective directions for Research and Development in the field of nuclear forensics in Azerbaijan

The Republic of Azerbaijan itself has no nuclear installations or materials and its nuclear activities are limited to typical uses in oil industry, medicine, agriculture and scientific researches. However, Azerbaijan has special geographical location in terms of land and sea borders and surrounded by the countries having nuclear research reactors, nuclear power plants, nuclear materials and finally nuclear weapons. Thus this strategic geographical location within the Caucasus makes it a possible transit corridor for both legal and illicit trafficking of nuclear material and equipment. It means that nuclear related technology, equipment and materials can be transported both illegally and legally through Azerbaijan's borders.

In the face of emerging nuclear terrorism threats, the development and enforcement of effective national system on the detection, categorization and response to the cases of illicit trafficking and criminal use of radioactive, nuclear and nuclear related materials, equipment are important issues for developing-transit countries like Azerbaijan with underdeveloped nuclear and radiation control system. In the current political climate of an emerging nuclear terrorist threat, the development of a national plan for the detection, categorization and response to incidents of illicit trafficking and criminal use of nuclear and radioactive materials is vitally important.



Main points for fight against illegal nuclear trafficking, nuclear terrorism and nuclear proliferation.

It is known that in the fight against illegal nuclear trafficking, terrorism and proliferation exist three main points as prevention, detection and response. Let consider briefly each of these points separately for the Republic of Azerbaijan.

1. Prevention, which obviously is one of the most effective ways to keep nuclear and radioactive material under permanent control. Implementation of such control is mainly responsibility of nuclear regulatory authority plus certain action on behalf of law enforcement structures.

2. Detection is considered as main point of second line defense. This issue is being covered in Azerbaijan jointly with US Department of Energy.





TRAINING



3. Response mechanism. Up to moment there is not fully developed and adopted response mechanism inside the country. Such kind mechanism will be hopefully developed with assistance of European Commission Joint Research Centre Institute for Transuranium Elements within the framework of multi-country project.



The current level and prospective directions for Research and Development in the field of nuclear forensics in Azerbaijan.

Since Azerbaijan has not previously any nuclear activities and also taking into account that during former Soviet Union in Azerbaijan was not good understanding of nuclear fuel cycle and nuclear physics and radiochemistry, which are main components of “nuclear fingerprint” then obviously we can say that new discipline like “nuclear forensics science” and its current level is underdeveloped field of science in the country. Main activities presently are concentrated in the field of detection. Several investigations dealing with development new types of detectors are being created. In addition during last years Azerbaijan Government has established good cooperation with IAEA and US DoE and recently with Institute for Transuranium Elements.

Some modern equipment like high purity gamma spectrometers, alpha and beta spectrometers have been obtained using international cooperation programmes.





Equipment from IAEA

However, lack of human resources in radiochemistry and nuclear physics do not allow to establish real capabilities and increase capacity of the country in these fields. Obviously that highly expensive equipment like for micro-analytical techniques is not needed for small countries as Azerbaijan. We can use the possibilities, which are provided by international cooperation and first of all within the framework of bilateral agreements with IAEA and ITU in case if such kind analysis will be required.

The main issue is to create special team of experts in radiochemistry and nuclear physics. This team has to have an access to the existing database as well as to model calculations for interpretation of the obtained data. In our opinion “Nucleonica” could be powerful tool for increasing knowledge and expertise in nuclear forensics.

Presently, the participation in international cooperation programmes is more effective and efficient way in order to do it via exchanging of information, getting new knowledge and skills in very specific field of science, which is nuclear forensics. Local team of experts will create the capacities and capabilities for sustainable success in fight against illegal nuclear trafficking, nuclear terrorism and nuclear proliferation.

Thank you for your attention!