



ITALY

Cooperative Activities under the SPS Programme



Since NATO began offering science cooperation to partners in 1992, Italian scientists and experts have had leading roles in 1,173 activities, and more joined various cooperative activities as participants.

Today, NATO science activities enable close collaboration on the two key priorities of **defence against terrorism** and **countering other threats to security** and are managed under the Science for Peace and Security (SPS) Programme. SPS activities contribute to NATO's strategic objective of partnership, helping to connect scientists and experts

from NATO countries with their counterparts from Partner and Mediterranean Dialogue countries through workshops, training courses, team collaborations and multi-year projects.

All activities supported by the SPS Programme are approved by NATO nations on the basis of consensus.

Examples of Activities

On 3 to 13 June 2010 an Advance Study Institute, entitled “**Structure and Function of Biomacromolecules as a Tool against CBRN Agents**” will be held in Erice, Italy. The objective of this SPS event, which will bring together up to 120 participants from NATO, Partner and Mediterranean Dialogue countries, is to train the younger generation on advanced methods and techniques to discover relevant structural and dynamic aspects of biological macromolecules. The outcome of this project, focused against bio terrorism, should lead to the understanding of the disease processes resulting from natural or engineered organisms and produce therapies and vaccines for common health threats and viral menaces. [ref 983866]

On a longer-term project, investigators from Italy, Israel, Russia and the United States have cooperated since March 2006 in the development of methods for “**Unexploded Ordnance Detection Using Electromagnetic Waves**”. This involves tracking the propagation of diffracted beams through complex media and developing algorithms to analyze scattering from large objects defined by edges. In terms of implementation, this research will be used in de-mining operations and for the detection of explosives during screening of luggage and passengers. In Italy, the end-users of this project will be governmental agencies and the company Galilea Avionica S.p.A, which is exploring potential technologies to address these applications.[ref 982376]



Inside the TAU Antenna Lab anechoic chamber, Prof. Amir Boag demonstrates the installation of the dual polarized antenna on the scanner for detection of UXO. (photo courtesy of project co-directors)

Also in the field of defence against terrorism, investigators from Italy, Canada, Romania and Spain have worked since October 2005 to develop a procedure for **“Photocatalytic Decontamination of Neurotoxic and Vesicant Compounds”**, to be used in the clean-up of land and materials exposed to chemical weapons, in circumstances where incineration or collection of spills would not be possible. In October 2008, a team from the NBC Defence and Ecology Research Centre of the Romanian Ministry of Defence demonstrated two new techniques for decontamination of CWA using photocatalysts. The techniques that were employed during the demonstration to decompose sulphur mustard use only natural chemicals and solar radiation and leave behind only innocuous gaseous oxide compounds. They are therefore environmentally friendly and safe for sensitive equipment, infrastructure and humans. [ref 981476]

Scientists from Italy, the United Kingdom, Kyrgyz Republic and Uzbekistan have been working together on a project aimed at increasing **“Geo-Environmental Security of the Toktogul Hydroelectric Power Station Region”**. The scientists will evaluate the seismic security of the Toktogul region, which lies in the centre of the largest hydroelectric irrigation area in Central Asia, as well as formulate threat scenarios, develop recommendations for risk mitigation measures, and disseminate information on the potential hazards using a GIS database. Another principal objective is

to identify the threats arising from earthquake-related disturbances to dumps of uranium tailings. The end-users of the results of this study include several ministries in the Kyrgyz Republic and Uzbekistan, as well as the Kyrgyzenergo Holding Company, which runs the Toktogul operation. [ref 983142]

In addition to NATO-funded activities, the SPS Programme facilitates the development of nationally funded activities, such as pilot study on **“Risk Assessment of Chernobyl Accident Consequences: Lessons Learned for the Future”**, led by Italy and the United States. Although the Chernobyl accident had triggered a considerable improvement in procedures for nuclear emergency preparedness and international information exchange, it was recognised that there was still room for improvement, for example in coordinating the response to nuclear accidents and in decision-making during the initial and later phases after an accident. The pilot study gathered experts for a number of meetings on the lessons learned from the Chernobyl accident and formulated recommendations for future response measures. [ref 982283]