



UNITED STATES

Cooperative Activities under the SPS Programme

Since NATO began offering science cooperation to partners in 1992, American scientists and experts have had leading roles in 4,786 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.



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

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Examples of Activities

An upcoming workshop entitled “**Warfare Ecology: Synthesis, Priorities and Policy Implications for Peace and Security**”, will take place on 10-12 December 2009 in Vieques, Puerto Rico. The purpose of the workshop is to help define and advance the emerging study of the ecological consequences of warfare, military preparations, and post-conflict activities. It will bring together around 25 key ecologists, social scientists, military professionals and policy-makers to examine case studies, discuss policy implications for peace and security, and establish future research priorities in the field of warfare ecology.

[ref 983502]

Investigators from the United States and the Republic of Georgia are developing a system for “**Protecting People and Underground Facilities from Explosions**”, particularly in countering terrorist attacks. To do this, they have studied the propagation of shock waves and energy absorption processes in tunnels and have designed hydraulic shock absorbers. Methods to identify blasts based on seismic, electromagnetic pulse, optical, thermal and overpressure effects have been analysed, and a system based on the detection of the electromagnetic pulse and optical signals has been selected. The findings of the study have been used to establish blast

identification criteria and identification software. [ref 980981]

A cutting-edge project in the field of cyber security, “**Quantum Dot Single Photon Sources for Data Encryption**”, began in August 2007. Recognizing the urgent need to improve the security of data transmission and storage against penetration by terrorists, industrial spies and other criminals, investigators from the United States, Russia, United Kingdom and Germany are working on a new method of data encryption using quantum cryptography. This method takes advantage of the physical uncertainties associated with quantum mechanics, making error-free reading or cloning of single photon transmission impossible. Ultimately it is the aim of the project to

Scientists from the United States, France and Ukraine have cooperated since October 2007 to develop a “**New Generation of Multi-Energy X-Ray Scanners for Anti-Terrorism Inspection**”, for the quantitative detection of explosives with a probability of up to 90-95%. The goal is detection of solid and liquid explosives, even when embedded in a background of inert organic materials with similar densities, which involves a new approach to visualization and recognition using X-rays in the dual- and multi-energy regimes. It is expected that the combination of two different technologies in one instrument, alongside a new method for determination of the atomic and chemical composition of materials, will lead to substantial improvements in sensitivity to illegal and dangerous materials. [ref 982823]

The SPS Programme also facilitates the development of nationally funded activities, such as the short-term project “**Environmental Aspects of Military Compounds**”, which was led by the United States, the Netherlands and Germany. Participants from 25 countries and several NATO agencies gathered at a three-day workshop to compare techniques and procedures in environmental management systems (EMS), to share experiences and successes in this field, and to establish a network of experts. The second phase consisted of three more workshops and finished in October 2008. Final outputs include recommendations for future training and information exchange fora; an EMS handbook for NATO-deployed compounds; and an environmental protection annex to the standard NATO Operations Plan. Project participants hope for successful implementation of these outputs in the NATO organisation. [ref 983080]



American scientist Dr. Leonard Otten was presented with the NATO Science Partnership Prize on 22 October 2003, along with his collaborator, Dr. Andrey V. Larichev of Russia, for their revolutionary work on ophthalmic imaging, in the framework of a project funded by the NATO Science Programme. Left to right: Dr. Otten, Dr. Larichev, former NATO Secretary General Lord Robertson and former Assistant Secretary General for Public Diplomacy Jean Fournet. (NATO photos)

produce a single photon source capable of operating at elevated temperatures. The prototype system may eventually be commercialized by a high-tech company in St. Petersburg. [ref 982735]