

## **Nuclear Security: Lessons learned from the past and future global directions**

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Protecting society against acts of nuclear terrorism is a new global-scale challenge facing the international community today. Improving nuclear security is therefore a common goal of the international community, including the IAEA.

The events of 9/11 in the USA demonstrated a new scale, dedication, sophistication and organization of terrorist groups and prompted the international community to re-evaluate the threat posed by terrorism, including threat against civilian nuclear programs. This re-evaluation has underscored the awareness of a much broader threat-picture. The willingness of terrorists to risk their own lives in attempts to cause death and destruction must be seriously taken into account. While the threat related to the potential construction of nuclear weapons remains the most devastating, the ways and means through which radioactive materials may be dispersed for the purpose of causing harm to persons, property and the environment must be strategically reconsidered.

The newly established IAEA definition of nuclear security “*the means and ways of preventing, detecting, and responding to sabotage, theft and unauthorised access to or illegal transfer of nuclear material and other radioactive substances, as well as their associated facilities*” underscores a broad strategic approach to nuclear security. Recent developments and the re-evaluation have more clearly identified overlaps and synergies between nuclear security, safety and safeguards. The IAEA General Conference in recent years, and prominently in 2004, noted in the resolution on nuclear and radiological security, *inter alia*, that strengthening the safety of radioactive sources contributes to enhanced security of such sources. It also noted that safeguards agreements, additional protocols, as well as states’ systems of accounting for and control of nuclear materials, contribute to preventing illicit trafficking, by deterring and detecting diversion of nuclear materials.

The modern society, whether in developed or in developing countries, depend on the availability of nuclear energy and on the day-to-day use of radioactive materials in medicine, agriculture, industry and for research. Before 9/11, these activities were mainly covered by safety rules regarding health and environment. Since 9/11, it is clear, that these activities also require adequate security. For the continued, and expanded, use of nuclear energy or radioactive materials, nuclear security is indispensable and an important prerequisite for successful and sustainable development.

We are now at a time for reflection and for developing our plan for the next stage of our collective efforts of improving nuclear security. More than three years have passed since September 2001, and we have gained much experience. Through many of our nuclear security services, expert assistance and training events, we have assisted Member States in their efforts to improve their preparedness and response capabilities and acquired a much better understanding of Member States problems and concerns and the need for further support. This conference aims at reviewing where we

stand and the achievements we have made as well as to identify the issues and directions for our future efforts.

## **The evolution of nuclear security and lessons learned**

### *The global picture*

The end of the Cold War was marked by a shift from a bi-polar structure of global security into a more complex and unpredictable configuration of world affairs. It also brought about new security challenges, i.e. an increased probability for low-density regional, national or sub-national conflicts with new and more dispersed threats emanating from a larger number of actors, including non-state actors; terrorists or criminals. The audio-visual impact of modern media has dramatically enhanced the socio-psychological impact on a global scale of such conflicts. The number of cases of illicit trafficking in nuclear materials that were recorded since the 90ies raised concern about the international physical protection regime and triggered an effort to enhance our capabilities for prevention, detection and responses regarding terrorist acts, as well as to strengthen the Convention on the Physical Protection of Nuclear Material.

Immediately after the events of 9/11, based on the re-evaluation of its implications, the IAEA identified four types of threat for nuclear security: a) theft of a nuclear weapon; b) construction of a crude nuclear explosive device using stolen nuclear materials; c) malicious use of nuclear and other radioactive materials including Radiological Dispersal Devices (RDD); and d) an attack on or sabotage of a nuclear installation or transported materials. The potential targets of such acts include nuclear power plants, fuel cycle facilities, research reactors, laboratories and storages as well as locations all over the world where these substances are used in a broad range of non-nuclear applications.

To prevent these events from happening, we must have a comprehensive, global approach to nuclear security, based on internationally accepted instruments, and which is implemented worldwide and in broad partnerships. Should a nuclear terrorist act happen, we would all suffer, directly or indirectly, as fellow passengers in the same boat.

### *Achievements*

The IAEA is now approaching the completion of its three year programme to protect against nuclear terrorism. Among the most important achievements is the increased Member States awareness of the need for a comprehensive approach covering *prevention, detection and response* to possible acts of nuclear terrorism. During these three years, the Agency has conducted more than 125 security advisory and evaluation missions, and more than 100 training events in more than 70 countries. We have helped Member States to improve regulatory systems and the physical protection of nuclear facilities. In several cases, the IAEA facilitated bilateral assistance. The three years programme had a target expenditure of \$36 million. As of this moment, with eight months left of the third year, the IAEA Nuclear Security Fund (NSF) has received about \$35 million and the expenditures are on or above annual targets. The sustainability of the Agency's programme will require continued voluntary funding and in-kind contributions.

We have been moving the programme towards the implementation of nuclear security improvements at regional and national levels and at facilities. The results of missions, training courses, workshops and other activities are used in the preparation of comprehensive *Integrated Nuclear Security Support Plans* for individual States. These plans include national level improvements required for the regulatory infrastructure, improvements at facilities, locations and for transports as well as improved radiation detection capability at border crossings. These plans provide an effective tool for coordination and an overall goal for the State based on an understanding of what needs to be

done over a period of time. First steps for the implementation of such plans have been taken in several Member States.

#### *Some lessons learned*

The activities performed during the past three years have also been an extensive learning process. Complexity and changes in the political situations have sometimes resulted in revisions and delays in implementation. However, the achievements that have been made, confirmed that a multi-track and holistic approach including the synergies between safety, safeguards, and security is warranted for the protection against acts of nuclear terrorism. These efforts would, in fact, underpin the promotion of using radioactive materials in support of sustainable development and could also help eradicate root causes of conflicts and terrorism. While there is a fundamental unpredictability of the continued funding of these activities, the planning and implementation have to assume that resources will be available for a longer period.

### **Directions for the future**

#### *Building a global nuclear security framework*

Expanded use of nuclear power and introduction of new nuclear energy technology as well as rapidly growing science and medical use of radioisotopes are evidence of the important role of nuclear technologies in sustainable development. The privatisation of the nuclear power industry, deregulation and government reform, point to expanded security related responsibilities for the private sector and other NGOs. Thus, international consensus on the establishing and enhancing of global nuclear security framework is urgently needed.

The top-tier of this framework is based on the universal implementation of prevailing legal instruments that are relevant for nuclear security.

As was mentioned earlier, in July this year, after five years of work, a conference will be convened with the State Parties of the Convention on the Physical Protection of Nuclear Material to review proposals for its strengthening. A strengthened convention, including an obligation by State Parties to implement physical protection for nuclear material in domestic use, storage and transport in addition to international nuclear transport, will be a major step forward for improved nuclear security. The revised Code of Conduct on the Safety and Security of Radioactive Sources, approved by the IAEA Board of Governors in 2003, complements this convention. More than 70 countries have declared their political commitment to implement the Code. In addition, the Board approved and the General Conference endorsed supplementary guidance on import-export of this Code in 2004. Both, policy and technical issues relevant to the implementation of the Code of Conduct will be further discussed in Bordeaux, in June 2005 and a series of Regional Meetings are planned on this topic. Safeguards agreements and additional protocols are recognized for their contribution to the nuclear security framework. Likewise, the Convention on Nuclear Safety and the Convention on the Early Notification of and Assistance in the Case of a Radiological Emergency are also important components of the institutional framework. Concerted efforts for the full implementation of all of these instruments will remain of the highest priority for the coming years. IAEA guidelines and recommendations, to be published in our nuclear security document series will facilitate these efforts.

#### *Weak links and cooperation*

Terrorists or criminals will target weak links in the system. Eliminating these “weak links” is therefore a high priority in the comprehensive approach. We must work towards creating a critical mass of intellectual and institutional resources in States, which can absorb competencies required to

maintain robust nuclear security systems and facilitate their implementation. Cooperation among relevant national authorities would benefit from national networks. Enhanced interaction between governments, NGOs and academic institutions will facilitate the exchange of new ideas and increase public awareness of measures taken to improve nuclear security. The establishment of regional centres for cooperation will facilitate interaction among States. Such interaction will promote increased awareness to give the necessary priority to effective nuclear security. At the same time, however, sensitive information must be protected. The legitimate need for transparency must always be balanced with the equally legitimate requirement not to risk any disclosure of sensitive information.

Cooperation among international organizations with mandates of relevance for nuclear security is essential for promoting the implementation of effective national nuclear security systems. Additional to effective inter-governmental networks, information exchange mechanisms with and between international and regional organizations are needed to promote a constructive dialogue and well-coordinated cooperative actions for nuclear security. Mechanisms and specific proposals for an enhanced programme will be covered later during the conference.

## **In conclusion**

This conference aims at examining whether enough has been done to make it much more difficult for any terrorist or criminal to use nuclear and radioactive materials to cause death, destruction and panic. We know that the consequences of an explosion of *one* crude nuclear or radiological device would be catastrophic or create severe disruption, and that the consequences of a sabotage of a nuclear facility could halt the development of nuclear technology for peaceful purposes and hamper socio-economic development.

Compared with three years ago, we are now better prepared, owing to international cooperation and the focus on preventive measures. However, a lot remains to be done in all areas of prevention, detection and response, within the comprehensive and cooperative approach. A strengthened global nuclear security framework requires useful information to have good understanding of the threats, risks, and world-wide status of nuclear security. It also requires effective long-term measures to *prevent* any terrorist from completing successfully a malicious act, as well as measures to detect and respond to smuggling or theft of nuclear materials or radioactive substances. There is also a need to continue efforts to *reduce the threat* by eliminating, as much and as quickly as possible, the quantities of highly enriched uranium or plutonium from peaceful applications for which they are not needed. Finally, it requires measures to *improve security* of poorly protected nuclear installations and transport of nuclear and radioactive materials. For the effectiveness of these measures, they should be implemented in a more consistent and coherent manner through closer cooperation and coordination, complying with the international instruments, related guidelines and recommendations. To achieve the goals of adequate protection of our society against the existing threat level of nuclear terrorism, higher and more predictable level of resources compared with the present programme will be required for the IAEA for the next cycle of the coming four years.

There are still sufficient opportunities to be more proactive than reactive. Let us use our collective wisdom to identify ways and means of protecting our society from nuclear terrorist acts.