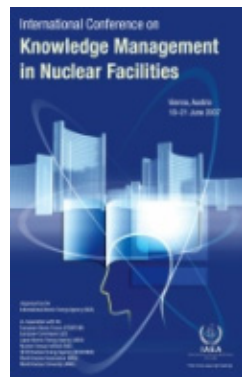


Knowledge Management Conference

18 – 21 June 2007, Vienna



The conference was organized by the IAEA in cooperation with the European Atomic Forum, the European Commission, the Japan Atomic Energy Agency, the Nuclear Energy Institute, the OECD Nuclear Energy Agency, the World Nuclear Association and the World Nuclear University. It was attended by more than 200 participants.

The experience of nuclear operators, regulatory bodies, technical and scientific support organizations and research centres to manage safety knowledge and to harmonize a high level of safety was shared in a session devoted to the application of knowledge management (KM) to nuclear safety and regulation.

In his opening address Mr. T. Taniguchi, Deputy Director General of the Safety and Security Department, stated that: "...The real learning process can take place only when it is active enough to embed and embody the lessons learned for the continuous improvement of safety..... To view concrete examples of active and continuous learning, we need to look no further than IAEA safety standards which crystallize the state-of-the-art safety knowledge through the open and transparent peer review process and strategic feedback from their

application, thus representing international consensus and today's good practices worldwide. OSART, IRRS and all other IAEA safety services are based on these standards, and their application further enhances knowledge management, information sharing and feedback".

Some findings of relevance to nuclear safety are:

KM has become an established management approach. A large "experience data base" of information to safely control nuclear technology is available worldwide and needs to continue to be the foundation for the safe utilization of nuclear power.

Creative and continuous learning are essential elements of KM. Safety knowledge has to be created and nourished in each country. The traditional teacher—student approach needs to be replaced by a creative management of knowledge through international experience sharing and mutual learning.

Transparency and openness, information sharing, mutual learning and networking are characteristics of active management of safety knowledge. Regulators, industry and contractors need educated, trained and well informed staff in the area of nuclear safety – effective systems for KM contribute to this aim.

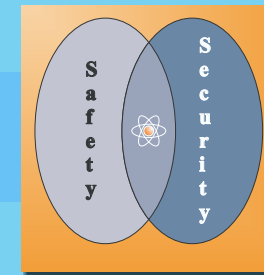
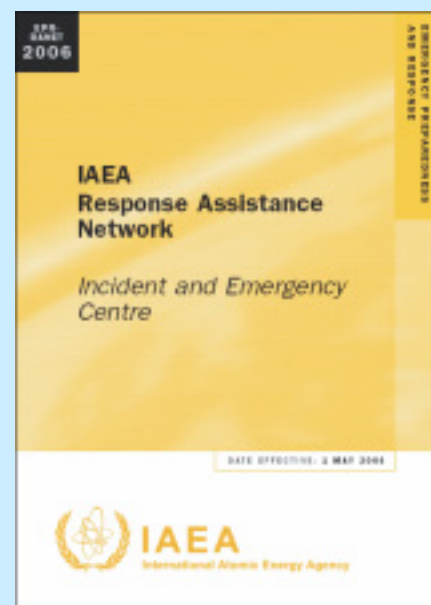
The Conference findings provide valuable insights to the IAEA and the nuclear community to further apply KM methods and tools to improve nuclear safety.

IAEA Response Assistance Network — RANET

In 2006 the Response Assistance Network (RANET) was established by the IAEA. When fully implemented, the RANET will be a network of national assistance capabilities to facilitate rapid response to radiation emergencies. It is intended to be a global network with emphasis on regional assistance and cooperation.

The main RANET document with its three attachments has been published and distributed to Member States. The document defines the network and explains its concept of operation for coordinating and providing assistance. The attachments establish the process of registration for RANET, provide model assistance agreements, and present technical guidelines for national assistance capabilities. The RANET concept is based on the Emergency Response Network (ERNET). The RANET is a complete revision of the ERNET to reflect a broader concept for the network and new operational procedures through Competent Authorities.

In July 2007 the 4th Meeting of Competent Authorities stressed the importance of the international assistance and encouraged Member States to register their response capabilities under RANET as soon as possible.



Denial of Shipments

Radioactive material needs to be transported for use in public health and industry. Transport of radioactive material is governed by national and international regulations which are based on the IAEA's *Regulations for the Safe Transport of Radioactive Material*. These *Regulations*, developed by experts around the world, ensure high standards of safety. However, even when complying with the Regulations, there continue to be instances where shipments have been denied or delayed. Denying or delaying a shipment of radioactive material for medical use can result in hardships to patients. In addition, radioactive materials for other activities such as sterilization or power generation are also affected.

In 2006, to increase transparency, seek effective solutions and permit participation of interested parties, the IAEA Director General created a senior level International Steering Committee on Denials of Shipments of Radioactive Material, which includes representatives from IAEA Member States, international governmental and nongovernmental organizations and industry. The Committee's mandate is to coordinate international efforts at determining solution of issues related to the denial of shipments and facilitate the coordination of a comprehensive international work plan of activities.

The first meeting of the Steering Committee took place in November 2006. A strategy was developed to significantly reduce cases of denial of shipment and alleviate the hardships due to denial and delay. This strategy includes the following principles: promote education; make a collective effort to share information and experience; report denials; and look at real experience at how measures produced specific results. The strategy embraces notification, investigation, facilitation/mediation and reporting cases of delays and denials. In this connection, each interested UN Agency has been invited to establish a point of contact to which reports are to be submitted. The second meeting of the Steering Committee in June 2007 reaffirmed this approach. The Steering Committee will continue to meet yearly to evaluate the progress made.



Package containing radiopharmaceuticals

In July 2007, the IAEA convened a workshop in Montevideo, Uruguay – the first of a series designed as part of the strategy in education – to address the problem at a regional level. The results of the workshop were a regional action plan to prevent or reduce instances of denials of shipments and to alleviate the hardships to users of radioactive material that have been denied and delayed, milestones in the implementation of the action plan, and specific role that could be played by each participant. Discussions among the participants have continued beyond the meeting. This communication has resulted in additional actions being proposed by the participants and in a refinement of the actions agreed at the meeting. The IAEA plans to convene a workshop in Asia later this year as well as workshops in Africa and Central Europe next year. As is the case with the Uruguay workshop the output of subsequent workshops will be regional action plans.

The IAEA's Illicit Trafficking Database

Illicit Trafficking Database

In the early 1990s a number of trafficking cases in the Czech Republic, Germany and the Russian Federation involved highly enriched uranium (HEU) and Plutonium, some in kilogram quantities. These cases raised serious concerns over the threat posed by nuclear materials which were apparently available for sale on the black market. In response, States asked the IAEA to establish a data base on illicit trafficking incidents. First established in the mid-1990s, this work was greatly accelerated and expanded following 9/11. The original purpose was to develop a reliable source of information for IAEA Member States on trafficking and to provide information for analysis and evaluation of patterns and trends. A reliable data base would also provide a source for the IAEA to provide authoritative information on illicit trafficking to the public.

Scope and applications

The data base contains information on incidents involving both nuclear material (uranium, plutonium and thorium) and other radioactive materials such as radioactive sources used in medicine, agriculture and industry, and radioactively contaminated materials. It collects on a wide range of incidents covering illegal possession, including attempts to smuggle material across borders; on thefts and attempted thefts; and on losses of material; on materials which are in some way recovered from uncontrolled circumstances including so called 'orphan sources'; and on materials which have been disposed of in an unauthorized or illegal way. The result is a rich source of information for the analyst.

Official reporting

The main source for information in the data base is the incident reports provided by the National Points of Contact (POCs) in IAEA Member States which voluntarily participate in the data base. Incoming reports are checked for technical consistency and then quickly sent to all the other national POCs and to a number of regional and international organizations; e.g. Interpol, World Customs Organization, the Organization for Security and Cooperation in Europe and Europol. In this way the IAEA fulfils the original requirement from States to provide a quick and reliable source of information on incidents to Member States.

Open source information

The IAEA team does not ignore information that appears in the media and elsewhere. An extensive programme collects information from open sources using various advanced search tools and data base services. When incidents not yet officially reported by States are found, the ITDB Office proactively seeks confirmation, or otherwise, from the State involved. In the meantime, the open source reports are kept in a separate part of the data base. The credibility of open source information varies but it is used in some ITDB analytical applications. It is

always clearly identified and separated from the State-confirmed reports.



Front line officer undertaking secondary search after alarm from radiation monitoring equipment.

Unique quality

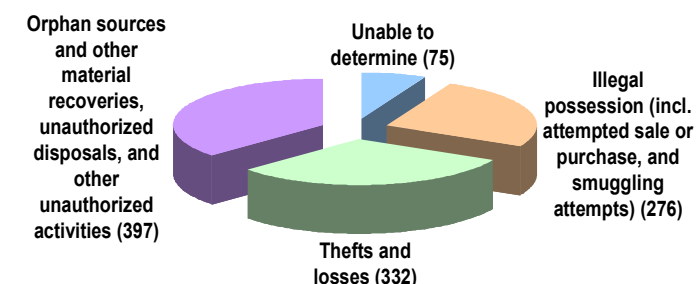
In the decade or more since it was founded, the IAEA's ITDB has developed into a respected source of credible information on nuclear trafficking and other unauthorized activities. Its unique quality is that it holds confirmed information on incidents provided by IAEA Member States. It is, therefore, more reliable than other trafficking data bases which rely largely on information collected from media reports and other open sources of varying levels of credibility. Currently, 95 States are participating in the ITDB.

Analyzing the data

ITDB data collection started in 1993. Up to the end of 2006, the participating States have reported 1080 incidents of illicit trafficking and other unauthorized activities to the IAEA. About 40% of these reports covered incidents which have occurred in the last three years (2004- 2006). The latest figures show that of the 252 incidents of illicit trafficking and other unauthorized activities were reported to the ITDB during 2006. Of these, 149 occurred during the year. The rest had occurred in earlier years but for various reasons reporting of them had been delayed. Fifteen of the incidents last year involved the seizure of nuclear materials and radioactive sources from individuals who possessed them illegally.

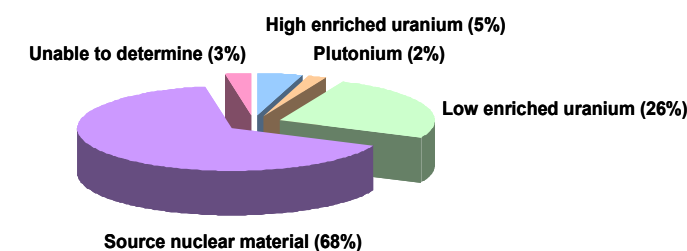
Eighty five incidents involved thefts and other losses, mainly of radioactive sources. In about three quarters of these incidents, the stolen and lost materials have not been recovered. These un-recovered materials are a cause for concern. They help form a pool of materials which are outside proper control and potentially available for malicious use. The remainder of the incidents which occurred in 2006 were either recoveries

of uncontrolled or orphan materials, or unauthorized disposals of radioactive sources and radioactively contaminated materials.



Breakdown of incidents reported to the ITDB during 1993- 2006 by type of activity.

Eighteen incidents over the period 1993 -2006 involved materials of the highest concern; i.e. high-enriched uranium (HEU) or plutonium. These are materials which, if available in sufficient quantities, could be used, with little or no additional processing, to make an improvised nuclear explosive device (INED). In most instances, when seized these materials were in the hands of criminals. And in some cases they were attempting to sell them or smuggle them across national borders. The most notable recent incident was the seizure in February 2006 of 79.5 g of 89% enriched HEU from a group of criminals in Tbilisi, Georgia.



Breakdown of incidents reported to the ITDB during 1993- 2006 by type of nuclear material.

Cooperating with Interpol

In a project begun early in 2005, the IAEA and the Interpol General Secretariat (IPSG) are collaborating in the development of a joint data base which fuses data on illicit trafficking and other unauthorized incidents held by the two organizations. The results will be used to provide improved analyses for use by both the IAEA and its Member States and by the law enforcement community. This project is a unique example of cooperation between international organizations involved in combating the threat of terrorism. By working together, the IAEA and Interpol will make the best use of their specialized skills and knowledge to the benefit of both their respective constituencies.

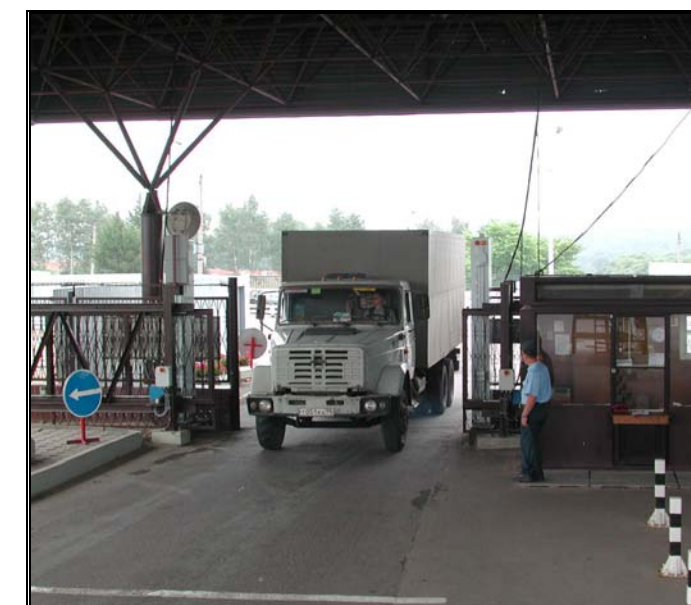
Public information

Whilst it respects the need for discretion and confidentiality on some matters, the IAEA recognizes the value of providing reliable and authoritative

information on illicit trafficking for the public and the media. The IAEA website contains details of high-interest cases involving highly enriched uranium and plutonium, aggregate data on incidents reported by States and some analyses.

The road ahead

Collecting reliable data is not the only reason the ITDB was established. This information was also to be analyzed to identify possible patterns and trends in trafficking. Over the years, the quality of these analyses has improved as the number of States reporting to the ITDB has grown, the number of incidents in the data base has increased, the quality of the reported information has improved, and techniques and resources have improved. The results are regularly disseminated to IAEA Member States and to various international and regional organizations.



A portal radiation monitor for trucks at a border crossing point.

As the IAEA's nuclear security programme has expanded and the priority given to enhancing nuclear security by States has increased, so has the need to identify and prioritise security needs. The information so painstakingly gathered by the IAEA and stored in the ITDB offers the potential to quantify possible risks and threats, to identify trafficking routes and favoured modus operandi, point to possible vulnerabilities in security measures, and provide technical information on the capabilities and performance of detection and monitoring equipment and installations. Such resources are an invaluable input to an information-driven system designed to address vulnerabilities in the overall security architecture. The role of the IAEA's Illicit Trafficking Data Base as the premier source of information on trafficking and related incidents is assured, and its contribution to enhancing nuclear security will only increase with time.