

International Conference on Management of Spent Fuel

19 - 22 June 2006, Vienna



This conference was held in cooperation with the OECD and was jointly organised by the departments of Nuclear Safety and Security and Nuclear Energy. It was attended by 150 participants and observers from 36 countries and 4 international organizations. Mr. Jacques Bouchard,

France, served as Conference President. The conference covered the evolving international scene, safety and technology aspects, and looking to the future.

Spent fuel management is growing in importance. With indications of a renaissance in the nuclear industry its fundamental place in the future development of nuclear power is increasingly recognised. This implies that the amount of spent fuel in storage will increase in the future if no choices are made on spent fuel management strategies.

Multilateral solutions may make economic sense to

smaller countries. Such approaches may be complemented by an International Safety Regime that has developed mainly as a result of the coming into force of the legally binding nuclear related conventions, in particular, the Joint Convention. The IAEA's safety standards in the area of spent fuel management are in the process of being updated and elaborated to cover a wider scope and to accommodate new developments.

Most spent fuel storage systems were designed for short term application. The time periods for storage systems have been extended because of the unavailability of disposal facilities. An important safety issue is how to establish safety in the long term and how to provide confidence in continued secure storage. A combination of monitoring, inspection and research is deemed to be a suitable approach that needs to be reflected in safety standards.

Research and development related to current trends, continued progress towards an international safety regime and the promotion and monitoring of future multilateral initiatives related to fuel cycle activities may be regarded as vital elements of future activities.

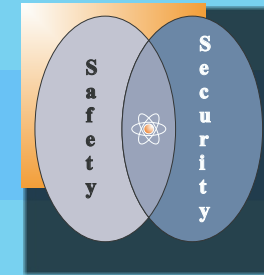
The findings of the President are available at (<http://www.iaea.org/NewsCenter/News/PDF/spentfuelpresfind.pdf>).

Recent INSAG Publications

The International Nuclear Safety Group (INSAG) published two reports in 2006 on Stakeholder Involvement in Nuclear Issues (INSAG-20) and on Strengthening the Global Nuclear Safety Regime (INSAG-21).

INSAG has concluded that the expectations of stakeholders of a right to participate in energy decisions are something that the nuclear community must address. Decisions regarding such matters as the siting and construction of a nuclear power plant are no longer largely the domain of a closed community of technical experts and utility executives. Today, the concerns and expectations of all manner of persons and organizations from the local farmer to the international financial institution must be considered.

The Global Nuclear Safety Regime is the framework for achieving the worldwide implementation of a high level of safety at nuclear installations. Its core is the activities undertaken by each country to ensure the safety and security of the nuclear installations within its jurisdiction. But national efforts are and should be augmented by the activities of a variety of international enterprises that facilitate nuclear safety intergovernmental organizations, multinational networks among operators, multinational networks among regulators, the international nuclear industry, multinational networks among scientists, international standards setting organizations and other stakeholders such as the public, news media and non-governmental organizations (NGOs) that are engaged in nuclear safety. All of these efforts should be harnessed to enhance the achievement of safety.



Training of Cardiologists in Radiation Protection



Participants in inter-regional training course on Radiation Protection in Cardiology held in Vienna

The IAEA has begun a major international initiative to train interventional cardiologists in radiation protection. Starting with the first course in May 2004, so far 6 regional and 3 national training courses have been conducted with the participation of over 400 health professionals putting the IAEA in a leading role in this area.

Cardiologists are among the most intensive users of fluoroscopy in the medical profession and generally have little or no training in radiation protection.^{1,2} There is a need to increase awareness about the potential for exposing patients undergoing cardiac catheterization procedures to relatively high levels of radiation to levels much higher than those handled by many radiologists. A patient undergoing percutaneous transluminal coronary angioplasty (PTCA) faces radiation exposure of the order of a thousand or more times that involved in chest radiography. Furthermore, the number of interventional cardiological procedures performed is doubling every 2 to 4 years in some countries.

A programme of two days' training has been developed, covering possible and observed radiation effects among patients and staff, international standards, dose management techniques, examples of good and bad practice and examples indicating prevention of possible

injuries as a result of good practice in radiation protection. The training material is freely available on CD and will be placed on the Radiological Protection of Patients website at <http://rpop.iaea.org/>.

The surveys conducted among participants in these programmes indicated that more than 85% and in some cases 100% of the participants were attending a structured programme on radiation protection for the first time; had not attended any cardiology conference where there was a lecture on radiation protection; and did not measure radiation doses to patients. More than 50% do not use a badge to monitor their own exposure.

In order to achieve sustainability of radiation protection in Member States, a regional cooperation project in Asia (RCA) has been launched to begin in 2007. It will create a network of trained cardiologists with the capability of continuing on-going activities through professional bodies. It is hoped that this will lead to sustainability in radiation protection activities in cardiology by 2010.

1. Rehani, M. M., Ortiz-Lopez P. (Editorial) Radiation effects in fluoroscopically guided cardiac interventions — keeping them under control, *Int. J. Cardiol.* 109; 147–151, 2006.

2. Rehani MM. Training of interventional cardiologists in radiation protection — the IAEA's initiatives. *Int. J. Cardiol.* 114; 256–60, 2007.

Safety Review Services

Promoting experience sharing and mutual learning

Operational Safety Assessment Review Team (OSART)

Conservative design, careful manufacture and sound construction are all prerequisites for safe operation of nuclear power plants. However, the safety of the plant depends ultimately on commissioning and operating personnel; on comprehensive instructions; and on adequate resources.

The OSART programme, established in 1982, has provided advice and assistance to Member States for almost 25 years to enhance the safety of nuclear power plants (NPPs) during commissioning and operation.



An OSART mission at Brunswick NPP in the USA took place in May 2005

The safety knowledge accumulated from OSART mission results is greatly appreciated by Member States for providing the opportunity for mutual learning and sharing good practices and experience between team members from different countries, and host plant personnel.

The OSART programme is one of the main mechanisms to provide for a wider application of the IAEA's safety standards. The primary function of the OSART programme is to assess the activities of and provide advice to the host plant on the basis of the IAEA's safety standards and to introduce the OSART methodology for establishing self-assessment operational safety programmes.

The OSART programme covers nine operational areas: management, organization and administration; training and qualification; operations; maintenance; technical support; operating experience feedback; radiation protection; chemistry; and emergency planning and preparedness. The practical experience of the application of the IAEA's safety standards in Member States is fed back into the IAEA's process to establish and improve the

safety standards.

At the request of the second review meeting of the Convention on Nuclear Safety (CNS), the IAEA prepared a report presenting generic information on significant issues, developments and trends in enhancing nuclear safety, based on the IAEA's safety services. The OSART programme results provided significant input into this report.

During the period between 2003 and 2006, 44 OSART missions and follow-up missions have been conducted in plants around the world.

The findings of these reviews including good practices, recommendations and suggestions for improvement are indicative of the current status of operational safety practices of NPPs. The following are some major insights from the reviews.

Management efforts have been effective in fostering a culture that promotes good teamwork, focuses the staff on the operational needs of the station, and fosters a healthy work environment.

However, in some cases, there are signs that personnel may be developing a feeling of overconfidence. This may be due in part to the general improvements in the safety levels of the plants and in the improved capacity factors seen worldwide. Care must be taken to ensure that complacency does not overshadow actual conditions in



A Follow-up OSART mission to Kashiwazaki Kariwa NPP in Japan was held in May 2006

both the technical and human performance areas. OSART missions also revealed cases where management expectations are not fully reflected in the actual situation in the field. Therefore recommendations have been made for improvement in areas such as: control of fire hazards, temporary plant modifications, predictive maintenance and early detection of degradation of systems performance.

At many plants, low-level events and near misses are not utilized in the operational feedback system.

OSART missions are requested by about six Member States per year. Many countries have now scheduled OSART missions in line with their NPP periodic safety reviews. Of particular note is that about 50% of OSART missions are now being requested from countries with well-developed nuclear programmes.

OSART missions are conducted according to guidelines prepared to provide a basic structure and common reference both across the various areas covered by an OSART mission and across all the missions in the



A Follow-up OSART mission to Angra 1 NPP in Brazil was held in July 2005

programme. As such, they are addressed, principally, to the team members of OSART missions but they will also provide guidance to a host nuclear plant preparing to receive a mission. In particular the reference documentation is valuable reading for staff at the host nuclear plant.¹

1. INTERNATIONAL ATOMIC ENERGY AGENCY, OSART Guidelines – 2005 Edition, IAEA Services Series No. 12, IAEA, Vienna (2005).



An OSART mission to the Blayais NPP in France took place in April 2005

