

**Achievements and Perspectives of the Joint Convention on the Safety of Spent Fuel Management
and on the Safety of Radioactive Waste Management**

D. Louvat
International Atomic Energy Agency
P.O. Box 100, A-1400 Vienna
Austria

A.C. Lacoste
Directorate General for Nuclear Safety and Radiation Protection
6 Place du Colonel Bourgoin, Paris
France

ABSTRACT

The Joint Convention on the Safety of Spent Fuel management and on the Safety of Radioactive Waste Management is the first legal instrument to directly address the safety of spent fuel and radioactive waste management on a global scale. The Joint Convention entered into force in 2001. This paper describes its process and its main achievements to date. The perspectives to establish of a Global Waste Safety Regime based on the Joint Convention are also discussed.

BACKGROUND

Twenty years ago, The Chernobyl accident focused the attention of the international community profoundly on the necessity to view globally the safety of the nuclear industry. As mentioned at that time by the IAEA Director General “*an accident somewhere is an accident everywhere*” emphasizing by this that a nuclear or radiological accident can seriously impact the environment beyond the border of the country where it happens. Such impact can be radiological damage, or financial or sociological impacts affecting public perception worldwide. The Chernobyl accident led immediately to the establishment of two international conventions for IAEA Member States, the Convention on Early Notification of a Nuclear Accident (1986) and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (1986).

Following a few years of retrospection on the accident and a realization of its broad implications, discussion started among IAEA Member States to build an international legal instrument around the safety principles operating nuclear power reactors must respect in order to ensure safety. As a result a broad group of technical and legal experts were convened to develop the Convention on Nuclear Safety that entered into force in 1994. The discussions to set up the Nuclear Safety Convention included consideration of radioactive waste, the experts involved recognizing the potential transboundary and intergenerational implications of its improper management. At that time, however, debate was still in progress on an agreed set of fundamental principles for the safety of radioactive waste management, it thus considered premature to include waste safety in the convention but recognized the need for a sister convention on waste safety, once the fundamental safety principles were agreed internationally.

Also around the same time, the United Nations Conference on Environment and Development adopted the *Agenda 21* in 1992, which reaffirms in Chapter 22 the paramount importance of the safe and environmentally sound management of radioactive waste. Further, the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter was amended in 1994 to ban the dumping of all radioactive wastes in the sea.

International consensus on the fundamental safety principles for radioactive waste management was achieved in 1995 and it was decided immediately to commence development of a separate convention called for in the preamble of the Convention on Nuclear Safety to give appropriate visibility to the management of radioactive waste worldwide.

From June 1995 to March 1997, a series of meetings of a group of legal and technical experts was organized to discuss the content of a convention on radioactive waste management. The group proposed that the convention should mirror the Convention on Nuclear Safety, to the extent possible, and that it should be based on the safety principles that had been agreed internationally in 1995 and documented in the IAEA Safety Fundamentals entitled "The Principles of Radioactive Waste Management". The group also took into consideration the principles contained in the interagency "International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources" (1996) and the prevailing international regulations on the safe transport of radioactive material.

A number of difficult issues had to be overcome during the development of the convention, particularly its scope of coverage. A number of countries were concerned that the safety of spent nuclear fuel management should be addressed by the convention; others who consider spent fuel a resource not a waste had reservations. The resolution was the development of a joint convention that satisfied both groups. Of equal concern was the inclusion of radioactive waste of military origin, again this issue was resolved by engendering a degree of flexibility for countries to decide on such inclusion or exclusion, but obliging the inclusion of waste transferred to civilian programmes for management.

In September 1997, a Diplomatic Conference adopted the text of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, the first and only legally binding agreement on a global scale in these fields of activity. The Joint Convention came into force in 2001 and its first Review Meeting of Contracting Parties took place in November 2003.

OBJECTIVE, SCOPE AND OBLIGATIONS

The objective of the Joint Convention is to achieve and maintain a high level of safety worldwide in the management of radioactive waste and spent fuel. The intent of the Parties to the Convention is to achieve this objective through international cooperation in addressing difficult waste safety issues, by peer review of each other's performance, by assistance when needed to states with less-developed programmes and capabilities, and by making use of internationally accepted standards of safety.

The Joint Convention applies primarily to spent fuel and radioactive waste resulting from civilian nuclear programmes and uses of radioactive material, and to spent fuel and radioactive waste from military or defence programmes if and when such materials are transferred permanently to civilian programmes. The Convention also applies to planned and controlled discharges into the environment of liquid or gaseous radioactive effluents from regulated nuclear facilities.

The obligations of the Contracting Parties with respect to the safety of spent fuel and radioactive waste management include, in particular, the obligation to establish and maintain a legislative and regulatory framework to govern safety and the obligation to ensure that individuals, society and the environment are adequately protected against radiological and other hazards. The Convention imposes obligations on Contracting Parties relating to the transboundary movement of spent fuel and radioactive waste, also, to take appropriate steps to ensure that disused sealed sources are managed safely.

However, the Convention is an incentive convention, in that it does not contain penalties for non-compliance. The underlying philosophy is that the Convention should serve as a means of stimulating the gradual improvement worldwide in the standards of safety that are achieved in the management of both spent nuclear fuel and radioactive waste. To deliver its objective, the Joint Convention is intended to encourage Contracting Parties to improve their performance, while realization and confirmation of safety remains a national responsibility.

THE CONVENTION PROCESS

When a country ratifies the Convention, the country becomes a Contracting Party to the Convention and is obliged to take part in the processes prescribed by the Convention, fundamental to which is a periodic review process. All Contracting Parties take part in the review process arranged at intervals not exceeding three years under the umbrella of the Convention. The incentive process provided by the Joint Convention is based on two complementary tools: the National Report, required by Article 32 of the Joint Convention; and the Review Meeting, established by Article 30.

The preparation of the National Report, addressing all articles of the Convention is a major task. Nevertheless it obliges the Safety Authorities of the Contracting Parties to systematically review all national activities in the field of spent fuel and radioactive waste management and to draw its own conclusions on their adequacy and measures that may have to be taken to address shortcomings. Article 32 of the Joint Convention addresses the content of the National Report in detail. The more comprehensive and clear the National Report is on difficulties or good practices, the more useful it can be for the national authorities. The exercise of preparing the national report in itself represents a national instrument for helping to assure the safety of these spent fuel and radioactive waste management facilities and activities.

The second purpose of the National Report is to allow for a free exchange of information and discussion between Contracting Parties during the Review Meeting, so that each Party may identify where performance could be further improved. The aim of Review Meetings is to stimulate discussion among the Parties that will reveal approaches to problems that have proven successful and can therefore serve as possible examples to emulate, and sometimes approaches that have not been successful and that therefore might best be avoided. Countries with very limited nuclear programmes can also benefit to a great degree from the experience of countries with more extensive programmes and experience, and also from other countries that have perhaps encountered similar problems. The main conclusions and recommendations of the Review Meeting and of the Peer Review process are published openly in a summary report.

ACHIEVEMENTS AND STATUS

At the end of the first Review Meeting, the Contracting Parties concluded that the peer review process and the Convention had, in general already contributed significantly to the safety of spent fuel and radioactive waste management. Several Contracting Parties had made improvements in their spent fuel and radioactive waste management programmes in the years leading up to the Review Meeting, acknowledging that in part they had been prompted by the date of the Review Meeting. Several Contracting Parties also acknowledged that the process of preparing a National Report and preparing for review by peers, although time consuming and expensive had been beneficial for them. The Contracting Parties concluded that while improvements can be made for future meetings, the overall process worked well.

During the first Review Meeting, many issues of special interest to both spent fuel and radioactive waste management emerged such as clearance levels for the disposal or reuse of materials with very low levels of radioactive contamination, management of mixed wastes, management of uranium mining and milling waste and waste from the use of other materials containing naturally occurring radionuclides, effective safety assessment tools for radioactive waste facilities, criteria for the design life of facilities for the storage of spent fuel and radioactive waste, integrated decommissioning and radioactive waste management plans and the long term storage of spent fuel.

The Review Meeting also recognized that the international safety standards produced by the IAEA are of great value for Contracting Parties working at achieving or maintaining a high level of safety in radioactive waste management. These safety standards nowadays tend to reflect an international consensus on what constitutes a high level of safety for protecting people and the environment. In most cases, they provide an effective and useful safety assessment tool for application to radioactive waste

management facilities. Nevertheless, it was also recognized that there is still room for further development and improvement in the international standards. As an international point of reference, their use in the development of national regulations or practices provides a practical way for Contracting Parties to achieve the main goals of the Joint Convention, recognizing that Contracting Parties may also adopt alternative ways at the national level to achieve these goals.

Most international agreements take some years to develop and mature. The first Review Meeting suffered to some extent from the limited number of Contracting Parties. At the time of the meeting only 32 on the 139 IAEA Member States were Contracting Parties. Nevertheless roughly 90% of the world inventory of spent fuel and HLW, 80% of LILW, 30% of uranium mining and processing waste and 40% of HLW from defence programmes were covered under the Joint Convention. Since the first Review Meeting, the membership has increased to 39 and the Joint Convention now covers around 97% of the world inventory of spent fuel and HLW, 90% of LILW, 40% of uranium mining and processing waste and 99% of HLW from defence programmes. The percentage of waste that remains to be covered still represents an important amount, especially for waste containing naturally occurring radionuclides and significant activity. Among the 100 Member States of the IAEA that have not yet ratify the Joint Convention, some have nuclear industry and defence programmes and some are just using radiation sources for industrial and medical applications, nevertheless, all have radioactive waste to manage and could therefore benefit from being Contracting Parties.

PERSPECTIVES

The second Review Meeting will take place in May 2006 and Contracting Parties have already submitted their National Report for the review of their peers. The effectiveness of the review process, based on the National Reports and the Review Meeting, is one of the key factors enabling the Joint Convention to enhance the global safety of spent fuel and radioactive waste management. In this respect, there is room for improvement of the National Reports that could then in turn improve the Review Meeting. In elaborating National Reports, countries are encouraged to focus not only on formal (legal) compliance with the articles of the Convention but also to address compliance at a practical level, i.e., the measures being taken and the practical arrangements in place to meet safety objectives. Good practices and innovative approaches should be reported but also, the difficulties encountered and future planned actions to improve the situation. Above all, difficulties should not be kept hidden if the desired objective is to make progress. Openness and frankness is necessary to enable the original spirit that prevailed during the drafting of the Joint Convention to be realized.

The second key factor for the Joint Convention is the number of Contracting Parties. The ratification process for the Joint Convention has been at a much slower rate than that for the Convention on Nuclear Safety or other safety conventions and it needs to be accelerated. The Contracting Parties and the IAEA Secretariat have in the intercessional period engaged in a number of initiatives to promote ratification, and these efforts need to be maintained and extended. The Secretariat has to enhance its promotion plan directed toward IAEA Member States who are not yet Contracting Parties. To date the plan has involved several initiatives such as information meetings for specific audiences (decision-makers, heads of regulatory authorities), regional information symposium and workshop, expert mission visits to support Member States in their ratification process. Three regional meeting were organized in 2005 for Africa, Latin America and East Asia. Two more are planned in the future for Central Asia and East Europe. Dedicated Workshops attended by countries sharing a specific common problem and need are also planned. A typical example would be a workshop on the Joint Convention for countries having uranium mining and milling residues. Such activities can only succeed with the input and assistance from the more experienced countries.

In the long term, a fair and effective international peer-review process involving all IAEA Member States as envisaged for the Joint Convention, can achieve a Global Waste Safety Regime which defines a model for safe radioactive waste management and can be utilized by the all countries for their own radioactive

waste management programme, to resolve issues with their neighbours in the region, independent of the extent of the national programmes of nuclear power or radiation technology utilization, to share facilities or disposal routes and to offer commercial standards and safe, proven solutions to less advanced countries.

The re-emergence of nuclear energy utilization is a reality and it becomes increasingly important for the international nuclear community to provide society with confidence in this energy form. The safety of radioactive waste management must be assured. In addition medical and industrial uses of radioactive materials continue to grow providing enormous benefit to societies around the world. The establishment of a Global Waste Safety Regime based on the Joint Convention and the application of International Safety Standards provides an opportunity to increase the credibility of national strategies for radioactive waste management by providing an independent assurance of the safety of practices, compatibility with international standards and consistency with solutions adopted elsewhere on the basis of sound safety principles.