

## **The Joint Convention – Its Structure, the Articles and its Administration**

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### **ABSTRACT**

The objective of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (The Joint Convention) is to achieve a high level of safety worldwide in the management of spent nuclear and fuel and radioactive waste.[1] It is an incentive convention designed to encourage and assist countries to achieve the objective. Contracting Parties to the Joint Convention are required to compile and submit a national report on how they meet the articles of the Joint Convention. The reports are peer reviewed by other Contracting Parties to the Joint Convention and then countries have to defend the report at a review meeting of all the Contracting Parties. The process entails both a self-appraisal in compiling the report and independent international peer review. Summaries are compiled of the various reviews and these are presented in plenary, with a view to identifying generic issues and areas in which countries are improving safety or have identified for further development. The process also presents an opportunity for countries involved to benchmark their national spent fuel and radioactive waste safety programmes against prevailing international practice. The paper elaborates the detailed elements involved and discusses the experience from the first review meeting of Contracting Parties, and issues envisaged for consideration at the second review meeting scheduled for May 2006.

### **BACKGROUND**

The Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (The Joint Convention) was adopted on 5 September 1997 by a Diplomatic Conference convened by the International Atomic Energy Agency (IAEA) and came into force on 18 June 2001. The Joint Convention is a sister convention to the Convention on Nuclear Safety which had previously entered into force in October 1996. Development of the Convention on Nuclear Safety essentially arose out of the aftermath of the Chernobyl accident, in recognition of the need to provide a high level of assurance world-wide that similar accidents would not occur in the future. In developing the Convention on Nuclear Safety, it was recognised that the management of radioactive waste was an issue of increasing global concern and should also be the subject of international scrutiny. A group of legal and technical experts was convened to draft a convention which considered the issues involved at a preparatory meeting and six additional meetings. These deliberations resulted in a draft convention which, with some modifications, was accepted by a Diplomatic Conference in September 1997.

The Joint Convention is based on the Convention on Nuclear Safety, both of which are deemed to be of an incentive nature – essentially meaning that the conventions do not invoke prescriptive technical requirements nor do they involve punitive sanction for non-compliance. The intent is to provide an incentive to Contracting Parties to adopt internationally endorsed standards of safety and to periodically subject their arrangement to international peer review. Contracting Parties are required to take reasonable measures to address any areas not compliant with international standards.

The basic obligations under the Joint Convention are to establish a legal and regulatory framework for the safety of spent fuel and radioactive waste management, to have in place an independent regulatory authority and to apply generally accepted principles of safety.

### **OBJECTIVES OF THE JOINT CONVENTION AND ITS SCOPE OF APPLICATION**

The objectives of the Joint Convention are clearly rooted in the Waste Safety Fundamentals, calling for a high level of safety world-wide in the management of spent nuclear fuel and radioactive waste through the enhancement of national measures, and by way of international co-operation. Effective defences are to be provided against associated radiation hazards to both people and the environment, both now and in the future and allowing for the needs and aspirations of present generations without compromising those of future generations. Accidents with potential radiological consequences are to be prevented and mitigated in the event they should occur.

The scope of the Joint Convention, as suggested by the name, is the safety of spent fuel management and of radioactive waste management. As originally envisaged, the Joint Convention was to apply to the management of radioactive waste. The issue of whether or not spent fuel should be included was one of considerable controversy, as a number of countries reprocess spent fuel and do not consider it to be a waste, but rather a resource. Nevertheless all parties agreed that the applicable safety requirements are very similar and that similar standards of safety are appropriate and applicable to the management of both spent fuel and radioactive waste. The idea of a joint convention was thus conceived to overcome problems that a number of countries had with the implication that spent nuclear fuel should always be necessarily considered as radioactive waste. The Joint Convention does not cover spent fuel held at reprocessing facilities which is pending reprocessing, unless declared to do so by the Contracting Party in question.

The Joint Convention covers waste of civilian origin (not military or defence), but does not apply to waste containing naturally occurring radioactive materials originating outside of the nuclear fuel cycle, unless it is a disused sealed source or the waste is declared to be included by the Contracting Party. It does not apply to spent fuel or waste within military or defence programmes, unless declared to do so by the Contracting Party or the spent fuel or waste of such origin is transferred to civilian programmes for management. The Joint Convention does apply to effluent discharges.

## **SAFETY OF SPENT FUEL MANAGEMENT AND RADIOACTIVE WASTE MANAGEMENT**

The Joint Convention has two distinct sections, one dealing with the safety of spent fuel management and the other devoted to the safety of radioactive waste management. This is, however, in recognition of the need to maintain a clear differentiation between the material types, not their associated radiological safety issues. As such the two sections both deal with general safety requirements, existing facilities, siting of proposed facilities, design and construction of facilities, assessment of the safety of facilities and operation of facilities. The section on spent fuel has a discrete article on disposal of spent fuel and the section on waste has a discrete article on institutional matters after closure of repositories.

The general safety requirements oblige Contracting Parties to:

- Ensure criticality and residual heat removal are addressed.
- Ensure associated generation of radioactive waste is minimised.
- Take into account interdependencies between management steps.
- Provide for the protection of person and the environment in a nationally regulated manner, taking due regard of internationally endorsed standards and criteria.
- Take account of associated chemical, biological and other hazards.
- Strive to avoid actions that impose reasonably predictable impacts on future generations, greater than those permitted for present generations.
- Aim to avoid imposing undue burdens on future generations.

Contracting Parties are required to review the safety of existing facilities at the time the Joint Convention enters into force and to ensure that, if necessary, all reasonably practicable improvements are made to upgrade the safety of such facilities.

With regard to the siting of proposed facilities Contracting Parties must:

- Evaluate site related factors likely to affect safety.
- Evaluate the likely safety impact on individuals, society and the environment.
- Make information on the safety of the facility available to members of the public.
- Consult Contracting Parties in the vicinity of the facility who may be affected by the facility and provide them, upon request, with data relating to the facility, to enable them to evaluate the likely safety impact upon their territory.

Contracting Parties must ensure that facilities do not have unacceptable effects on other Contracting Parties.

In designing and constructing facilities Contracting Parties must ensure that:

- Radiological impacts on individuals, society and the environment from discharges or from uncontrolled releases are limited.
- Conceptual plans and technical provisions for decommissioning are provided.
- Technologies used are supported by experience, testing or analysis.

In respect of safety assessment, each Contracting Party must:

- Prior to construction, systematically carry out a safety and environmental impact assessment.
- Update the assessment prior to operation.
- For waste disposal facilities, assess impacts in the post closure phase.

For operation of facilities, Contracting Parties are required to:

- Apply conditions of licence based on the safety and environmental impact assessment and require the commissioning programme to demonstrate the facility, as constructed, complies with the assessed design.
- Apply operational limits and conditions congruent with the safety assessment.
- Require appropriate maintenance, monitoring, testing and inspection procedures – in respect of waste disposal facilities these must verify assumptions made in the post closure safety assessment.
- Provide operational engineering support to all necessary safety related functions.
- Adopt appropriate incident reporting systems.
- Review and provide feedback on pertinent operational experience.
- Ensure decommissioning plans are established and updated in respect of waste management facilities other than disposal facilities, for which closure plans must be prepared.

Should Contracting Parties designate spent fuel for disposal, this should be carried out according to the requirements for disposal of radioactive waste.

For waste disposal facilities, Contracting Parties must ensure that measures for institutional control following closure ensure:

- Preservation of records about the facility, as required by the regulatory authority.
- Requirements for active and/or passive controls, such as monitoring, are in place.
- Intervention measures will be taken in the event of unplanned release of radioactive material into the environment.

## **GENERAL SAFETY PROVISIONS**

Each Contracting Party is required to have in place the necessary legal, administrative and regulatory provisions. The legislative framework must provide for:

- Establishment of national safety requirements for radiation safety.
- A licensing system.
- Legal prohibition of waste generating and management activities, except under licence.
- A system of institutional control, inspection, documentation and reporting
- Enforcement.
- A clear allocation of responsibilities for spent fuel and radioactive waste management.

Regulatory bodies must be assigned appropriate responsibilities and provided with the necessary authority, competence and resources to fulfil their obligations. The regulatory authority must be independent of any potential conflict of interest.

Licensees have the prime responsibility for safety and must meet these responsibilities. In the event there is no licensee responsible for particular radioactive waste, the responsibility is vested in the Contracting Party.

Contracting Parties are obliged to ensure that adequate human and financial resources are available for the safety of spent fuel and radioactive waste management and for appropriate institutional control measures following closure of disposal facilities.

Appropriate quality assurance provisions are to be in place in respect of all safety related aspect of spent fuel and radioactive waste management.

Contracting Parties are required to ensure that appropriate and optimised radiation protection arrangements are in place to protect workers and the public and that individual dose limits are not exceeded. Measures must be put in place to prevent unplanned or uncontrolled releases of radioactive material into the environment.

Discharges must be controlled such that individual dose limitation requirements are respected and that doses are maintained as low as reasonably achievable, economic and social factors being taken into consideration.

Countermeasures are to be implemented in the event of unplanned or uncontrolled release. Emergency planning arrangement are to be in place on site and if necessary off-site. Contracting Parties which may be affected by unplanned or uncontrolled releases in other countries should make the necessary emergency arrangements.

Appropriate arrangements in respect of human and financial provisions for decommissioning must be in place.

## **TRANS-BOUNDARY MOVEMENT**

The Joint Convention covers the trans-boundary movement of spent nuclear fuel and radioactive waste. This does not address transportation as such, but the transfer of the material from one State (the State of origin) to another (the State of destination) and the passage through States (States of transit). The intent is to ensure that the transfer of such materials does not take place to States which do not have the necessary resources or infrastructure to safely manage them, and to provide for movement through States of transit. Specific obligations are:

- States of origin must ensure prior authorisation from States of destination.
- Trans-boundary movement through States of Transit must respect the international obligations relevant to the particular mode of transport.
- States of destination must only accept spent fuel or waste if they have the necessary infrastructure, resources and competence for its safe management.
- States of origin must ensure that trans-boundary movements are only carried out following acceptance from the State of origin.
- States of origin must permit re-entry if the trans-boundary movement cannot be completed or alternative arrangements available.

## **DISUSED SEALED SOURCES**

In recognition of the serious problems that have arisen from instances where control over disused or spent radiation sources having been lost, two specific articles were included in the Joint Convention. The first requires Contracting Parties to ensure that such sources remain within the regulatory framework and the second requires provisions to be in place to allow re-importation of such sources following use, if this is permitted within the national legal framework.

## **MEETINGS OF THE CONTRACTING PARTIES**

One of the prime functions of the Joint Convention is the process of international peer review of national arrangements demonstrating compliance with the obligations of the Joint Convention. This process is fulfilled by the convening of periodic review meetings. In addition, prior to the first such review meeting, the Joint Convention required a preparatory meeting where Rules of Procedure and Financial Rules were prepared and adopted addressing;

- Guidelines regarding the form and structure of national reports.
- The date for submission of national reports.
- The procedure for reviewing national reports.

The review process involves forming groups of countries groups who review national reports compiled by other members of the group. Countries may also choose to review country reports from countries in other groups. The grouping of Contracting Parties is made along similar lines as the Convention on Nuclear Safety, with a view to achieving balanced groups representing countries with large nuclear programmes through to those with small programmes or countries

using only limited amounts of radiation sources. The one significant difference identified is the fact that only a limited number of Contracting Parties engage in re-processing activities and uranium mining activities. Provision has been made to form special groups of countries engaged in these activities to ensure competent review, but this issue remains unresolved despite having been addressed at the first review meeting and at the organisational meeting for the second Review Meeting.

National reports are circulated to Contracting Parties prior to the review meeting during which they must be afforded a reasonable opportunity to discuss the reports submitted by other Contracting Parties and seek clarification of such reports. The first Review Meeting was required to take place no later than thirty months after the Joint Convention came into force, and took place in November 2003. Thereafter, review meeting must be held at intervals not exceeding three years, the second scheduled for May 2006.

National reports must address the measures taken to implement each of the obligations of the Joint Convention. In addition, the reports must address:

- The national spent fuel management policy.
- Spent fuel management practices.
- The national radioactive waste management policy.
- Radioactive waste management practices.
- Criteria used to define and categorise radioactive waste.

The report must also include:

- A list of spent fuel management facilities subject to the Joint Convention, their location, purpose and features.
- An inventory of spent fuel in storage and disposed.
- A list of waste management facilities subject to the Joint Convention, their location, purpose and features.
- An inventory of waste – in storage, disposed and from past practices.
- A list of facilities undergoing decommissioning.

## **ADMINISTRATION OF THE JOINT CONVENTION**

Contracting Parties are required to attend meetings of the parties and may invite observers from intergovernmental organisations. A summary report must be prepared and made public, which summarises the issues discussed and the conclusions reached during meetings of Contracting Parties. Meeting languages are Arabic, Chinese, English, French, Russian and Spanish, unless the Contracting Parties agree otherwise in the Rules of Procedure. Reports can be submitted in national languages but Contracting Parties must provide translation into a designated language. The Joint Convention makes provision for confidentiality in respect of pertinent national requirements – particularly relating to physical security issues and protection of intellectual property and gives discretion in respect of information parties wish to make publicly available.

The IAEA provides the secretariat for the meetings of Contracting Parties. The Agency convenes the meeting and provides necessary support services such as transmission of information received or prepared in accordance with the provision of the Joint Convention.

A mechanism is in place to resolve disagreements between Contracting Parties concerning the application or interpretation of the Joint Convention. These call for the parties to meet within the framework of the Joint Convention, failing which mediation, conciliation or arbitration mechanisms provided for in international law may be invoked, including the rules and practices prevailing within the IAEA.

The Joint Convention is open for signature, ratification, acceptance, approval or accession by all States

## **THE FIRST REVIEW MEETING**

In November 2003 the first Review Meeting of Contracting Parties took place Vienna signalling that the Joint Convention had become fully operational. At the Review Meeting the National Reports and the questions and answers were presented orally and formed the basis of discussion between groups of Contracting Parties.

It was concluded that the overall process had contributed significantly to achieving the objective of the Joint Convention. Firstly, as a result of being prompted by the forthcoming Review Meeting, several Contracting Parties had made improvements in the management of spent fuel or radioactive waste in the period leading up to the Review Meeting, secondly, others acknowledged that the process of preparing the National Report had been beneficial since it had identified needs and deficiencies in the national arrangements for radioactive waste management and thirdly, still others had identified improvements for the future and volunteered to report on progress in their implementation at the next review meeting.

Some of the technical issues attracting most discussion in the plenary sessions included: the need for all countries to have in place a long term strategy for managing spent fuel and radioactive waste, recognizing that, at present, only a few have firm plans for the final disposition of spent fuel and high level waste. In some countries national committees have been established for the purpose of defining such a national strategy. In others, there is interest in exploring possible regional solutions for the management of radioactive waste. A linked issue is the growing recognition of the need for countries to have in place plans for integrated decommissioning and waste management, containing schemes for managing all of the various different types of waste resulting from the decommissioning process. Of particular relevance in this context was the absence, at that time, of agreed international criteria for the clearance of materials containing very low activity levels from regulatory control.

The emphasis in National Reports and in the discussions at the Review Meeting was on spent fuel and radioactive waste from the nuclear fuel cycle. Comparatively little attention was given to the issue of managing disused sealed radioactive sources, an issue of principal interest for some of the non-nuclear power countries and this, together with the subject of effluent discharge control, was identified as needing more consideration at the next meeting.



Public consultation was seen as being increasingly important in relation to long term radioactive waste management. The old policy of "decide, announce and defend" no longer being seen as tenable and, in several countries, the public were being involved through consultation processes in decision making with regard to repository siting decisions, options for decommissioning and policies for effluent discharge.

The IAEA safety standards were discussed in various parts of the meeting and topics on which international guidance is still needed were identified. However, there was not consensus on what should be the relationship between the standards and the Joint Convention process. Some countries wish to use the standards as a point of reference for interpreting the Joint Convention articles while others see the Joint Convention and its articles as being separate and self-standing.

At the time of the first Review Meeting only thirty-three countries were Contracting Parties to the Joint Convention, this being considered as an issue of great concern. The Joint Convention is relevant and potentially important to all countries in which there is radioactive waste; even to those where the only waste generated comes for the use of radioactive materials in industry, medicine and research. Proposals were put forward on ways to increase the membership, for example, by holding regional meetings at which representatives of existing Contracting Parties could explain the benefits to countries in the region.

The Contracting Parties at that time were: Argentina, Australia, Austria, Belarus, Belgium, Bulgaria, Canada, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Japan, Korea, (Republic of), Latvia, Luxembourg, Morocco, Netherlands, Norway, Poland, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Kingdom, and the United States.

The outcome of the discussions at the Review Meeting was recorded in a publicly available Summary Report agreed upon by the Contracting Parties.

## **THE SECOND REVIEW MEETING**

The second review meeting of the Joint Convention is scheduled to take place 15-26 May 2006. There are now forty Contracting Parties; additional members being Estonia, EURATOM, Iceland, Italy, Lithuania, Russia and Uruguay. National reports have been submitted to the Secretariat and have undergone review. Over two thousands questions have been generated and are being responded to by the various Contracting Parties. Of the over two thousand questions, the highest percentage concern Article 32, the actual reporting process. The questions cover a very broad range of points; from the substance of the reports themselves to questions of national waste management policy. A second area of considerable interest is Article 19 concerning legislative and regulatory framework, equally a large number of questions have been posed in respect of general safety requirements for disposal facilities, decommissioning and the management of disused sealed sources. The safety of existing facilities and institutional control measures after closure together with operational radiation protection and quality assurance appear to have attracted the next level of attention. The number of questions in particular areas can only be seen as an indicator of interest by Contracting Parties and the actual focus of interest will only be known following the second review meeting.

More general matters to be considered at the Review Meeting will include measures to increase the number of Contracting Parties further and the issue of topical groups to review activities limited to a few countries such as; reprocessing or uranium mining. Precedent will also most likely be taken from the most recent meeting of the Convention on Nuclear Safety and further discussion will take place on the role of international waste safety standards and the results of international peer review processes.

## **CONCLUSION**

The Joint Convention is the only international legally binding treaty on radioactive waste management. Its aim is to achieve a high level of safety throughout the world by way of incentive. It is of concern to all countries in view of radioactive waste safety being, in the first place, a safety prerequisite to the further large scale development of the nuclear industry, second because of the potential transboundary effects that could arise if it is not properly managed and thirdly because of its potential mobility and transfer to countries not equipped for its safe management. The Joint Convention contains an extensive number of technical requirements and an obligation for countries to have in place arrangements to meet these requirements and to subject the arrangements to periodic international peer review. The process to date has been recognised as beneficial because the review process itself requires in depth retrospection of national waste safety arrangements – and lessons learned to be shared amongst peers.

Additional countries have become party to the Joint Convention since the first Review Meeting, but efforts to attract more countries need to be redoubled. Tangible benefits must be derived by countries from involvement in the Joint Convention – the prime one potentially being to increase confidence in the safety of radioactive waste management facilities and activities for all potentially interested and affected parties. The Contracting Parties will have to give due attention to this issue.

## **REFERENCES**

1. <http://www-ns.iaea.org/conventions/waste-jointconvention.htm>