LEGAL ISSUES INVOLVED IN THE INTERNATIONAL DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTE

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ABSTRACT

This presentation deals with some important legal issues in connection with the international disposal of high-level radioactive waste. International disposal may be a possible future option for some States to deposit their high-level radioactive waste in a safe and economic way. The question whether there exist legal obligations requiring disposal of radioactive waste only in the State of origin will be examined.

Within the framework of an international disposal project, the transboundary movement of the waste raises legal issues. In this context, the most important regulation of international nuclear law is Article 27 of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste will be discussed in detail. Also import and export restrictions and liability issues connected hereto will be examined. Finally, the organization of the international repository itself will be discussed in an overview.

INTRODUCTION

The disposal of high-level radioactive waste is one of the greatest challenges to be met by States and nuclear industry within the following years and decades. Technical, political, social, and legal problems at national level have not yet been able to be solved: to date, there is no final disposal facility for high-level radioactive waste in operation worldwide.

The international disposal is an issue which is even more politically sensitive. However, it may be an option, in particular for States with a small nuclear program and those that do not have suitable geological formations in their territories. International waste disposal may provide advantages with regard to safety, security, environmental, and economic aspects, which warrants the examination of this option in greater detail.

However, there is substantial political and public opposition against international disposal. One of the main arguments of the opponents is the “Polluter-pays principle”, which they claim requires that radioactive waste has to remain in the State of origin. They also say one could not shift national responsibilities to the international community. At this point, the first legal questions arise.

First of all, it will be investigated whether legal obligations exist forcing States to only deposit their high-level radioactive waste in their own territory in order to meet the disposal requirements.

Naturally, within the framework of an international disposal of high-level radioactive waste, the transboundary movement of the waste to the final repository plays an important role. Legally, there is the difficulty that the transport of radioactive material from one State to another entails a change of national jurisdictions.

Therefore several international legal instruments exist within international nuclear law effecting a harmonization of jurisdictions in order to minimize problems regarding the international transportation. The
most important regulation is Article 27 of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, which will be discussed in further detail.

The last step towards an internationalization of the final disposal of high-level radioactive waste is the organization of the repository itself. Regardless of which of the models having been developed so far will be chosen, the conclusion of a bilateral or multilateral agreement will be necessary. Within this agreement, issues of licensing, liability, legal basis and others need to be regulated between the participating States. These issues will be discussed in an overview within the final part of this presentation.

IS THE DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTE AN OBLIGATION OF THE STATE OF ORIGIN?

Opponents to international disposal argue that the responsibility for the disposal of high-level radioactive waste must be with the State of origin having drawn an advantage out of the use of nuclear energy in the first place. This statement can be accepted from the author’s point of view. However, the question is how the term ‘responsibility’ is to be defined in this context.

Responsibility within the framework of final disposal of high-level radioactive waste can only mean to chose the safest solution for both mankind and environment from today’s point of view. This means that under certain circumstances a national solution might be ruled out, because e.g. the respective State does not have suitable geological conditions for a safe final repository.

The legal obligation for a final disposal in the State of origin is demanded by opponents of an international final disposal mainly with regard to the ‘Polluter-pays-principle’. This would, however, imply that the ‘Polluter-pays-principle’ is of an internationally accepted binding character, i.e. is a source of international law under Article 38, paragraph I of the Statute of the International Court of Justice.

According to that provision only international conventions, international custom, and general principles of law can be considered binding sources of international law. This means that legally binding obligations can only develop from principles of (environmental) international law if they have either been taken up into the operative part of an international agreement, if they have become international custom, or if they form a general principle of law.

The difficult and still unresolved question of when principles of international environmental law become international custom or form a general principle of law cannot be clarified within the framework of this presentation. In particular the question of whether the ‘Polluter-pays-principle’ enjoys the status of international custom is still subject of a comprehensive discussion among experts in international law.

The author is of the opinion that the ‘Polluter-pays-principle’ does not yet represent international custom. It may be called international custom in “status nascendi”, but still no rights and obligations can be derived from it.

Undoubtedly, the ‘Polluter-pays-principle’ achieves a legally binding effect if it has been taken up into the operative part of an international agreement. Therefore it must be examined whether there are international regulations dealing with the principle of a final disposal of radioactive waste in the State of origin only. The most important international convention regarding the disposal of radioactive waste is the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (Joint Convention) [1]. The principle of final disposal in the State of origin is contained in paragraph (xi) of the Preamble to the Joint Convention, in which the Contracting Parties express their conviction that radioactive waste should be disposed of in the State in which it was generated.
However, in the very same paragraph, the Contracting Parties also express their view that the disposal of radioactive waste in the State of origin should only apply „as far as compatible with the safety of the management of such material“ and at the same time recognizing that „in certain circumstances, safe and efficient management of spent fuel and radioactive waste might be fostered through agreements among Contracting Parties to use facilities in one of them for the benefit of the other parties[...]”.

From this preambular paragraph the basic principle of final disposal of radioactive waste in the State of origin can in fact be derived. At the same time, however, the Contracting Parties leave the door open to joint waste disposal projects in the interests of safety and efficiency. It appears that the principle of final disposal in the State of origin only is contained in none of the other international regulations making statements on the disposal of radioactive waste.

In concluding, it can be noted that on an international level there is no legal obligation to deposit radioactive waste in the State of origin only. For reasons of completeness it should be mentioned that in the same way as in the Joint Convention the possibility of a cooperation among States in the field of disposal of radioactive waste is also expressed on a European level. Already in 1994, the national autarcy regarding the disposal of radioactive waste had been emphasized within the framework of a common EU strategy [2]. However, in particular with regard to nuclear safety, the possibility of a regional concept including several countries was left open.

Lately, this strategy was expressed within the Draft Proposal for a Council Directive on the Management of Spent Nuclear Fuel and Radioactive Waste [3]. The Explanatory Note and Article 5, Clause 4 of the Draft Directive emphasize that especially for Member States “with very limited accumulations of waste, export to other countries probably represents the most viable option from the environmental, safety and economic points of views [...]”.

However, States can refuse the import and export of radioactive waste to or from their territory by national jurisdiction. This is also provided for in paragraph (xii) of the Preamble to the Joint Convention. At the same time, there are rules of international law prohibiting for good reasons the export to certain regions of the world. These rules will be dealt with in detail later in this presentation.

Finally, it must be emphasized once again that the responsibility for the disposal in principle lies with the State of origin. However, responsibility in this sense must not be defined as the obligation to dispose of radioactive waste exclusively in domestic territory. Responsibility in this sense rather means that the State of origin shell ensure the disposal of radioactive waste in the safest way for itself and, with respect to transboundary radioactive effects, for neighbouring countries as well as for future generations.

**LEGAL REQUIREMENTS FOR THE TRANSBOUNDARY MOVEMENT OF RADIOACTIVE WASTE**

When dealing with the international disposal of high-level radioactive waste, it is also necessary to deal with the legal implications of transboundary movement of waste to the international repository. Border crossing transportation of nuclear waste is a necessary prerequisite for the operator of an international repository.

According to Article 2 (u) of the Joint Convention [1], transboundary movement means “any shipment of spent fuel or of radioactive waste from a State of origin to a State of destination”. From a legal point of view the difficulty has to be discussed that the transboundary movement of radioactive waste entails a change of jurisdiction. First of all, the radioactive waste is located in the State of origin in order to be possibly shipped to the State of destination through one or more States of transit. The carrier will therefore get in touch with at least two foreign jurisdictions. This circumstance might lead
to legal uncertainty and obstruct the execution of the international movement. The carrier needs new transport licences in every State and must deal with different import- and export requirements. With regard to the specific dangers of high-level radioactive waste, the carrier might also get in touch with different levels of safety. Therefore, an extensive harmonization of jurisdictions is of great importance especially regarding the transboundary movement of radioactive materials.

Since the beginning of the last century a number of recommendations, conventions and other international instruments have been established in order to grant harmonization of international transportation as, inter alia:

- The large number of international instruments covering the carriage of dangerous goods, including radioactive substances, for example the IAEA Transport Regulations [4], which are implemented in numerous multilateral treaties and other instruments, e.g. ADR (road transport), COTIF (rail transport), which cannot be listed in this paper.


- Import and export restrictions under the Non-proliferation Treaty [10] and other international environmental law instruments e.g. the Antarctic-Treaty [11] or the Bamako Convention[12].

This short list of international legal instruments shows that a harmonization or at least approximation of national jurisdictions has been reached to a large extent already, provided that they have come into force in each of the Contracting States. This circumstance facilitates the international transport and minimizes potential problems.

At the same time, however, a variety of new legal questions arises that cannot be discussed in detail within the framework of this presentation. Three aspects regarding transboundary movement that are of special significance within the context of international disposal will be discussed in further detail.

- Article 27 of the Joint Convention [1],
- Import and export prohibitions and
- Liability issues in the context of international transportation.

**Article 27 of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (Joint Convention)**

The author would like to pay special attention to Article 27 of the Joint Convention, which is mainly based on the IAEA’s Code of Practice on the International Transboundary Movement of Radioactive Waste of 21 Sept. 1990 [5].

Article 27 of the Joint Convention is of decisive significance for transboundary movement and in this respect indirectly for the international final disposal. It aims at providing a regime which allows for the movement of radioactive waste only if appropriate steps are taken to ensure that such movement is under-
taken in a manner consistent with the provisions of the Joint Convention and relevant binding international instruments (Article 27.1.).

Therefore the Contracting Party which is State of origin of the waste shall have to meet the prerequisites of paragraph 1 of Article 27. If the transboundary movement is not or cannot be completed in conformity with the prerequisites of Article 27, the State of origin shall take the appropriate steps to permit re-entry into its territory, unless an alternative safe arrangement can be made (Article 27.1., subparagraph (v)). The prerequisites of paragraph 1 of Article 27 Joint Convention will now be discussed. Some problems which could arise prior and during the transboundary movement will be pointed out. The chapeau sentence of paragraph 1 of Article 27 refers to the Joint Convention and the relevant binding international instruments. Paragraph 1, subparagraph (ii) of Article 27 states that transboundary movement through States of transit shall be subject to those international obligations which are relevant to the particular modes of transport utilized. Consequently, both paragraph 1 and its subparagraph (ii) of Article 27 are merely of a declaratory nature.

However, with respect to subparagraph (ii) it is unclear how the prerequisite should be fulfilled if the respective transit State is not a Contracting Party to the relevant transport conventions. From a legal point of view, the consequence must be that transit through States not having adhered to any of the international transport conventions is not in agreement with the prerequisites of Article 27 and therefore must not be authorized. This is a serious problem for the State of origin which wants to ship radioactive waste to an international repository, because such a State has no legal possibility of forcing these international transport conventions upon transit States.

Regarding the international final deposit this aspect shows the importance of fully integrating States into the respective international conventions even if they are only affected indirectly, such as transit States. With regard to an international repository project, this problem needs to be taken into consideration and corresponding action needs to be taken if necessary.

Paragraph 1 of Article 27 also provides extensive obligations for the Contracting Parties. According to subparagraph (i) the State of origin shall take the appropriate steps to ensure that the transboundary movement is authorized and takes place only with the prior notification and consent of the State of destination. The State of destination’s agreement again presupposes in accordance with subparagraph (iii) the presence of administrative and technical capacity as well as the regulatory structure needed to manage the spent fuel or the radioactive waste in a manner consistent with the Joint Convention.

Tied to this, according to subparagraph (iv), is the State of origin’s obligation to authorize a transboundary movement only if it can satisfy itself in accordance with the consent of the State of destination that the requirements of subparagraph (iii) are met prior to transboundary movement.

This chain of prerequisites for approval raises questions under several points of view. First of all, according to subparagraph (iii), it is necessary that the respective State of destination itself assesses its structure regarding the treatment of spent fuel or radioactive waste correctly. This is where the problem arises that a State wanting to embark on radioactive waste business will most likely always claim a positive judgment. The necessary objectiveness is most likely not always given. In order to prevent this problem, subparagraph (iv) was included in paragraph 1 Article 27. This prerequisite is not unproblematic from a public international law view, as it affects the State of destination’s sovereignty. The State of origin’s right to affect the State of destination’s internal affairs in order to gain certainty according to subparagraph (iii) would not be compatible with principles of public international law.

On the other hand, according to subparagraph (iii), it will not be sufficient to rely on the State of destination’s voluntary notification and information.
If there is reason to doubt that the prerequisites of subparagraph (iii) are met, the State of origin does at least have the obligation to demand further information. However, this procedure might lead to diplomatic trouble which the States concerned would certainly try to avoid.

Within the context of an international repository project it can only be advised to chose potential host countries which leave no doubt with regard to the fulfillment of the prerequisites of subparagraph (iii) in the first place, or to chose such countries for which the necessary certainty in the sense of subparagraph (iv) can be gained without running into diplomatic trouble.

In this context it should be considered to have the necessary assessments of the potential State of destination performed by an independent organization such as the IAEA. If thereafter any potential doubts still have not been eliminated the transboundary movement must not be approved.

If a transboundary movement is not or cannot be completed in conformity with Article 27, the State of origin, as stated above, according to subparagraph (v) shall take the appropriate steps to permit re-entry into its territory unless an alternative safe arrangement can be made. A different safe proceeding would be the transport to another destination suitable according to Article 27 respectively routing the transport via a different State of transit than originally planned. To find such States, however, can be difficult and a considerable delay of the movement will be unavoidable.

In accordance with paragraph 2 of Article 27 and in consideration of the Antarctic Treaty the “a Contracting Party shall not license the shipment of its spent fuel or radioactive waste to a destination south of latitude 60 degrees South for storage or disposal”. This raises a new legal issue relevant for international disposal: There are explicit import and export prohibitions.

Prohibitions of Transboundary Movements of radioactive waste

As mentioned above, there may be a legal requirement for countries to refuse export or import of radioactive waste to certain areas. There exist several regional agreements as well as EU regulations prohibiting import and export of radioactive waste. Of course, those regulations affect the transboundary movement and thus the possibilities of an international final deposit. Important international instruments to ban the import and export of radioactive waste are e.g.:

- The Bamako Convention [12].
- The Convention to Ban the Importation into Forum Island Countries of Hazardous Wastes and Radioactive Wastes and to Control the Transboundary Movement and Management of Hazardous Wastes within the South Pacific [13].
- The Regional Agreement on the Transboundary Movement of Hazardous Wastes (Central American) [14].

For the sake of completeness it shall be mentioned that regarding the relation of the European Union and the so-called ACP (African, Caribbean and Pacific) Countries, the restrictions listed above are supplemented by international legal agreements concluded by the Community and implementing Community Law. The basic legal provision is Directive 92/3 Euratom [15]. Furthermore, the 4th Lomé Convention [16] shall be mentioned, which was replaced by the Cotonou Agreement [17] in June 2000. By Council
Order 97/803/EC [18] the EU agrees to take all necessary actions within its area of responsibility in order to control the dealing with radioactive waste and to prohibit all direct or indirect export of such waste to overseas countries and areas. Thus it contains almost literally rights and obligations with regard to radioactive waste that are already included in Article 39 of the 4th Lomé Convention.

Although the Cotonou Agreement does not contain regulations comparable to those of the Lomé Convention, it cannot be concluded that the obligations agreed in the Lomé Agreement and confirmed by Community Law should no longer be valid.

Overview on Liability Issues

The following section gives an overview on liability issues regarding transboundary movement of radioactive waste. These issues are among the most important and most difficult issues connected with international disposal of radioactive waste.

As mentioned above, the transboundary movement of radioactive waste implies a change of jurisdiction. That applies in particular to those states that are not parties to the international conventions on nuclear liability such as the Vienna [8] and the Paris [7] Conventions. This affects also the liability during transboundary movements.

The potential problems will be minimized if the States are Contracting Parties to the same international nuclear liability conventions. The States should therefore be Parties to either the Vienna Convention or the Paris Convention, or to the Vienna and the Paris Conventions linked by the Joint Protocol relating to the Application of the Vienna Convention and the Paris Convention [9]. In those cases, liability issues can be solved relatively easily because the principle of legal channelling of liability onto the operator as one of the main principles of nuclear liability applies.

According to Article II (1) of the Vienna Convention and Article 4 of the Paris Convention, either the sending or the receiving operator of a nuclear installation is held liable during an international nuclear transport.

By a written contract the sending and the receiving operators furthermore may agree at which transport stage the liability shifts from one operator to the other. In the absence of such a contract, the liability shifts from the sending operator to the receiving operator when the receiving operator has taken charge of the nuclear substances. This is also valid regarding the storage of nuclear material incidental to transport, even if the material is stored at a nuclear installation of a third operator.

Likewise, the liability in case of transportation of nuclear material to a receiver within the territory of a non-Contracting State is defined by Article II (1) of the Vienna Convention and Article 4 of the Paris Convention. In this case the sending operator remains liable until the material has been unloaded from the means of transport by which it arrived in the territory of that State.

In case of transboundary movement of nuclear materials by a person within the territory of a non-Contracting State to a receiving operator in a Contracting State, the receiving operator of the Contracting State is liable from the moment the material has been loaded on to the means of transport by which it is to be carried from the territory of the former State.

Despite these provisions, however, liability issues get more complex if non-Contracting Parties are involved. In those cases the nuclear liability conventions only apply if the general principles of private international law show them to be applicable. The difficult subject of liability within the framework of transboundary movement of radioactive material under consideration of non-Contracting States cannot be dis-
cussed in detail here. But the author would like to emphasize that it will be of great significance for the international final disposal. This becomes evident in the case of the USA having their own liability system, the so-called Price-Anderson-Act, and not being part of any of the international liability conventions. Also Russia, which is considered as a possible host-State of an international final disposal facility, is neither Contracting Party to the Paris nor the Vienna Convention.

**Summary on Transboundary Movement**

The discussion of the previous chapter has provided an overview of some important issues regarding transboundary movements of radioactive waste. One may summarize, an international repository requires transboundary movement of radioactive waste. For that reason it is a main issue and a main task to attract as many states as possible to the relevant international agreements with the view to facilitate the transboundary shipment of waste.

**OVERVIEW OF SPECIFIC LEGAL QUESTIONS RELATED TO THE ORGANISATION OF AN INTERNATIONAL REPOSITORY**

In the past a variety of models and scenarios regarding the establishment of international disposal projects were developed [19]. These will be discussed in this session in other presentations. The author will therefore refrain from offering a detailed presentation. Basically, a distinction can be made between multinational, international, and regional concepts. Regarding multinational and regional models, common disposal plants are used by different countries; in case of regional final disposal the countries concerned are situated in the same region of the world. International final disposal is often used as a synonym for the supervision by a supranational organization.

At this point, reference will be made to multinational and regional models only. Further distinction must be made regarding the question whether States decide to establish a common disposal facility or whether one State already operating a final repository (not yet the case for high-level radioactive waste) agrees to accept the waste of one or more other countries. The latter case is not quite that complicated from a legal point of view, because a final disposal facility already exists. The question of location has already been settled.

Independent of the chosen model, both the establishment and the operation of an international facility for the disposal of high-level radioactive waste require the conclusion of a bilateral or multilateral agreement. Rights and obligations of the Parties concerned need to be determined; furthermore, as already shown, transboundary movement of radioactive waste must be performed in accordance with the international transport conventions.

In addition, an international agreement is needed to clarify the following questions; specific determination of organizational structures, of the legal form according to which the international plant shall be established and operated, and finally of the legal requirements which the installation has to meet, including nuclear liability and insurance.

Also, the legal entity for establishment and operation needs to be agreed upon. In this context the central question of nuclear law and liability needs to be clarified by defining the operator of the final deposit. In the implementing legal framework special emphasis has to be given to the obligations under the relevant international agreements and other regulations. Amongst others, the following international regulations shall be considered:

- The Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (Joint Convention) [1].
• The Convention on Nuclear Safety [20].

• The Paris and Vienna Conventions and the Joint Protocol relating to the Application of the Vienna Convention and the Paris Convention [7,8,9].

• The Convention on the Physical Protection of Nuclear Material [6].

• The Non-proliferation Treaty [10].

• The Convention on Early Notification of a Nuclear Accident [21].

• The Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency [22].

• International Recommendations on Radiological Protection e.g. of the ICRP or IAEA.

• The Espoo Convention on Environmental Impact Assessment in a Transboundary Context [23].

• The Aarhus Convention on Access to information, Public Participation in Decision-Making and Access to Justice in Environmental Matters [24].

• The International Transport Regulations as mentioned above.

Furthermore, it must be fixed in the agreement which authorities decide, on which regulations the siting of the repository is based and on which regulations the licensing and operation of the international repository are based. With respect to the technical specifications, reference is made to the IAEA Recommendations for final disposal and to Chapter 2 and 3 of the Joint Convention [1].

As mentioned above, a central question regarding all models refers to the waste ownership. This question becomes relevant especially in the cases of the possible retrieval of the waste and the liability. In this context, the time of transfer of ownership that the States will have to agree on is important.

In the context of liability, it must be stated that liability for damages occurring from the final disposal of radioactive waste is regulated explicitly neither within the Paris nor the Vienna Convention. Therefore, the original versions of the Paris and Vienna Convention permitted doubts to what extent the final disposal of radioactive waste falls into their scope.

In a first instance, the Steering Committee for Nuclear Energy of the OECD/NEA decided in 1984 that for the pre-closure phase disposal installations shall be deemed to be nuclear installations in the sense of the Paris Convention [7]. The Paris Convention as revised by protocol of February 12th 2004 includes “installations for the disposal of nuclear substances” into the definition of nuclear installations and consequently covers disposal facilities without any time limit.

**GENERAL CONCLUSION**

The detailed legal arrangement regarding the establishment of an international final disposal of high-level radioactive waste offers a variety of interesting and complex legal aspects. The author selected several important questions and offered possible solutions. In order to establish and bring into operation an international final disposal of radioactive waste it is of capital importance to achieve public and political acceptance of the project. Based on the well-developed international set of rules, an international final
disposal facility can then be established. As was expressed previously, member States of an international final disposal project should by all means be Contracting Parties to the relevant conventions with the view to facilitating co-operation and minimizing upcoming legal problems.

REFERENCES


17 The Cotonou Agreement, Cotonou, Benin, 23 June 2000.


21 INTERNATIONAL ATOMIC ENERGY AGENCY, Convention on Early Notification of a Nuclear Accident, INFCIRC/335, IAEA, Vienna (1986).

22 INTERNATIONAL ATOMIC ENERGY AGENCY, Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, INFCIRC/336, IAEA, Vienna (1986).
