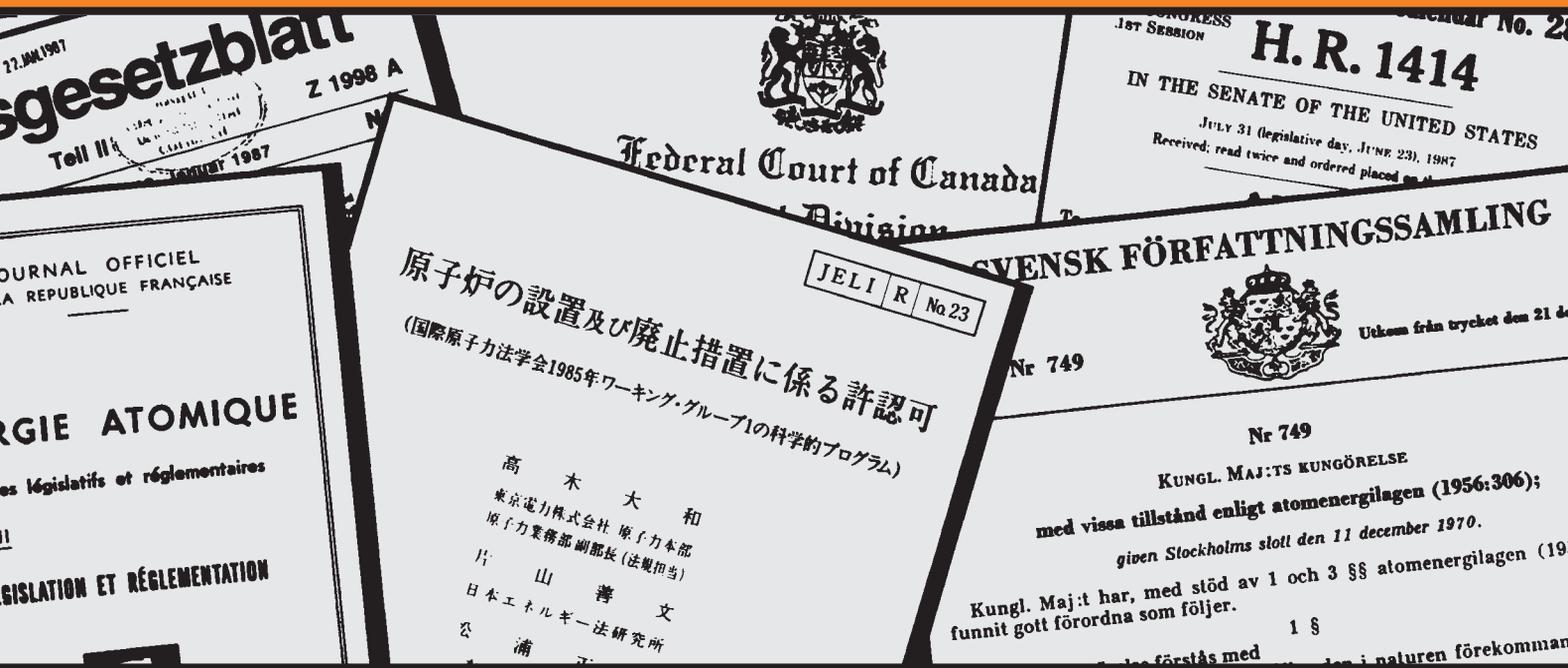




# NUCLEAR LAW



## BULLETIN 73 VOLUME 2004/1

NUCLEAR ENERGY AGENCY



# NUCLEAR LAW BULLETIN No. 73

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June 2004  
Nuclear Energy Agency  
Organisation for Economic Co-operation and Development

## **ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT**

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- to achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries, while maintaining financial stability, and thus to contribute to the development of the world economy;
- to contribute to sound economic expansion in Member as well as non-member countries in the process of economic development; and
- to contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations.

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The mission of the NEA is:

- to assist its Member countries in maintaining and further developing, through international co-operation, the scientific, technological and legal bases required for a safe, environmentally friendly and economical use of nuclear energy for peaceful purposes, as well as
- to provide authoritative assessments and to forge common understandings on key issues, as input to government decisions on nuclear energy policy and to broader OECD policy analyses in areas such as energy and sustainable development.

Specific areas of competence of the NEA include safety and regulation of nuclear activities, radioactive waste management, radiological protection, nuclear science, economic and technical analyses of the nuclear fuel cycle, nuclear law and liability, and public information. The NEA Data Bank provides nuclear data and computer program services for participating countries.

In these and related tasks, the NEA works in close collaboration with the International Atomic Energy Agency in Vienna, with which it has a Co-operation Agreement, as well as with other international organisations in the nuclear field.

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# ARTICLES

## **Putting the Cart Before the Horse – The Case Against a New Regime Covering Radioactive Incidents During Transport**

**by Jeffrey A. Miller\***

### **I. Introduction**

States that engage in the international transport of radioactive materials are besieged on all sides by calls for greater regulation and a special regime to address liability for damage caused during such transport. These calls primarily emanate from countries located in the vicinity of shipping routes, which are purportedly concerned that the existing international nuclear liability regimes do not adequately protect the public, the environment, or their respective economic interests. Whatever their actual motivations and agenda may be, these states must realise that they are adversely affecting their own citizens and national interests by resisting efforts to establish a unified international legal regime for liability associated with nuclear accidents on the basis of existing, modern nuclear liability conventions. Widespread adherence to a global nuclear liability regime by nuclear and nonnuclear power generating states is best way to protect all relevant interests in the event of a nuclear incident on land or during transport, and promote the safe use of nuclear energy.

Countries located in the vicinity of shipping routes appear convinced that their transport grievances are so special, so enormous, that they must not acquiesce to establishing a comprehensive nuclear liability regime based upon existing instruments. Portraying themselves as “coastal states”, these countries have raised their concerns in many international fora, including the United Nations, International Atomic Energy Agency, International Maritime Organisation, Organization of American States, and the Pacific Islands Forum. The intense, acrimonious debates that have ensued therein continue to polarise positions and engender mistrust, but not an atmosphere conducive to compromise.

Many of the concerns expressed by countries that advocate a new regime to address liability during the transport of nuclear materials are not unreasonable. Serial recalcitrance to support widespread adherence to existing, modern liability regimes that protect the public and promote the safer use of nuclear energy through common principles, however, is absolutely unreasonable. States

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\* Attorney, and Senior Negotiator, United States Department of State. The author prepared this paper in his personal capacity. The opinions expressed herein do not necessarily represent the views of the government of the United States. This article was originally submitted as the dissertation requirement of the Diploma of International Nuclear Law following the 2003 Session of the International School of Nuclear Law.

that advocate a new instrument to address liability during transport must recognise that the negotiation and entry into force of such a convention would take a considerable amount of time, assuming *arguendo* that states engaged in the shipment of nuclear materials are willing to consider such a regime. It is the belief of this author that, as of this writing, so-called “shipping states” do not support the creation of a special regime to address liability during transport. The existing international nuclear liability conventions already encompass nuclear accidents during transport within their ambit. Admittedly, these regimes are not perfect. Coastal state concerns should be considered and addressed, to the greatest extent possible, within the rubric of existing instruments and international nuclear liability legal principles – but only after the modern liability regimes are widely in force. Coastal states might find states that engage in the transport of radioactive materials willing to consider modifications to a comprehensive nuclear liability regime once widespread adherence to it by nuclear and non-nuclear power generating states is achieved.

It should be noted at the outset that nuclear power generating states, including states that ship nuclear materials, must provide leadership to create an international liability system. Major nuclear power generating states such as Canada, China, France, Germany, India, Japan, the Russian Federation, South Korea, the United Kingdom, and the United States must join the same nuclear liability regime to create a true worldwide system. Coastal state adherence to the modern nuclear liability conventions should be encouraged, but these countries should not be expected to take the first step. Nuclear power generating states (including states that ship nuclear materials) must be prepared to compromise in order to provide an incentive for nonnuclear power generating states to support the creation of a global liability system. This paper will focus exclusively on the concerns of coastal states related to liability during the sea transport of nuclear materials, and possible amendments to existing, modern nuclear liability regimes that could achieve widespread adherence.

## II. Commentary on the International Nuclear Liability Regimes

Before examining and addressing the concerns expressed by countries located in the vicinity of shipping routes, it is worth briefly reviewing the relevant regimes that would potentially apply in the event of nuclear accident during transport, as well as their fundamental underpinnings.<sup>1</sup> Since its inception in the 1960s, international nuclear liability law has served four core purposes: (1) to protect the public through enhancing nuclear safety and preventing nuclear incidents, (2) to compensate victims of nuclear damage, (3) to protect the viability of nuclear industry, and in particular suppliers of nuclear safety equipment and technology, and (4) harmonising legislation in participating countries,

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1. A myriad of articles, seminars, and treatises have addressed the finer points of the conventions and international nuclear liability law, and, thus, this paper will offer only a redacted version of its most important features. For further commentary and analysis of the international nuclear liability conventions and nuclear liability law, see Nathalie L.J.T. Horbach, “Contemporary Developments in Nuclear Energy Law/Harmonising Legislation in CEEC/NIS” (The Hague: Kluwer Law, 1999); Marcus Radetzki, “Limitation of Third Party Liability: Causes, Implications and Future Possibilities”, *Nuclear Law Bulletin* No. 63, p. 7 (June 1999); Andrea Gioia, “The New Provisions in the 1997 Vienna Protocol and in the 1997 Convention on Supplementary Compensation”, *Nuclear Law Bulletin* No. 63, p. 25 (June 1999); Ben McRae, “The Compensation Convention: Path to a Global Regime for Dealing with Legal Liability and Compensation for Nuclear Damage”, *Nuclear Law Bulletin* No. 61, p. 25 (June 1998); Patrick Reyners, “Modernisation of the Civil Liability Regime for Nuclear Damage: Amendment of the Vienna Convention and Adoption of the New Convention on Supplementary Compensation for Nuclear Damage”, *Advanced Training Seminar on Nuclear Law: Compendium*, (Tallinn, August 1998); Norbert Pelzer, “Concepts of Nuclear Liability Revisited: A Post-Chernobyl Assessment of the Paris and Vienna Conventions”, in *Nuclear Energy Law after Chernobyl* (P. Cameron, L. Hancher and W Kühn eds., 1988).

thereby promoting the safer use of nuclear energy through common principles.<sup>2</sup> Eight international nuclear liability regimes currently exist that reflect these core purposes.<sup>3</sup> Organisation for Economic Co-operation and Development (OECD) member countries drafted the first international nuclear liability regime, the 1960 Paris Convention on Third Party Liability in the Field of Nuclear Energy (the Paris Convention) and strengthened this regime with the 1963 Brussels Convention Supplementary to the Paris Convention (the Brussels Convention).<sup>4</sup> The Paris regime served as a model for the 1963 Vienna Convention on Civil Liability for Nuclear Damage (the Vienna Convention), developed under International Atomic Energy Agency (IAEA) auspices to form the basis for a worldwide system.<sup>5</sup> The 1971 Maritime Carriage of Nuclear Material Convention (the Maritime Convention) was intended to resolve potential conflicts, which would arise from the simultaneous application of maritime liability regimes and the Paris and Vienna Conventions.<sup>6</sup> The 1988 Joint

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2. See Norbert Pelzer, Professor of International Law, University of Göttingen, Address, “International Law as an Element of Nuclear Safety” (Bonn, Germany, 23 April 2002) *Informationskreis Kernenergie*, [www.infokreis-kernenergie.org/e/forumdetail.cfm?fIDUR=498&fIDR=250](http://www.infokreis-kernenergie.org/e/forumdetail.cfm?fIDUR=498&fIDR=250) (accessed 29 March 2004). See also Omer F. Brown, Attorney, Address, *Nuclear Liability: A Continuing Impediment to Nuclear Commerce* (Uranium Institute, 8-10 September 1999) [www.world-nuclear.org/sym/1999/brown.htm](http://www.world-nuclear.org/sym/1999/brown.htm) (accessed 23 March 2004).
  3. In addition to the eight instruments discussed below, there is a substantial question as to whether the Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal, and its Liability Protocol, apply to shipments of radioactive waste. See the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal at [www.basel.int/about.html](http://www.basel.int/about.html) (accessed 25 March 2004). Article 1(3) of the Basel Convention excludes from the scope of the Convention, “wastes which, as a result of being radioactive, are subject to other international control systems, including international instruments, applying specifically to radioactive materials”. With regard to international instruments, the Joint Convention on the Safety of Spent Fuel and Radioactive Waste Management (the “Joint Convention”) ([www.iaea.org/Publications/Documents/Conventions/index.html](http://www.iaea.org/Publications/Documents/Conventions/index.html)) appears to provide a binding legal regime that addresses radioactive materials. Therefore, it appears that the Basel Convention does not apply to nuclear materials, or the transportation thereof.
  4. The Paris and Brussels Conventions were drafted under the auspices of the OECD Nuclear Energy Agency (the “NEA”). Parties to the Paris Convention include Belgium, Denmark, Finland, France, Germany, Greece, Italy, Netherlands, Norway, Portugal, Slovenia, Spain, Sweden, Turkey and the United Kingdom. All Parties to the Paris Convention, with the exception of Portugal and Turkey, are Parties to the Brussels Convention. The Brussels Convention provides additional compensation from public funds if compensation under the Paris Convention is insufficient. For additional information regarding the Paris and Brussels Conventions, see the NEA Web site: [www.nea.fr/html/law/legal-documents.html](http://www.nea.fr/html/law/legal-documents.html) (accessed 25 March 2004). See also *infra* note 28, and Philippe Sands and Paolo Galizzi, “The 1968 Brussels Convention and Liability for Nuclear Damage”, *Nuclear Law Bulletin* No. 64, p. 7 (December 1999).
  5. Article 21 of the Paris Convention limits membership in the Paris regime to OECD member states. Non-signatory member states may join the Paris regime, but only with unanimous consent of all contracting parties. In contrast, the Vienna Convention is open for membership by all states. The Parties to the Vienna Convention include Argentina, Armenia, Belarus, Bolivia, Bosnia & Herzegovina, Brazil, Bulgaria, Cameroon, Chile, Croatia, Cuba, Czech Republic, Egypt, Estonia, Hungary, Latvia, Lebanon, Lithuania, Mexico, Niger, Peru, Philippines, Poland, Republic of Moldova, Romania, St. Vincent & the Grenadines, Serbia & Montenegro, Slovakia, Former Yugoslav Republic of Macedonia, Trinidad & Tobago, Ukraine, and Uruguay. (Slovenia withdrew from the Vienna Convention regime on 11 December 2002. Slovenia is now a member of the Paris Convention regime.) For further information on the Vienna Convention, see the IAEA Web site: [www.iaea.org/Publications/Documents/Conventions/index.html](http://www.iaea.org/Publications/Documents/Conventions/index.html) (accessed 26 March 2004).
  6. The Maritime Convention was adopted under the auspices of the International Maritime Organisation, IAEA and NEA. Membership is primarily comprised of Paris regime members, such as Belgium,

Protocol in Relation to the Application of the Vienna Convention and the Paris Convention (the Joint Protocol) established treaty relations between members of the Vienna and Paris regimes.<sup>7</sup> The Protocol to Amend the Vienna Convention (Revised Vienna) and the Convention on Supplementary Compensation for Nuclear Damage (the CSC) were drafted under IAEA auspices in 1997 in a second attempt to establish a comprehensive and unified international nuclear liability system.<sup>8</sup> Contracting Parties to the Paris and Brussels Conventions have also revised these regimes; the signing of the Protocols to amend the Paris and Brussels Conventions took place on 12 February 2004.<sup>9</sup>

With the exception of the Maritime Convention, these treaties incorporate six well-accepted principles, which have also been incorporated into the domestic nuclear laws in many countries.<sup>10</sup> These principles include:

- Adjudicating all claims resulting from a covered nuclear incident in a single forum (in most cases the courts of the Party within which the nuclear incident occurs);
- Channeling liability for all claims to the nuclear installation operator;
- Strict liability of the operator for nuclear damage (i.e., without the need for victims to prove negligence);
- Liability of the operator limited in time, and in amount;

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Denmark, Finland, France, Germany, Italy, the Netherlands, Norway, Spain and Sweden. Two Vienna member states (Argentina and Gabon) and two non-Vienna/non-Paris flag states (Liberia and Yemen) have also joined. For further information regarding the Maritime Convention, see the International Maritime Organisation Web site: [www.imo.org](http://www.imo.org). (accessed 23 March 2004), and the Admiralty and Maritime Law Guide: [www.admiraltylawguide.com](http://www.admiraltylawguide.com) (also accessed 23 March 2004).

7. The Joint Protocol extends the application of both Conventions to cover victims of nuclear damage in the territory of Parties to either Convention. Particularly in the case of transport, the Joint Protocol also resolves potential conflicts between the two conventions by ensuring that only one convention applies to any one incident. Parties to the Joint Protocol include Bulgaria, Cameroon, Chile, Croatia, Czech Republic, Denmark, Egypt, Estonia, Finland, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Netherlands, Norway, Poland, Romania, St. Vincent & the Grenadines, Slovakia, Slovenia, Sweden and Ukraine. For further information on the Joint Protocol, see the IAEA Web site: [www.iaea.org/Publications/Documents/Conventions/index.html](http://www.iaea.org/Publications/Documents/Conventions/index.html) (accessed 26 March 2004).
8. The CSC is not in force. Revised Vienna is in force. Argentina, Belarus, Latvia, Morocco, and Romania have ratified Revised Vienna.
9. For details on the signing ceremony and the revised Paris and Brussels regimes see the NEA Web site: [www.nea.fr/html/general/press/2004/2004-01.html](http://www.nea.fr/html/general/press/2004/2004-01.html) (accessed 23 March 2004). Revisions to the Paris and Brussels Conventions were not completed prior to the International Conference on the Safety and Transport of Radioactive Materials (see *infra* notes 15-22) and consequently, so-called “coastal states” did not squarely address these regimes in their submissions to the Conference. The Revised Paris is generally consistent with Revised Vienna and the CSC, although some differences exist. Article 21 of the Paris Convention (as described in note 5 *supra*) remains unchanged in Revised Paris, except that a new paragraph “(c)” has been added. This paragraph has no relation to the unanimous consent required for non-OECD member countries to join the regime. For a discussion of the main differences between Revised Paris and Revised Vienna, see Patrick Reyners, “The Modernisation of the International Nuclear Liability Regime: its Impact on Transport Operations”, in *International Conference on the Safety of Transport of Radioactive Material – Contributed Papers*, p. 5-11 (IAEA-CN-101/5) (7-11 July 2003).
10. The Maritime Convention does not expressly contain the core principles discussed below.

- Mandatory insurance or other financial security for all operators corresponding to its liability; installation state is ultimately responsible for any shortfall; and
- Non-discrimination against victims, based upon nationality, domicile or residence.

These principles have comprised the cornerstones of international nuclear liability law since the adoption of the Paris Convention on 29 July 1960. Stated otherwise, they have formed the basis for nuclear commerce for more than forty years, and they must continue to do so, even as additional revisions to the conventions are considered. When the conventions apply, these principles are equally applicable to nuclear accidents on land and during transport.<sup>11</sup> These treaties, however, do not cover shipments of nuclear materials among and between nuclear power generating states located in North America, Eastern Europe and Asia.<sup>12</sup> Furthermore, the conventions do not uniformly implement the principles described above. The scope of coverage for nuclear accidents under the conventions is not identical (e.g., liability amounts and definitions of what constitutes nuclear damage) and the interrelationship among and between the regimes that are in force is complex.<sup>13</sup> Consequently, victims could potentially invoke several liability agreements in the event of an accident during the transport of nuclear materials, as well as normal tort law.<sup>14</sup> Damage to victims, the environment, and economic interests of countries in the vicinity of shipping routes and their citizens might be left uncompensated under these circumstances.

Mindful of this background, the concerns of countries located in the vicinity of shipping routes will be examined, and addressed.

### **III. Examination of concerns raised by states located in the vicinity of shipping routes related to a special regime covering transport**

#### **A. *International Conference on the Safety of Transport of Radioactive Materials (“Conference”)***

The July 2003 International Conference on the Safety of Transport of Radioactive Materials (the Conference) provided the most recent opportunity for so-called “coastal-states” and so-called

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11. Generally, Vienna Convention Articles I-XV and Paris Convention Article 1-14 contain provisions related to transport, to the extent that the conventions would apply.
  12. This includes Canada, China, India, Japan, the Russian Federation, South Korea, and the United States. In addition, the international nuclear liability conventions do not cover shipments between Asia and Western Europe, including Japan, France, and the United Kingdom.
  13. The regimes that are currently in force are the Paris Convention, Vienna Convention, Brussels Convention, Joint Protocol, Revised Vienna, and the Maritime Convention. For a complete discussion of the “labyrinth of international agreements on nuclear liability”, and their application to transport issues, see Omer F. Brown and Nathalie L.J.T. Horbach, “Liability for International Nuclear Transport: An Overview”, International Symposium on the Reform of Civil Nuclear Liability, Budapest Symposium (1 June 1999) at p. 237-261.
  14. In other words, ordinary rules of negligence and potentially unlimited liability may apply in jurisdictions where lawsuits are filed in the aftermath of a nuclear incident, and not channeling of legal liability and monetary limitations as contemplated under the conventions. Although this may sound enticing, whereas the conventions expressly identify a person liable and a sum certain to compensate victims of nuclear damage, there is absolutely no guarantee that a defendant will be found liable under normal tort law, and protracted litigation would ensue in any case prior to a defendant compensating victims.

“shipping states” to discuss issues pertaining to the transport of nuclear materials.<sup>15</sup> The Conference featured a series of technical topical sessions and panel discussions that covered selected issues relating to the safety of transport of radioactive material. Chairpersons of each topical discussion presented session summaries, and the President of the Conference presented the Conference findings, conclusions and recommendations to Conference participants.<sup>16</sup> The IAEA also convened an explanatory topical session entitled “Liability in the Transport of Radioactive Material”; papers outlining concerns related to liability were prepared and discussed during the Session, albeit the Conference President did not present findings.<sup>17</sup>

1. *Discussion of concerns presented by countries located in the vicinity of shipping routes*

Representatives from the governments of Ireland,<sup>18</sup> New Zealand,<sup>19</sup> and Peru<sup>20</sup> (countries located in the vicinity of shipping routes) prepared position papers that articulated rationales for a special regime to address liability during transport.<sup>21</sup> In the view of these countries, the concerns expressed below militate against joining an existing nuclear liability regime.<sup>22</sup> These concerns also appear to reflect the sentiments of other states located in the vicinity of shipping routes, including small island states.<sup>23</sup> Ireland, New Zealand and Peru raised the following concerns:

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15. The International Conference on the Safety of Transport of Radioactive Materials (the Conference) was convened in Vienna, Austria from 7-11 July 2003. The Conference was organised by the IAEA, and co-sponsored by the International Civil Aviation Organization (ICAO), the International Maritime Organisation (IMO), in co-operation with the International Air Transport Association (IATA), and the International Organization for Standardization (ISO). For detailed information on the subjects discussed and findings of the Conference, see the IAEA Web site: [www-rasanet.iaea.org/default.asp](http://www-rasanet.iaea.org/default.asp) (accessed 21 March 2004).
  16. *Id.* See also: [www-rasanet.iaea.org/downloads/meetings/july2003\\_trans\\_saf\\_conf\\_summary\\_and\\_findings.pdf](http://www-rasanet.iaea.org/downloads/meetings/july2003_trans_saf_conf_summary_and_findings.pdf) (accessed 21 March 2004).
  17. *Id.*
  18. F. Maughan and E. Caro, “Liability in the Transport of Radioactive Material”, in *International Conference on the Safety of Transport of Radioactive Material – Contributed Papers*, 5-11 (IAEA-CN-101/2) (7-11 July 2003).
  19. J. Ludbrook, “Liability in the Transport of Nuclear Material – Existing Liability Regimes and Gaps in their Coverage”, in *International Conference on the Safety of Transport of Radioactive Material – Contributed Papers*, p. 15-19 (IAEA-CN-101/4) (7-11 July 2003).
  20. C. Azurin-Araujo, “Towards a Global and Comprehensive IAEA’s Nuclear Liability Regime, in Particular for Nuclear Damage caused during the Transport of Radioactive Material”, in *International Conference on the Safety of Transport of Radioactive Material – Contributed Papers*, p. 29-33 (IAEA-CN-101/6) (7-11 July 2003).
  21. The governments of France, the United States, and the NEA also submitted papers for discussion. These papers are available on the IAEA Web site: [www-rasanet.iaea.org/downloads/radiation-safety/512seitenText.pdf](http://www-rasanet.iaea.org/downloads/radiation-safety/512seitenText.pdf).
  22. Separate and distinct from liability concerns, states located in the vicinity of nuclear shipments have also proposed more stringent regulation of sea transport, and mandatory prior notification of shipments that traverse their Exclusive Economic Zone. These issues are beyond the scope of this paper.
  23. See generally 1997-2003 IAEA General Conference resolutions on transportation safety of radioactive materials, available on the IAEA Web site: [www-rasanet.iaea.org/programme/radiation-safety/trans-safety.htm](http://www-rasanet.iaea.org/programme/radiation-safety/trans-safety.htm) (accessed 17 March 2004); see also Second High-Level Meeting on the Special Security Concerns of Small Island States, Declaration of Kingstown on the Security of Small Island States

a. Revised Vienna and the CSC are not in force

Revised Vienna and the CSC were finalised under IAEA auspices in 1997; approximately six years have elapsed and these conventions are not in force.<sup>24</sup> The Vienna and Paris Conventions, the key regimes that are in force, contain serious deficiencies in respect of the definition of nuclear damage, jurisdiction over a nuclear accident, and levels of compensation. Furthermore, not all “shipping states” or nuclear power generating states are members of the Vienna and Paris regimes, and not all members of these regimes are party to the Joint Protocol that establishes treaty relations between them.<sup>25</sup>

b. Inadequate levels of compensation

Compensation levels under the Paris and Vienna Conventions are inadequate.<sup>26</sup> Revised Vienna and the CSC increase the levels of compensation available to victims for nuclear damage, but not necessarily for non-contracting states.<sup>27</sup>

c. Compensating damage without benefiting from the underlying activity

The Brussels Convention and the CSC create multi-tiered mechanisms for compensating nuclear damage caused within the territory of Parties by a nuclear incident for which an operator within a State Party is liable. Under these conventions, one tier of compensation is provided by a supplementary compensation fund to which Parties to these conventions (nuclear and non-nuclear power generating states) would be required to contribute in certain circumstances.<sup>28</sup> Concerned countries located within the vicinity of shipping routes question the requirement to contribute to a fund established to

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(8-10 January 2003), [www.oas.org/xxxiiga/english/reference\\_docs/declaracion\\_kingstown.pdf](http://www.oas.org/xxxiiga/english/reference_docs/declaracion_kingstown.pdf) (accessed 29 March 2004); Duncan E.J. Currie, “The International Law of Shipments of Ultra hazardous Radioactive Materials: Strategies and Options to Protect the Marine Environment”, [www.globelaw.com/Nukes/Nuclear%20Shipment%20Paper.htm](http://www.globelaw.com/Nukes/Nuclear%20Shipment%20Paper.htm) (accessed 29 March 2004).

24. Revised Vienna has entered into force in the aftermath of the Conference. On October 4, 2003 Revised Vienna entered into force for Argentina, Belarus, Latvia, Morocco, and Romania. As stated above in footnote 9, the governments of Ireland, New Zealand and Peru did not squarely address Revised Paris in their submissions to the Conference. While Revised Paris will not be the primary focus of ensuing discussion below, this convention (once adopted under NEA auspices) will constitute a key component in creating a global civil nuclear liability regime. Therefore, elements of Revised Paris will be discussed below.

25. See F. Maughan and E. Caro, “Liability in the Transport of Radioactive Material”, at p. 8.

26. See *infra* note 44.

27. See F. Maughan and E. Caro, “Liability in the Transport of Radioactive Material”, at p. 9; J. Ludbrook, “Liability in the Transport of Nuclear Material – Existing Liability Regimes and Gaps in their Coverage”, at p. 17.

28. The Paris and Brussels Conventions together create a three-tier structure that provides for a maximum of SDR 300 million to compensate victims of nuclear damage. In the first two tiers, compensation of up to SDR 175 million is provided by the operator, and possibly public funds of the Party in whose territory the nuclear installation is located. Compensation above SDR 175 million and up to SDR 300 million is provided from public funds contributed by all Parties to the Brussels Convention. For a discussion of the CSC’s supplementary fund see *infra* note 47. See *infra* note 53 for a discussion of the Revised Paris-Brussels regimes.

compensate nuclear damage when they derive no benefit from, and do not necessarily support, the underlying activity.<sup>29</sup>

d. Jurisdiction

Generally, under the Vienna and Paris regimes, jurisdiction lies only with the courts of the state where a nuclear incident occurs.<sup>30</sup> Where, however, a nuclear incident occurs outside the territory of a State Party (for example, during the course of maritime transport, on the high seas) jurisdiction lies with the competent court in whose territory the installation of the operator liable is situated. Revised Vienna and the CSC would allow jurisdiction to reside with the contracting state in whose exclusive economic zone (EEZ) and incident occurs, but this provision will not benefit victims of incidents, either on the high seas or in non-contracting states.<sup>31</sup>

e. Definition of nuclear damage

The Paris and Vienna Conventions define nuclear damage to generally include loss of life, personal injury and damage to property.<sup>32</sup> Revised Vienna and the CSC would expand the definition of nuclear damage, but these regimes are not in force.<sup>33</sup> These conventions, however, do not contemplate compensation for economic loss arising as a result of rumor damage.<sup>34</sup>

#### **IV. Responding to the concerns raised by states located in the vicinity of shipping routes related to a special regime covering transport**

##### **A. *Requiem for coastal states and the coastal state/shipping state dichotomy***

Underlying the concerns expressed by countries located in the vicinity of shipping routes appears to be dubious belief as to the safety of shipments of nuclear materials, coupled with concern over damage to the marine environment and economies of coastal states, should an accident during transport occur.<sup>35</sup> Evidence exists, however, which indicates that the concerns of states located in the

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29. J. Ludbrook, "Liability in the Transport of Nuclear Material – Existing Liability Regimes and Gaps in their Coverage", at p. 18; F. Maughan and E. Caro, "Liability in the Transport of Radioactive Material", at p. 9-10.

30. F. Maughan and E. Caro, "Liability in the Transport of Radioactive Material", at p. 8-9. See also Vienna Convention, Article XI, and Paris Convention, Article 13.

31. F. Maughan and E. Caro, "Liability in the Transport of Radioactive Material", at 8-9.

32. See Vienna Convention Article I(k), and Paris Convention Article 3(a).

33. As stated above, Revised Vienna has entered into force in the aftermath of the Conference. See *infra* note 48 for citations to expanded definitions of nuclear damage in the Revised Vienna and Paris regimes, as well as the CSC.

34. See F. Maughan and E. Caro, "Liability in the Transport of Radioactive Material", at p. 9. In its submission to the Conference, the government of New Zealand described rumor damage as the "economic loss sustained as a result of a perceived danger of harm resulting from an accident/incident, such as irradiation of fish resources or of tourism areas, thereby threatening human health". See J. Ludbrook, "Liability in the Transport of Nuclear Material – Existing Liability Regimes and Gaps in their Coverage", at p. 17.

35. On the other hand, non-governmental organisations such as Greenpeace openly advocate the cessation of nuclear transport entirely. See Greenpeace, "Can't Pay, Won't Pay: Plutonium and high-level nuclear waste and the inadequacies of international liability arrangements", <http://archive.greenpeace.org/nuclear/transport/mox99/index.html> (July 1999) (accessed 29 March 2004). It is possible that countries

vicinity of shipping routes are not supported by objective facts.<sup>36</sup> Experts have determined that the probability of an accident during transport where casks containing radioactive materials spill on to the ocean floor is negligibly small.<sup>37</sup>

Nevertheless, the consequences of an incident with a release of radiation during transport should not be underestimated. The results could be severe, due to the long half-lives of the radioactive material involved. There have been, however, more than 160 sea shipments of radioactive materials between Europe and Asia over more than thirty years without a single incident involving radiological consequences.<sup>38</sup> All shipments strictly comply with requirements in the IAEA Transport Guidelines, and International Maritime Organisation standards.<sup>39</sup> The IAEA published its first transportation safety standards in 1961; the IMO published its first regulations in 1965. In the intervening 42 years, IAEA and IMO standards have become even more exacting.<sup>40</sup> States that engage in the transport of nuclear materials are acutely aware of the transboundary consequences of a nuclear incident, particularly in the aftermath of the 1986 Chernobyl disaster.

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calling for a special regime to address liability during transport share the same views, and further that calls for a new convention are one step in a coordinated effort to achieve this end.

36. See for example, Ron Smith, "The Maritime Transportation of Nuclear Materials: a view from New Zealand", *Political Science*, Volume 54, No. 1 (June 1999) at p. 5-19. In this article, Ron Smith, a citizen of New Zealand, challenges the views of the government of New Zealand on the safety of the sea transport of radioactive materials.
37. In fact, the overall probability of an accident during transport (in the case of MOX fuel shipments) has been determined to be "one such event every 500 000 years". This would not necessarily result in the release of radioactivity into the marine environment. See Ron Smith, "Maritime Transportation of Nuclear Materials", at p. 7 [quoting Jeremy Sprung et al, "Data and Methods for Assessment of the Risks Associated with the Maritime Transport of Radioactive Materials: Results of the SeaRAM Program Studies", Sandia National Laboratories (1998) (SAND98-1171/1)]. With regard to shipments of vitrified high-level radioactive waste (VHLW), the probability of a release of radiation resulting from an accident during transport is 1 in  $10^{18}$ , or 0.000,000,000,000,000,001. See Ron Smith, "Maritime Transportation of Nuclear Materials", at p. 6 [quoting Jeremy Sprung et al, "Comments on Paper Titled 'The Sea Transport of Vitrified High-Level Radioactive Wastes: Unresolved Safety Issues'", Sandia National Laboratories (May 1997)].
38. The spotlight has primarily been on sea shipments of nuclear materials between Europe and Japan. These include (1) Japanese spent power reactor fuel being sent to Europe for reprocessing; (2) mixed plutonium/uranium oxide (MOX) fresh fuel to Japan for use in Japanese power reactors; and (3) VHLW – the residue after reprocessing – which has been put into a stable, solid glass form for safety of handling, transport and disposition, and is returned from Europe to Japan for long-term storage.
39. IAEA regulations relevant to the transport of nuclear materials include the Regulations for the Safe Transport of Radioactive Material, and the IAEA Basic Safety Standards. The full scope of the IAEA's programs in the area of nuclear transport safety is beyond the scope of this paper. For a full explanation of IAEA regulations and transport requirements, see "Radioactive Materials Transport: The International Safety Regime", *World Nuclear Transport Institute*, Series No. 1 (July 2001). See also IAEA Board of Governors Resolution, Safety of Transport of Radioactive Material, GOV/1998/17 (30 April 1998). The IMO publishes an International Maritime Dangerous Goods Code (IMDG) for sea transport, which incorporates the IAEA's transport regulations. Since 1993, the IMO has also published the Code for the Safe Carriage of Irradiated Nuclear Fuel, Plutonium and High-level Radioactive Wastes in Flasks on Board Ships ("INF Code").
40. The IAEA has also created the Transport Safety Standards Advisory Committee (TRANSSAC), a body of senior regulatory officials with expertise in radioactive materials transport safety. TRANSSAC reviews IAEA transport regulations on a two-year cycle.

All but 42 countries in the world have coastlines, and thus the majority of countries on the planet are “coastal states”.<sup>41</sup> Marine bio-diversity is omnipresent; seafaring nations exist on every continent, in every hemisphere and region. Each country with coastlines and their citizens derive at least some revenue from marine-based businesses, and tourism.<sup>42</sup> Therefore, it appears that the “coastal state/shipping state” dichotomy is not a proper way to frame the nuclear transport debate. An appropriate context within which to discuss these issues might be “shipping states” or “nuclear seafaring states” on the one hand, and “concerned states” or “vicinity states” on the other hand.

**B. Modern liability regimes can provide the basis for a comprehensive international nuclear liability regime**

The majority of concerns highlighted by Ireland, New Zealand and Peru in their submissions to the Conference are rectified, at least to some extent, in the Revised Vienna and the CSC regimes.<sup>43</sup> The new and expanded provisions in the Revised Vienna and CSC regimes stem from the renewed intention to create a true worldwide liability system. It is not merely because these conventions permit all states to become parties, but rather that nuclear power generating states have already introduced concessions in order to make adherence more attractive to non-nuclear power generating states, including states located in the vicinity of shipping routes.

*1. Compensation amounts*

Many countries, in particular non-nuclear power generating countries, remain unwilling to enter into treaty relations on the basis of the compensation amounts under the Vienna and Paris regimes.<sup>44</sup> The minimum amount of compensation is low, and relatively little incentive exists for Parties to make

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41. The World Bank Group, “Look after your Coastline”, [www.worldbank.org/eca/yugoslavia.nsf/0/61DA5752899E9FBBC1256DA2004A4E40?Opendocument](http://www.worldbank.org/eca/yugoslavia.nsf/0/61DA5752899E9FBBC1256DA2004A4E40?Opendocument) (accessed 27 March 2004).

42. See generally, *The World Almanac and Book of Facts 2002*. The coastlines of Canada, France, Japan, Russia, South Korea, the United Kingdom, and the United States are 202 080 km, 3 427 km, 29 751 km, 37 653 km, 2 413 km, 12 429 km and 19 924 km, respectively. The coastlines of the Dominican Republic, Fiji, Ireland, New Zealand, and Peru, are 1 288 km, 1 129 km, 1 448 km, 15 134 km and 2 414 km, respectively. See *CIA World Factbook*, “Field Listing – Coastline”, [www.odci.gov/cia/publications/factbook/fields/2060.html](http://www.odci.gov/cia/publications/factbook/fields/2060.html) (accessed on 28 March 2004).

43. Revised Paris also addresses the concerns of vicinity states to the same extent that Revised Vienna and the CSC address them. As explained in note 5 *supra*, however, the Paris Convention, even in its revised form, still contains barriers to accession for non-OECD member states, and, as a consequence, the Paris Convention arguably cannot provide the basis for a global regime. [At present, 30 countries currently comprise the membership constituency of the OECD. For further information regarding the membership of the OECD, and its relationships with non-member countries, see [www.oecd.org/document/58/0,2340,en\\_2649\\_34483\\_1889402\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/58/0,2340,en_2649_34483_1889402_1_1_1_1,00.html) (accessed 27 March 2004)]. Furthermore, the United States (an OECD member country) cannot join the Paris regime, even in its revised form, because the United States is not prepared to alter its fundamental system of tort liability based on the laws of the states of the United States. Membership in Revised Vienna is open to all states. Membership in the CSC is open to all parties to the Vienna and Paris Conventions, as well as to countries (including the United States) that have domestic nuclear liability statutes, which conform to the requirements set forth in the CSC’s Annex. The U.S. domestic nuclear liability statute, the Price-Anderson Act (42 U.S.C. § 2210) conforms to the requirements set forth in the CSC’s Annex.

44. Under the Paris Convention, the minimum must not be less than 7 million US dollars (“USD”), while the Vienna Convention requires not less than USD 5 million in terms of gold on 29 April 1963 (about USD 50 million at recent gold prices). See Paris Convention Article 7, and Vienna Convention Article V, respectively.

more than the minimum amounts prescribed in the conventions available to compensate victims of nuclear damage. Revised Vienna and the CSC, however, require a minimum amount of 300 million Special Drawing Rights (SDRs), about 400 million US dollars (USD) at current rates of exchange.<sup>45</sup> These minimum amounts are in excess of USD 300 million higher than the minimum amounts under the Vienna and Paris regimes.<sup>46</sup> Furthermore, the CSC makes at least an additional SDR 300 million available through a supplementary fund designed to mobilise additional funds on an international plane to compensate victims of nuclear damage.<sup>47</sup>

## 2. *Jurisdiction over a nuclear incident*

The modern conventions expand the jurisdictional provisions to increase the likelihood that a vicinity state would be able to exercise jurisdiction over a nuclear incident during transport. Revised Vienna and the CSC (in addition to Revised Paris) treat the exclusive economic zone (EEZ) of a Party as an extension of its territory as opposed to the high seas, thereby ensuring that jurisdiction over a transport incident in a Party's EEZ will reside with that Party.<sup>48</sup> Vicinity states would not exercise jurisdiction over an incident during transport in its EEZ under the Vienna and Paris regimes.

## 3. *Definition of nuclear damage*

Revised Vienna and the CSC (in addition to Revised Paris) improve the definition of nuclear damage by explicitly identifying the types of damage that are considered nuclear damage.<sup>49</sup> In addition to personal injury and property damage, these regimes expressly identify five categories of damage

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45. A special drawing right is the unit of account defined by the International Monetary Fund and used by it for its own operations and transactions. Both conventions prescribe transition periods where not less than SDR 150 million must be available under the CSC until 29 September 2007, and not less than SDR 100 million must be available under Revised Vienna through fall 2013. See Articles III and V of the CSC and Revised Vienna, respectively.

46. See *supra* note 44.

47. The obligation to contribute to the fund would be triggered if the "installation state" notifies the Parties that the amount of all eligible claims may exceed the minimum first tier amount that applies to that state. Fifty percent of the fund is to be used to compensate damage occurring outside the "installation state" (transboundary damage), including transboundary damage occurring in a non-nuclear power generating Party. Under Article XI(4), Parties to the CSC may declare a first tier amount that is SDR 600 million or greater. In that case, the allocation to transboundary damage is eliminated and the entire international supplementary fund is available on a non-differentiated basis. For a complete analysis of the CSC, including the supplementary fund, see Ben McRae, "The Compensation Convention: Path to a Global Regime for Dealing with Legal Liability and Compensation for Nuclear Damage", *Nuclear Law Bulletin* No. 61, p. 25 (June 1998).

48. Compare Article XI of the Vienna Convention and Article 13 of the Paris Convention to Article XIII of the CSC, Article XI of Revised Vienna, and Article 13 of Revised Paris. The new provisions on jurisdiction in these conventions take into account the changes in the international law of the sea which have occurred in the past 20 years, and are reflected in the 1982 United Nations Convention on the Law of the Sea (the "LOSC"): [www.un.org/Depts/los/convention\\_agreements/texts/unclos/unclos\\_e.pdf](http://www.un.org/Depts/los/convention_agreements/texts/unclos/unclos_e.pdf) (accessed 25 March 2004). (The LOSC was adopted in Montego Bay, Jamaica on 10 December 1982, and entered into force on 16 November 1994.) For further commentary and analysis on the new jurisdictional provisions in Revised Vienna and the CSC, see Andrea Gioia, "The New Provisions in the 1997 Vienna Protocol and in the 1997 Convention on Supplementary Compensation", *Nuclear Law Bulletin* No. 63, p. 25 (June 1999), and Ben McRae, "Compensation Convention", *Nuclear Law Bulletin* No. 61, p. 25 (June 1998).

49. See Revised Vienna Article I(k), CSC Article I(f), and Revised Paris Article I(a)(vii)-(x).

relating to impairment of the environment, preventive measures, and economic loss.<sup>50</sup> The later five categories have no analogue in the Vienna and Paris regimes; these concepts were included primarily in response to vicinity state concerns regarding nuclear incidents during transport.<sup>51</sup>

## ***B. Possible amendments to a global regime, once widely in force***

The discussion above demonstrates that further steps were taken in order to improve the international nuclear liability regime for nuclear damage with the aim of creating a worldwide system. Additional improvements should be considered, however, once widespread adherence has been achieved, and provided that vicinity states promote the benefits of membership in a global regime to similarly situated countries. Nuclear and non-nuclear power generating states could consider four basic amendments:

### *1. Increased liability amounts*

Five years after the revision of the Vienna Convention and creation of the CSC, the Paris Convention members have revised this regime under NEA auspices.<sup>52</sup> Once in force, the revised Paris Convention would require the liability of the operator to not less than EUR 700 million.<sup>53</sup> The *Exposé des Motifs* to the Paris Convention makes clear that the operator's minimum liability under Revised Paris (i.e., EUR 700 million) must also constitute a risk currently insurable on international insurance markets.<sup>54</sup> Amendments to Revised Vienna and the CSC could harmonise minimum operator liability amounts, bringing them into conformity with Revised Paris and the apparent current capacity of international insurance markets.<sup>55</sup>

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50. *Id.* See also Ben McRae, "Compensation Convention", *Nuclear Law Bulletin* No. 61, at p. 37-40.

51. National law determines the extent to which damage relating to impairment of the environment, preventive measures, and economic loss are covered. See CSC Article I(f), and Revised Vienna Article I(k).

52. Although Revised Paris arguably cannot provide the basis for a global regime, certain provisions in Revised Paris can serve as a model for amendments to Revised Vienna and the CSC.

53. See Revised Paris, Articles 7 and 10. Once in force, the revised Paris and Brussels regimes would provide EUR 1.5 billion to compensate victims of nuclear damage. The first tier of compensation is comprised of the minimum liability requirement under Revised Paris, i.e., EUR 700 million, and is still provided by the operator's financial security; the installation state is ultimately responsible for any shortfall. The second tier of Revised Brussels is now EUR 500 million, and continues to be provided from public funds made available by the installation state. The third tier (EUR 300 million) is derived from compensation provided by all Contracting Parties. The Protocol to amend the Paris Convention will enter into force when ratified by two-thirds of the Signatory States; the Protocol to amend the Brussels Supplementary Convention will enter into force when ratified by all Signatory States to the Convention. For further information, see the NEA Web site: [www.nea.fr/html/general/press/2004/2004-01.html](http://www.nea.fr/html/general/press/2004/2004-01.html) (accessed 25 March 2004).

54. Paragraph 4 of the *Exposé des Motifs* to the Paris Convention (approved in its revised form, on 16 November 1982 by the OECD Council) states in pertinent part, "the possible magnitude of a nuclear incident requires international collaboration between national insurance pools. Only by an effective marshalling of the resources of the international insurance markets by coinsurance and reinsurance can sufficient financial security be made available to meet possible compensation claims". See also Marcus Radetzki, "Limitation of Third Party Liability: Causes, Implications and Future Possibilities", *Nuclear Law Bulletin* No. 63, at p. 9-14.

55. It should be noted, however, that a relationship may exist in Revised Paris between international insurance capacity, and the statistical probability that a catastrophic nuclear incident could occur in the

In addition, nuclear and non-nuclear power generating states should consider raising the level of the CSC's supplementary fund to approximately SDR 700 million. Such an amendment would maintain the current concordance between the supplementary fund and the operator's minimum liability amount required under the CSC and Revised Vienna. A minimum of SDR 1.4 billion (about USD 1.6 billion) would be available to compensate victims of an accident during transport if these amendments are adopted.

## 2. *Compensating damage without benefiting from the underlying activity*

In respect of the supplementary fund created under Article III.1(b) of the CSC, ninety percent of contributions would come from nuclear power generating countries on the basis of their installed nuclear capacity.<sup>56</sup> The remaining ten percent would come from all Parties on the basis of their United Nations (UN) rate of assessment.<sup>57</sup> The CSC already provides that no contribution shall be required from countries on the minimum UN rate of assessment with no nuclear reactors.<sup>58</sup> Members of the regime should consider an amendment to ensure that only nuclear power generating states shall be required to contribute to the supplementary fund. Through such an amendment, non-nuclear power generating states such as Chile, Ireland, New Zealand and Peru could accede to the regime without the ideological conflict of potentially compensating victims of nuclear damage when they do not necessarily support the underlying activity.<sup>59</sup>

## 3. *Definition of nuclear damage*

Countries located in the vicinity of shipping routes claim that Revised Vienna and the CSC do not require compensation for rumor damage.<sup>60</sup> Vicinity states are correct in their assessment that under the Vienna and Paris regimes operator liability for nuclear damage is predicated upon a release of ionising radiation.<sup>61</sup> With regard to Revised Vienna, the CSC, and the Revised Paris regimes, vicinity

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OECD member area, in which approximately 350 reactors are operating. See Marcus Radetzki, "Limitation of Third Party Liability: Causes, Implications and Future Possibilities", *Nuclear Law Bulletin* No. 63 at p. 11. The minimum levels in Revised Vienna and the CSC could still be increased, to the extent that insurance markets cannot meet the same level of insurance capacity in (for example) Eastern Europe because of the higher risk involved in insuring reactors located in Eastern Europe, of Soviet-legacy design. Article V of Revised Vienna would allow the liability of an operator to be limited to less than SDR 300 million provided that public funds are available to meet the minimum requirement of SDR 300 million. See Revised Vienna Article V(1)(b), and V(2). A similar liability-sharing scheme could be created through revisions to Revised Vienna and the CSC to ensure that at least a minimum of EUR 700 million is available to compensate victims of nuclear damage.

56. See CSC Article IV.1(a). See also Ben McRae, "Compensation Convention", *Nuclear Law Bulletin* No. 61 at p. 33-37.

57. See Article IV.1(a).

58. See Article IV.1(b). This would include virtually all small island states.

59. In his article analysing the CSC, Ben McRae notes that nuclear power generating states typically have high UN rates of assessment, and therefore the formula described in CSC Article IV should result in 98% percent of the contributions to the supplementary fund coming from nuclear power generating states. See Ben McRae, *Nuclear Law Bulletin* No. 61 at p. 34-35. Assuming this is the case, the amendment described above would merely formalise an implicit reality of the CSC regime when adopted in 1997.

60. The government of New Zealand's definition of rumor damage appears *supra* in note 34.

61. Under the Vienna and Paris Conventions, nuclear damage "arises out of or results from the radioactive properties or a combination of radioactive properties with toxic, explosive or other hazardous properties

state claims are not entirely correct. Each of these regimes allows recovery for precautionary evacuations when the possibility of a nuclear incident creates a grave and imminent threat of a release of ionising radiation.<sup>62</sup> Such preventive measures would likely include, among other things, operations to recover a ship that sinks in a vicinity state's EEZ, as well as the cost of shutting down fisheries, testing water for contamination, and prohibiting the consumption of marine food products for a reasonable period of time while confirming whether or not a release of ionising radiation has occurred.<sup>63</sup> The conventions, however, do not appear to cover broader forms of economic damage that might arise in a hypothetical scenario where a ship sinks in a vicinity state's EEZ, and it is determined that a release of ionising radiation has not occurred.<sup>64</sup> In this regard, nuclear and non-nuclear power generating states could consider inserting a definition for "rumor damage" as follows: "in the event of an accident during the transport of nuclear materials, economic damage resulting in the absence of a release of ionising radiation, to the extent permitted by the general law on civil liability of the competent court."<sup>65</sup> Such a definition would give vicinity states with jurisdiction over a nuclear incident broad leeway to define economic damage in the absence of a release of radioactivity, while ensuring that an accident must occur (as opposed to merely traversing the EEZ of a vicinity state) in order for this provision to be invoked.<sup>66</sup>

#### 4. *Accidents during transport on the high seas*

As stated above, Revised Vienna, and the CSC (as well as Revised Paris) equate the EEZ of a State Party with its territorial sea, thus ensuring that jurisdiction over a transport incident in a Party's EEZ will reside with that Party.<sup>67</sup> Under all existing international nuclear liability regimes, however, the installation state (i.e., the state where the operator of a nuclear installation is located) would exercise jurisdiction over nuclear incidents not occurring within the territory of any Party. This includes nuclear incidents on the high seas. Vicinity states highlighted this as a major concern in their

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of nuclear fuel or radioactive waste products..." See Vienna Convention Article I(k), and Paris Convention Article 1(a)(i).

62. See CSC Articles I(f), I(h) and I(i); Revised Vienna Articles 1(k) 1(l) and 1(n); and Revised Paris Articles 1(a)(vii), 1(a)(ix), and 1(a)(x).
63. Of course, the definition of rumor damage might also include instances where a release of radiation occurs, but the levels are not significant enough to cause harm people, or the environment. Under such a scenario, victims would be compensated for the costs of measures to reinstate the impaired environment, loss of income deriving from economic interests and "any other economic loss" permitted by the competent court under CSC Article 1(f), Revised Vienna Article 1(k), and Revised Paris Article 1(a)(vii).
64. Such broader forms of economic loss might include a decline in the sale and consumption of fish, and loss of tourism revenue.
65. This definition could be incorporated as a component of the definitions of "nuclear damage" [CSC Article 1(f), Revised Vienna Article I(k)], or as a separate concept, similar to "preventive measures" [CSC Article I(h), and Revised Vienna Article I(n)]. National also law determines the extent to which damage relating to impairment of the environment, preventive measures, and economic loss are covered. See CSC Article I(f), Revised Vienna Article I(k), Revised Paris I(a)(vii)-(x).
66. The government of Peru correctly points out that CSC Annex Article 6 states that the maximum operator liability for an accident during transport is determined by the national law of the installation state. See C. Azurin-Araujo, "Towards a Global and Comprehensive IAEA's Nuclear Liability Regime, in Particular for Nuclear Damage caused during the Transport of Radioactive Material", at 32. Vicinity states must accept this, in exchange for including the concept of "rumor damage" in modern liability regimes, and determined in accordance with their national laws.
67. See Section IV(B)(2) of this article, and note 48 *supra*.

submissions to the Conference.<sup>68</sup> The *Exposé des Motifs* to the Paris Convention makes clear that the drafters' considered the propriety of installation states exercising jurisdiction in these instances. The drafters were "unable to find another solution which would enable the victims to refer to their national court and which would at the same time secure unity of jurisdiction".<sup>69</sup> Provisions exist, however, in the original and revised conventions (including the CSC) that allow Contracting Parties to determine by agreement which courts shall have jurisdiction when jurisdiction might lie with more than one party. Notwithstanding the commentary in the *Exposé des Motifs* to the Paris Convention, perhaps incidents on the high seas could be addressed in an analogous manner. To the extent that a nuclear incident occurs on the high seas with damage resulting in the EEZ of only one Contracting Party, jurisdiction could reside with the courts of this Party, and not the installation state.<sup>70</sup> Likewise, to the extent that a nuclear incident occurs on the high seas with damage resulting in the EEZ of multiple Contracting Parties, the installation state and these Parties could decide by agreement which courts shall have jurisdiction.<sup>71</sup> Such amendments would, of course, constitute an exception to the unity of jurisdiction principle and potentially jeopardise timely compensation for victims of nuclear damage.

##### 5. *Treatment of non-contracting Parties*

One additional argument made by vicinity states in their submissions to the Conference is that the benefits of membership in a liability regime do not necessarily extend to non-parties.<sup>72</sup> This may be true, but the answer is simple: join the conventions. The costs for non-nuclear power generating states, including small island states, to join Revised Vienna or the CSC are small, but the benefits of legal certainty, guaranteed levels of compensation and a predictable procedural legal process for receiving compensation are enormous. The majority of vicinity states are non-nuclear power generating states; the cost of joining a convention would be negligible at best.<sup>73</sup> With the exception of an intentional act for which an operator could exercise a right of recourse, vicinity states would have no financial obligations under these conventions. That said, it is entirely possible that ideological convictions will ultimately prevent non-nuclear power generating states from joining efforts to create a worldwide nuclear liability system.<sup>74</sup> Assuming this is the case, the Vienna Convention on the Law of

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68. See notes 30-31 *supra*, and accompanying text.

69. See *Exposé des Motifs* to the Paris Convention, at paragraph 55. See also Andrea Gioia, "The New Provisions in the 1997 Vienna Protocol and in the 1997 Convention on Supplementary Compensation", *Nuclear Law Bulletin* No. 63 at p. 28.

70. This concept is similar, but not identical to Revised Paris Article 13(f)(i).

71. CSC Article XIII(3)-(4), and Revised Vienna Article XI(2)-(3) would have to be revised under these circumstances. Jurisdiction over accidents on the high seas with no damage resulting in the EEZ of a Contracting Party would still reside with the installation state.

72. For example, the government of Ireland notes that access to supplementary compensation funds under the second and third tiers of the CSC might be excluded, depending upon the obligations of a State under the Vienna or Paris regimes. See F. Maughan and E. Carroll, "Liability in the Transport of Radioactive Material", at p. 9. The government of New Zealand also notes that levels of compensation under Revised Vienna will be limited if an installation state excludes claims for damage in a non-party. See J. Ludbrook, "Liability in the Transport of Nuclear Material – Existing Liability Regimes and Gaps in their Coverage", at p. 17.

73. In particular, Ireland, New Zealand and Peru are non-nuclear power generating states, and therefore would have no nuclear installations to declare and no claims for compensation to satisfy or indemnify in the event of a nuclear incident. For a listing of nuclear power generating states, and the number of reactors operating in each state, see *Nuclear News Magazine*, A Publication of the American Nuclear Society (March 2004) at p. 41-67.

74. See Greenpeace discussion, *supra* note 35.

Treaties could provide a solution whereby non-contracting states become third party beneficiaries of the regime provided that such countries adopt national laws that fully and faithfully implement the principles embodied in the conventions.<sup>75</sup> Such states would appear bound to follow the requirements of the conventions, *pacta sunt servanda* under either scenario.

## V. Final Thoughts

Vicinity states that advocate a new instrument to address liability during the transport of nuclear materials must recognise that the negotiation and entry into force of such a convention would take a considerable amount of time, assuming *arguendo* that nuclear power generating states are willing to consider the creation of such a regime. The Paris Convention was adopted under NEA auspices in 1960, but the regime did not enter into force until 1968. The Vienna Convention was adopted under IAEA auspices in 1963; the regime entered into force in 1977. Revised Vienna and the CSC were revised during 17 sessions over a seven-year period, starting in 1990. Revised Vienna has only recently entered into force, and the CSC remains merely an existing instrument adopted under IAEA auspices. Further delay in creating an international nuclear liability system to compensate victims of nuclear damage is contrary to the interests of nuclear and non-nuclear power generating states alike.

The way forward is for all nuclear power generating states to lead by example through ratification of the modern nuclear liability instruments, and where applicable withdrawing forthwith from the Vienna and Paris regimes.<sup>76</sup> Modern civil nuclear liability conventions assure that significantly greater resources will be available from both domestic and international sources to compensate potential victims and provide for restoration of the environment in the territory of Parties in the event of a nuclear incident.<sup>77</sup> Adherence to the same regimes, or, alternatively, linkages through binding treaty relations would form the basis for an international civil nuclear liability system to which

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75. See Vienna Convention on the Law of Treaties (VCLT), Article 36, [www.un.org/law/ilc/texts/treaties.htm](http://www.un.org/law/ilc/texts/treaties.htm) (accessed 26 March 2004). Article 36 states in pertinent part, “(1) A right arises for a third State from a provision of a treaty if the parties to the treaty intend the provision to accord that right either to the third State, or to a group of States to which it belongs, or to all States, and the third State assents thereto. (2) A State exercising a right in accordance with paragraph 1 shall comply with the conditions for its exercise provided in the treaty or established in conformity with the treaty”.

76. As Andrea Gioia points out, VCLT Article 30 addresses the “application of successive treaties relating to the same subject matter”. Paragraph 3 states that “when all parties to the earlier treaty are parties also to the later treaty but the earlier treaty is not terminated or suspended . . . the earlier treaty applies only to the extent that its provisions are incompatible with those of the later treaty”. Likewise, under Article 30, paragraph 4(a), the same rule also applies “when the parties to the later treaty do not include all the parties to the earlier one as between States, which are parties to both treaties”. The primary concern here is that the new rules in respect of jurisdiction and the EEZ might not apply if nuclear and non-nuclear power generating states do not join the modern regimes, and where applicable withdraw from the older regimes. See Andrea Gioia, “The New Provisions in the 1997 Vienna Protocol and in the 1997 Convention on Supplementary Compensation”, *Nuclear Law Bulletin* No. 63 at p. 27.

77. For comparison purposes, vicinity states should review the Soviet law on compensating victims of the Chernobyl nuclear accident. The Union of Soviet Socialist Republics (USSR) law is entitled “On Social Protection for Citizens who suffered as a Result of the Chernobyl Catastrophe”. Chapter 3, Article 13 generally sets forth the measures of compensation available for victims of the Chernobyl incident. Among other things, victims are entitled to “free manufacture and repair of dentures (with the exception of dentures of precious metals)”, a “free passenger car with manual transmission if there are appropriate medical indications”, and “provision of foodstuffs in accordance with rational norms of food consumption.” See text of Law of the Union of Soviet Socialist Republics (in particular Article 13) on Social Protection for Citizens Who Suffered as a Result of the Chernobyl Catastrophe, *Izvestiya* (21 May 1991).

vicinity states might derive benefit in joining. Treaty relations among and between nuclear and non-nuclear power generating states is best way to protect all relevant interests in the event of a nuclear incident on land or during transport, and promote the safe use of nuclear energy. At the same time, influential vicinity states, such as Ireland, New Zealand and Peru should promote adherence to similarly situated states on the understanding that once the conventions are widely in force, vicinity state concerns will be addressed to the greatest extent possible through amendments to the modern liability conventions.



# The Safety Regime Concerning Transboundary Movement of Radioactive Waste and its Compatibility with the Trade Regime of the WTO

by Lutz Strack\*

## I. Introduction

The nature of radioactive waste gives rise to the question of interrelationships to other issues: mining and milling, physical protection, transport, safety, protection of human health and the environment, etc. In times of globalisation one aspect is becoming increasingly relevant: the transboundary movement of radioactive waste which leads to a linkage of nuclear material to international trade.

International trade of all kinds is being progressively liberalised under the trade regime agreed within the framework of the World Trade Organization (WTO). The General Agreement on Tariffs and Trade (GATT) is intended to gradually open up international trade in goods by removing quantitative limitations imposed by individual countries and by reducing import tariffs. Although the GATT has been in place for about 50 years, for much of that time it was considered that its provisions *de facto* should not or did not apply to trade in nuclear materials and waste. It now appears that the situation has changed and is rather more complex because the WTO/GATT is applicable in principle to trade in nuclear material and waste.

At the same time, several principles and rules have been developed on the regional and international level to achieve and maintain a high level of safety in the management of radioactive waste. This forms a comprehensive “safety regime”, which relies, *inter alia*, on trade restrictions and import/export bans. The interface and relationship between this safety regime and the world trade regime is unclear and needs further clarification.

From a perspective that focuses on trade rules, several questions need to be addressed. Under which circumstances and with which constraints may states adopt trade restrictions to promote a high level of safety in the management of radioactive waste? Does the interpretation of existing trade rules give rise to concerns in respect of safety-motivated national trade measures? Do the existing trade rules need to be modified in order to ensure compatibility with (international) nuclear or environmental law? What, if anything, is required to ensure that States do not subscribe to

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contradictory rules in international nuclear and trade law? Aspects of each of these questions are addressed in this article.<sup>1</sup>

The analysis is divided into three sections: Part A discusses some general aspects of globalisation in the nuclear field, and then describes the “new” trading regime of the WTO in general. Part B examines, in particular, the main legal instruments establishing a safety regime governing radioactive waste management. Finally, Part C analyses whether and to what extent the two sets of regimes conflict with each other. Thus, the core provisions of the relevant WTO agreements and their relevance concerning the transboundary movement of radioactive waste (excluding questions of transportation) are examined. The conclusion is that the safety regime is an adequate answer on the part of the international community to the challenges of globalisation in the nuclear field, and that it seems to be compatible with the world trade system.

## **A. The Multilateral Trade Regime of the WTO**

### ***I. Globalisation, trade liberalisation and the consequences for the nuclear field***

Globalisation, the result of human innovation and technological progress, means that the interdependencies among countries in the world economy are becoming more intense. Trade, investment, capital flows, technology and communication will continue to move us towards a more integrated, even borderless, world economy (“global village”). Other impediments to international exchange such as tariffs and political barriers lose importance, the economic distance shrinks, and a greater number of countries will participate in the world trading system.<sup>2</sup> Globalisation of the world economy clearly presents national economic policy makers with enormous opportunities and challenges. For example, trade liberalisation during recent years has opened new markets for many agricultural commodities and products. Some view globalisation as a process that is beneficial, a key to future world economic development, and also inevitable and irreversible. Others regard it with hostility, even fear, believing that it increases inequality within and between nations, threatens employment and living standards and thwarts social progress.

Many have seen in the powerful impetus of globalisation the undermining (or perhaps the death) of the sovereignty of states as power flows out of the formal decision-making process of the state and into the hands of international or non-governmental organisations. There is some fear that globalisation increasingly constrains the ability of democratic communities to make unfettered choices about policies that affect the fundamental welfare of their citizens, including those of safety, human health and the environment. For example, a country’s policies with respect to nuclear material may now be fundamentally shaped by rules that are made and interpreted at the regional and international level.

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1. A comprehensive analysis of all aspects of radioactive waste management and of international trade is not possible and thus not intended. Moreover, this article examines only the ability of international institutions or certain states to respond to the challenges of economic globalisation.
  2. See Horst Siebert, “What does Globalisation Mean for the World Trading System?”, in *From GATT To the WTO: The Multilateral Trading System In The New Millennium*, p. 137, 138 (The WTO Secretariat, 2000).

## II. *The World Trade Organization (WTO)*

With the successful conclusion of the last multilateral trade negotiations held under the auspices of the General Agreement on Tariffs and Trade (GATT),<sup>3</sup> the so-called Uruguay Round (1986-1994), and the subsequent creation of the World Trade Organization (WTO) on 1 January 1995, a new era in world trade began.<sup>4</sup>

The Uruguay Round has significantly increased the role given to the rule of law in the international trading system. The new WTO agreements and provisions are more precise and more detailed than the old General Agreement on Tariffs and Trade (“GATT 1947”). The enlargement of trade areas covered by the WTO as opposed to the previous GATT 1947 reduces the scope remaining for unilateral action by individual states. Besides creating a permanent trade institution and introducing the biggest trade liberalisation in history, the WTO Agreement<sup>5</sup> provides the world trading system with the means to confront the considerable challenges facing the world economy today: the WTO has primary responsibility for establishing rules for trade in goods and services, and the protection of intellectual property rights. The WTO aims at facilitating international trade in order to contribute to international economic growth and economic welfare. In addition, the WTO Agreement refers to the principle of sustainable development and to the protection and preservation of the environment.<sup>6</sup>

One of the most significant achievements of the Uruguay Round is the new unified dispute settlement system, regulated in the Dispute Settlement Understanding (DSU).<sup>7</sup> The principal changes with respect to the previous GATT dispute settlement system include the creation of a standing Appellate Body to review legal issues settled by the panels, and the automatic adoption of the reports

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3. General Agreement on Tariffs and Trade, 30 October 1947, 61 Stat. A-11, T.I.A.S. 1700, 55 U.N.T.S. 194 [hereinafter GATT 1947].
  4. See generally John H. Jackson, *The World Trading System: Law and Policy of International Economic Relations*, p. 44-49 (Cambridge, 2nd ed. 1997).
  5. Marrakesh Agreement Establishing the World Trade Organization, 15 April 1994, 33 *International Legal Materials*, 1125, 1144 (1994) [hereinafter WTO Agreement], reprinted in *WTO, The Results of the Uruguay Round of Multilateral Trade Negotiations: The Legal Texts*, p. 4-15 (Geneva 1994); O.J. 1994 No. L 336, 3. The WTO Agreement can be understood as an “umbrella” agreement that embraces all other agreements of the Uruguay Round, which are “attached” in four annexes. In addition to the texts of the agreements, the WTO Agreement also contains texts of Ministerial Decisions and Declarations, which further clarify certain provisions of some of the agreements. The schedules of commitments also form part of the Uruguay Round agreements. The WTO framework ensures a “single undertaking approach” – thus, membership in the WTO entails accepting all the results of the Uruguay Round without exception.
  6. *Id.* Preamble.
  7. Understanding on Rules and Procedures Governing the Settlement of Disputes, 15 April 1994, WTO Agreement, Annex 2, 1869 U.N.T.S. 401, 33 *International Legal Materials*, p. 1125, at p. 1226 (1994) [hereinafter DSU], reprinted in *WTO, the Results of the Uruguay Round*, p. 354-79; O.J. 1994 No. L 336, 234. The DSU emphasises the importance of consultations in securing dispute resolution. Where a dispute is not settled through consultations, the DSU requires the establishment of a panel, which normally consist of three persons of appropriate background and experience from countries not party to the dispute. Once the panel report is adopted, the party concerned will have to notify its intentions with respect to implementation of adopted recommendations. Furthermore, the DSU sets out rules for compensation or the suspension of concessions in the event of non-implementation. One of the central provisions of the DSU reaffirms that Members shall not themselves make determinations of violations or suspend concessions, but shall make use of the dispute settlement rules and procedures of the DSU.

by the Dispute Settlement Body (DSB) unless it decides by consensus not to adopt the report.<sup>8</sup> This “negative consensus procedure” eliminates the ability of a single WTO Member to block the adoption of a Panel report using its veto power, and brings a change from power-oriented “diplomatic” to rule-oriented “legal” methods of foreign policy-making.<sup>9</sup>

### **III. *The GATT and its core principles***

The original “GATT 1947” was revised as part of the Uruguay Round and the modified text constitutes an integral part of the WTO Agreement.<sup>10</sup> The central aim of the GATT is to liberalise trade between the Contracting Parties, ensuring “free trade”<sup>11</sup> by reducing tariffs and other obstacles to international trade. GATT is based on three main principles. Article I GATT, the “most favoured nation” (MFN) principle, requires that any trade advantages granted by any Contracting Party to any product either for import or export must also be applied immediately and unconditionally to any other “like product” originating in, or bound for, any other Contracting Party. This provision applies to customs regulation and internal regulations. Article III GATT, the “national treatment” (NT) principle, similarly requires imported and domestic “like products” to be treated no less favourably with respect to internal laws, regulations and requirements.<sup>12</sup> In other words, GATT Members are not permitted to discriminate between traded products produced by other Members, or between domestic and foreign products. Article XI GATT forbids any restrictions other than duties, taxes or other charges on imports from, and exports to, other Contracting Parties. It establishes a general prohibition of quantitative restrictions.

### **IV. *The GATS and its core principles***

The General Agreement on Trade in Services (GATS), the counterpart of GATT for trade in services is one of the significant outcomes of the Uruguay Round.<sup>13</sup> It is the first multilateral agreement to provide legally enforceable rights to trade in services and obliges WTO Members to substantially liberalise their service industry. As a framework agreement for the entire landscape of trade in services, it covers all services, except those provided in the exercise of governmental authority as defined in Article I GATS, which are neither supplied on a commercial basis nor in competition with other service suppliers. As a general matter, the core principles of the GATS are quite similar to the GATT, but the GATS is not as stringent as the GATT as many obligations only apply where there is a negotiated commitment. The centrally important MFN principle is included in Article II GATS.

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8. *Id.* Articles 16(4) and 21(4).

9. Ernst-Ulrich Petersmann, *The GATT/WTO Dispute Settlement System*, p. 64 (1997); see generally John H. Jackson, “Dispute Settlement and the WTO: emerging problems”, in *The Jurisprudence of GATT and the WTO*, p. 168 (2000).

10. General Agreement on Tariffs and Trade 1994, 15 April 1994, WTO Agreement, Annex 1A, 1867 U.N.T.S. 187, 33 *International Legal Materials*, p. 1125, at p. 1153 (1994) [hereinafter GATT], reprinted in *WTO, the Results of the Uruguay Round*, p. 17-32; see generally Peter-Tobias Stoll & Frank Schorkopf, *WTO – Welthandelsordnung und Welthandelsrecht*, p. 177 (Köln 2002).

11. See for a definition of the term “free trade” Peter-Tobias Stoll & Frank Schorkopf, *WTO* p. 30-36.

12. See for a detailed discussion of the crucial term “like product” Robert E. Hudec, “GATT/WTO Constraints on National Regulation: Requiem for an ‘Aim and Effects’ Test”, 32 *The International Lawyer*, p. 619, at p. 624 (1998).

13. General Agreement on Trade in Services, 15 April 1994, WTO Agreement, Annex 1B, 33 *International Legal Materials*, p. 1125, 1168 (1994) [hereinafter GATS], reprinted in *WTO, The Results of the Uruguay Round*, p. 325; O.J. 1994 No. L 336, 191.

With regard to market access [Article XVI GATS] and national treatment [Article XVII GATS] obligations exist when governments choose to make commitments in specific schedules, which apply individually and separately in the various member countries.<sup>14</sup>

## **B. Transboundary Movement of Radioactive Waste**

### ***I. The definition of radioactive waste***

All substances, whether regarded as waste or not, hold some amount of radioactivity. They contain either naturally occurring radioactive materials, or traces of radioactive substances produced from human activities. This fact has complicated what at first glance seems like a rather easy question, namely, what is radioactive waste?

According to the International Atomic Energy Agency (IAEA), radioactive waste is any material that contains a concentration of radionuclides greater than those deemed safe by national authorities, and for which no use is foreseen. Because of the wide variety of nuclear applications, the amounts, types and even physical forms of radioactive wastes vary considerably: some wastes can remain radioactive for hundreds or thousands of years, while others may require storage for only a short decay period prior to conventional disposal. To facilitate communication and information exchange among its Member States, the IAEA instituted a revised waste classification system in 1994 that takes into account both qualitative and quantitative criteria, including activity levels and heat content. IAEA's three principal classes include exempt waste, low and intermediate level waste, and high level waste.

Radioactive waste is an inevitable by-product of the application of ionising radiation. Substantial amounts of radioactive waste are generated through civilian applications of radionuclides in medicine (for diagnosis and treatment), in research and industry (for example, for finding new sources of petroleum or producing plastics), or agricultural applications (notably for the conservation of foodstuffs). A major source of non-military waste is nuclear power generation, including various steps in the nuclear fuel cycle such as fuel fabrication, power plant operation, reprocessing, and the decommissioning of nuclear facilities. The radioactive waste produced by nuclear power generators represents a small fraction of the total toxic wastes generated in countries that use nuclear energy to generate electricity, but at the same time this waste has the highest levels of radioactivity.<sup>15</sup>

In developing countries, the situation is different. Most of them do not generate large amounts of radioactive waste yet they require technical assistance and guidance to establish sufficient infrastructures and capabilities to safely manage and dispose of waste. As more radioactive waste disposal facilities are put into operation around the world, the transboundary movement of radioactive waste will be more and more of vital importance. High disposal costs and more stringent regulations in some countries, lower transportation costs, and the continuing liberalisation of trade facilitates shipments of radioactive wastes across national borders for disposal elsewhere.

### ***II. The European safety regime concerning transboundary movement of radioactive waste***

Radioactive material has traditionally been subject to separate regulation, on the basis of the Euratom Treaty, which was adopted in 1957 to raise the standard of living in the Member States and to

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14. See generally John H. Jackson, *The World Trading System*, p. 306-310.

15. Carlton Stoiber et. al., *Handbook on Nuclear Law*, p. 97 (Vienna 2003).

improve the development of commercial exchanges with other countries by creating the conditions necessary for the speedy establishment and growth of nuclear industries.<sup>16</sup>

In the past, radioactive waste was dealt with only incidentally in Directive 80/836/Euratom on safety standards for health protection against ionising radiation,<sup>17</sup> without there being legislation on transboundary shipments comparable to Directive 84/631/EEC.<sup>18</sup>

On 3 February 1992, the Council adopted Directive 92/3/Euratom on the supervision and control of shipments of radioactive waste between Member States and into and out of the Community,<sup>19</sup> whenever the quantities and concentration exceed certain levels. The Directive distinguishes between three types of shipments: those between Member States, those involving imports into and out of the European Community, and reshipment operations.<sup>20</sup> It defines the term “radioactive waste” as any material, which contains or is contaminated by radionuclides and for which no use is foreseen.<sup>21</sup> Based on Articles 31 and 32 Euratom Treaty (and thus formally still an instrument for the protection of the health of workers and the general public against the dangers arising from ionising radiation as well as a safety measure), the Directive provides for a notification procedure for radioactive waste shipments which require prior authorisation by all Member States concerned, but no written consent of third states of destination.<sup>22</sup> Third states have merely to be consulted by the authorities of the Member States of dispatch.<sup>23</sup> Shipments to ACP (African, Caribbean, Pacific) countries and Antarctica are prohibited,<sup>24</sup> as are shipments to third states, which do

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16. Treaty establishing the European Atomic Energy Community, 25 March 1957 [hereinafter Euratom Treaty], (<http://europa.eu.int/eur-lex>). The main provisions of the Euratom Treaty relating to the environment concern health and safety. It provides for basic standards to be laid down for the protection of the health of workers and the public arising from ionising radiation. Member States must adopt provisions to ensure compliance with these standards.
  17. O.J. 1980 No. L 246, 1, as amended by Directive 84/467/Euratom, O.J. 1984 No. L 265, 4. *See* also the not adopted Proposal for a Council Directive amending Directive 80/836/Euratom laying down the basic safety standards for the health protection of the general public and workers against the dangers of ionising radiation as regards prior authorisation of shipments of radioactive waste, O.J. 1990 No. C 210, 7.
  18. O.J. 1984 No. L 326, 31. This Directive on the supervision and control within the European Community of the transfrontier shipment of hazardous waste does not apply to radioactive waste. Additionally, Council Regulation (EEC) No. 259/93 of 1 February 1993 on the supervision and control of shipments of waste within, into and out of the European Community, O.J. 1993 No. L 30, 1, does not cover the shipment of radioactive waste either.
  19. O.J. 1992 No. L 35, 24. Annual production of all conditioned radioactive waste in the European Union is around 50,000m<sup>3</sup>.
  20. *See* Gorka Gallego, “Waste Legislation in the European Union”, 11 *European Environmental Law Review*, p. 8, at p. 12 (2002); Jean-Pierre Hannequart, *European Waste Law*, p. 284 (London 1998).
  21. Directive 92/3/Euratom, *supra*, Article 2.
  22. In respect of imports and exports from third states the Directive does not expressly require the prior informed consent (PIC) of third States before authorising the shipment. However, the Preamble makes clear that this is required, stating that to protect human health and the environment account must be taken of risks occurring outside the Community, and that accordingly “in the case of radioactive waste entering and/or leaving the Community the third country of destination or origin and any third country or countries of transit must be consulted and informed and must have given their consent.” *Id.* Preamble.
  23. *Id.* Article 12(1).
  24. *Id.* Article 11. Additionally, Article V of the 1959 Antarctic Treaty, which entered into force on 23 June 1961, prohibits the disposal of radioactive wastes in Antarctica.

not have the technical, legal or administrative resources to manage radioactive waste safely.<sup>25</sup> In addition, shipments to third countries are prohibited if the authority of dispatch believes that the waste will not be managed in an environmentally sound manner in the state of destination.<sup>26</sup> Finally, the Directive contains several provisions enabling Member States to whom waste is to be exported for processing to return the waste after treatment to its country of origin.

Radioactive waste may contain nuclear materials as defined by Commission Regulation (Euratom) No. 3227/76 of 19 October 1976 concerning the application of the provisions on Euratom safeguards<sup>27</sup> and the transport of such substances must be in accordance with the provisions of the Convention on the Physical Protection of Nuclear Material.<sup>28</sup>

### **III. The international safety regime concerning transboundary movement of radioactive waste**

In the last years, transboundary movement and import/export of hazardous waste in general, and radioactive waste in particular, has received great attention from the international community.<sup>29</sup> Therefore, several legal instruments exist in this specific regulatory area. The following provides a brief survey of the different existing legal instruments, focusing mainly on the trade aspects of the international safety regime.<sup>30</sup>

#### **1. The Basel Convention**

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention), which came into force in 1992, is a compromise between industrialised and developing countries.<sup>31</sup> The Convention puts the onus on exporting countries to ensure that hazardous waste is managed in an environmentally sound manner in the country of import.<sup>32</sup> The overall goal of the Basel Convention is to protect, through strict controls, human health

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25. Directive 92/3/Euratom, *supra*, Articles 11 and 14.

26. Important details necessary for the implementation of the Directive, like the uniform consignment note or the criteria for assessing environmentally sound treatment, are to be set up. *Id.* Article 20.

27. O.J. 1976 No. L 363, 1, as amended by Regulation (Euratom) No. 220/90, O.J. 1990 No. L 22, 56.

28. Signed at Vienna and at New York on 3 March 1980, entered into force on 23 September 2003, INFCIRC/274/Rev.1.

29. Chapter 22 of Agenda 21, adopted at the 1992 UN Conference on Environment and Development (“Rio Conference”), addresses the management of radioactive wastes, but has only one program area. Specific international co-operation is called for, *inter alia*, not to export radioactive wastes to countries that prohibit the import of such wastes [Para. 22(5)(d)]. See Bundesumweltministerium (Ed.), “Umweltpolitik: Agenda 21, Konferenz der Vereinten Nationen für Umwelt und Entwicklung im Juni 1992 in Rio de Janeiro, Dokumente”, p. 216, (Bonn 1997).

30. For a general discussion of radioactive waste management, see Carlton Stoiber et. al., *Handbook on Nuclear Law*, p. 97-103.

31. Adopted by the Conference of the Plenipotentiaries on 22 March 1989, entered into force on 5 May 1992; UNEP Doc. T/BSL/OOO; 1673 U.N.T.S. 28911, 28 *International Legal Materials*, 649 (1989) [hereinafter Basel Convention]. See also Council Decision 93/98/EEC of 1 February 1993 on the conclusion, on behalf of the Community, of the Convention on the control of transboundary movements of hazardous wastes and their disposal (Basel Convention), O.J. 1993 No. L 39, 1.

32. According to the definition in Article 2 No. 8 Basel Convention “environmentally sound management of hazardous wastes or other wastes” means taking all practicable steps to ensure that hazardous wastes or other wastes are managed in a manner which will protect human health and the environment against the adverse effects which may result from such wastes.

and the environment against the adverse effects that may result from the generation, transboundary movement and management of hazardous and other waste.<sup>33</sup> The cornerstone of the Convention is the principle of prior informed consent (PIC), which is required for any waste export.

Generally, the Basel Convention does not address radioactive waste.<sup>34</sup> Article 1(3) of the Convention states, “Wastes which, as a result of being radioactive, are subject to other international control systems, including international instruments, applying specifically to radioactive materials, are excluded from the scope of this convention.” According to this language, the Basel Convention does apply to radioactive waste until another “international control system” is developed to govern these materials.<sup>35</sup>

## 2. *The Hazardous Wastes Protocol*

The so-called 1996 Hazardous Wastes Protocol<sup>36</sup> to the Barcelona Convention<sup>37</sup> includes some provisions that are more protective than the general system established by the Basel Convention. Besides other hazardous waste, the Protocol also applies to radioactive waste and to hazardous substances that have been banned in the country of manufacture or export for human health or environmental reasons [Article 3].

The Parties to the Protocol shall take all appropriate measures to reduce to a minimum the transboundary movement of radioactive waste, and if possible to eliminate such movement in the Mediterranean. To achieve this goal, Parties have the right individually or collectively to ban the import of radioactive waste. Other Parties shall respect this sovereign decision and not permit the export of radioactive waste to states which have prohibited their import [Article 5(3)].

Additionally, the Protocol sets a ban on the import to non-OECD member countries, and the export and transit of hazardous and radioactive wastes from OECD member countries to non-OECD

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33. The Basel Convention defines “transboundary movement” as any movement of hazardous wastes or other wastes from an area under the national jurisdiction of one state to or through an area under the national jurisdiction of another state, or to or through an area not under the national jurisdiction of any state, provided at least two states are involved in the movement [Article 2(3)].
  34. See Carlton Stoiber et. al., *Handbook on Nuclear Law*, p. 94.
  35. The language of Article 1(3) would appear to mean that the Basel Convention would apply to radioactive wastes if no international arrangements covering these wastes were in place, and could therefore be included as “hazardous waste” and subject to the Convention. The report on the Basel Convention issued by U.S. Deputy Secretary of State Lawrence Eagleburger on 13 May 1991 contains the interesting comment that “[t]he Convention does not regulate movements of *low-level radioactive wastes* that are covered by other international control systems, such as the Code of Practice of the International Atomic Energy Agency (IAEA), to which the U.S. adheres ....”, reprinted in Marian Nash Leich, “Contemporary Practice of the United States Relating to International Law”, 85 *American Journal of International Law*, p. 674, 675 (1991) (emphasis added). See generally Barbara Kwiatkowska & Alfred Soons, “Plutonium Shipments – A Supplement”, 25 *Ocean Development and International Law*, p. 419 (1994).
  36. Protocol on the Prevention of Pollution of the Mediterranean Sea by Transboundary Movements of Hazardous Wastes and their Disposal (Hazardous Wastes Protocol), adopted in Izmir on 1 October 1996, not yet entered into force, ([www.unepmap.gr](http://www.unepmap.gr)).
  37. Convention for the Protection of the Mediterranean Sea against Pollution (Barcelona Convention), adopted on 16 February 1976, entered into force on 12 February 1978, amended on 10 June 1995, ([www.unepmap.gr](http://www.unepmap.gr)). See also Council Decision 77/585/EEC of 25 July 1977 concluding the Convention for the Protection of the Mediterranean Sea against Pollution and the Protocol for the Prevention of the Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft, O.J. 1977 No. L 240, 1.

member countries [Article 5(4)], thus protecting the developing countries of the region from becoming waste disposal sites for the developed ones.<sup>38</sup> Only in exceptional cases when radioactive waste cannot be disposed of in an environmentally sound manner in the country of origin, may transboundary movements of such waste be allowed [Article 6]. The Protocol also encourages the Parties to move towards clean production processes in order to eradicate the problem of radioactive waste generation and disposal.

### 3. *The Waigani Convention*

The 2001 Waigani Convention (Convention to Ban the Importation into Forum Island Countries of Hazardous and Radioactive Wastes and to Control the Transboundary Movement and Management of Hazardous Wastes within the South Pacific Region)<sup>39</sup> is a regional agreement according to Article 11 of the Basel Convention.<sup>40</sup> The Waigani Convention prohibits the importation of all radioactive wastes<sup>41</sup> into Pacific Island Developing Parties,<sup>42</sup> while at the same time recognising that the standards, procedures and authorities responsible for the environmentally sound management of radioactive wastes will differ from those in respect of hazardous wastes.

### 4. *The Bamako Convention*

Another useful source concerning radioactive wastes on a regional level is the 1991 Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa, for Member States of the Organization of African Unity (OAU).<sup>43</sup> This treaty explicitly applies to radioactive waste [Article 2(2) and Annex I]. All

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38. Unlike the Basel Convention, the Protocol has the advantage of banning the trade of radioactive waste between developed and developing countries, which saves the populations of these countries the danger of handling such lethal wastes.

39. Adopted on 16 September 1995, entered into force on 21 October 2001, ([www.sprep.org.ws](http://www.sprep.org.ws)). At the moment ten Parties have ratified this Convention: Australia, Cook Islands, Federated States of Micronesia, Kirribati, Papua New Guinea, Samoa, Solomon Island and Tuvalu.

40. The Basel Convention establishes a global control system for hazardous wastes being shipped from one country to another. States which are Parties to the Convention must not trade in hazardous wastes with non-Parties but an exception to this is provided for in Article 11 of the Basel Convention, whereby Parties may enter into bilateral, multilateral or regional agreements or arrangements either with other Parties or with non-Parties. These agreements or arrangements can also set out controls which are different from those prescribed by the Convention itself, provided such controls do not reduce the level of environmental protection intended by the Convention. *See*, for a further example, the Agreement on Transboundary Movements of Hazardous Wastes in the Central America, signed in Panama in December 1992 by six Central American countries.

41. The Convention defines “radioactive wastes” as wastes which, as a result of being radioactive, are subject to other international control systems, including international instruments, applying specifically to radioactive materials [Article 1]. Radioactive wastes are excluded from the scope of the Waigani Convention except as specifically provided for in Articles 4(1), 4(2), 4(3), and 4(5) of this Convention [Article 2(2)].

42. “Other Parties”, at the moment only Australia and New Zealand are obliged to ban the export of radioactive wastes to all Forum Island Countries [Article 4(1)(b)].

43. Adopted on 30 January 1991, entered into force on 22 April 1998; reprinted in 30 *International Legal Materials* 773 (1991). The objectives of the Convention are to protect human health and the environment from dangers posed by hazardous wastes by reducing their generation to a minimum in terms of quantity and/or hazard potential.

Contracting Parties shall take appropriate legal, administrative and other measures within their jurisdiction to prohibit the import of all radioactive waste, for any reason, into Africa from non-Contracting Parties. Such import shall be deemed illegal and a criminal act [Article 4(1)]. The Convention calls upon Parties “to adopt and implement the preventive, precautionary approach to pollution problems” [Article 4(3)(f)]. The state of export shall notify in writing the competent authority of the states concerned of any proposed transboundary movement of hazardous waste [Article 6(1)]. Such notification shall contain the declarations and information specified in Annex IVA of the Convention. The Convention also requires exporting states to “receive the written consent of the state of transit” before commencing a shipment (Article 6(4)). Additionally, the dumping of radioactive waste is prohibited [Article 4(2)].

#### 5. *The Lomé IV Convention*

Article 39 of the Lomé IV Convention prohibits the direct or indirect export of all hazardous and radioactive waste from the European Community to any African, Caribbean, Pacific (ACP) country, and applies within the framework of the Basel Convention.<sup>44</sup> At the same time the ACP states shall prohibit the direct or indirect import into their territory of radioactive waste from the European Community or from any other country, without prejudice to specific international undertakings to which the Contracting Parties have subscribed or may subscribe in the future within the competent international fora. The provisions do not apply to cases where an ACP country has chosen to export waste for processing to a member state after which the waste is returned to the ACP country of origin.

#### 6. *The IAEA Code of Practice*

Even though not legally binding, an important instrument on this topic is the Code of Practice on the International Transboundary Movement of Radioactive Waste, adopted in 1990 by consensus in an International Atomic Energy Agency (IAEA) General Conference resolution.<sup>45</sup> The Code defines “radioactive waste”<sup>46</sup> as any material that contains or is contaminated with radionuclides at concentrations or radioactivity levels greater than the “exempt quantities” established by the competent authorities and for which no use is foreseen.<sup>47</sup> Exempt quantities are levels below which the competent authority decides to exempt the material from regulatory requirements because the individual and collective dose equivalents received from them are so low that they are not significant for purposes of radiation protection. Such exempt quantities should be agreed upon by the authorities in the countries concerned with the international transboundary movement of radioactive waste.

Principle 3 states that “It is the sovereign right of every state to prohibit the movement of radioactive waste into, from or through its territory.” The Code calls on states to ensure that

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44. Lomé Convention, Fourth Revision, 15 December 1989, O.J. 1991 No. L 229, 3; reprinted in 29 *International Legal Materials*, 809 (1990).

45. IAEA, General Conference Resolution on Code of Practice on the International Transboundary Movement of Radioactive Waste, 21 September 1990, INFCIRC/386; reprinted in 30 *International Legal Materials* 556 (1991) [hereinafter IAEA Code of Practice].

46. *Id.* Annex I, Section II. Spent fuel which is not intended for disposal is not considered to be radioactive waste.

47. *Id.* Kwiatkowska & Soons, “Plutonium Shipments”, *supra*, at p. 421, point out that because of this language the 1992 plutonium shipment and the shipment of spent nuclear fuel from Japan to Europe for reprocessing do not fall directly under the IAEA Code. The Pacific Pintail’s shipment of vitrified glass blocks of high level wastes back to Japan would be covered by this Code because these wastes are “intended for disposal”.

transboundary movements are undertaken in a manner consistent with international safety standards (Principle 4). Principle 5 builds on this by stating that “Every state should take the appropriate steps necessary to ensure that, subject to the relevant norms of international law, the international transboundary movement of radioactive waste takes place only with the prior notification and consent of the sending, receiving and transit States in accordance with their respective laws and regulations.”

The IAEA Code of Practice affirms, with respect to transboundary movements of radioactive wastes, the general principles of the Basel Convention, including the central regime of prior notification and prior informed consent (PIC) that extend the scope of duties to notification, environmental impact assessment, and consultation with respect to transboundary movements, as these duties have evolved under existing customary law.

## 7. *The Joint Convention*

The first binding legal instrument to directly address the issue on a global scale was the 1997 Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (Joint Convention), which entered into force on 18 June 2001.<sup>48</sup> It is an international legal mechanism and framework for the harmonisation of national waste management practices and standards. The main mechanism for bringing this about is the review process contained in the Convention whereby Contracting Parties to the Convention are expected to report on their own progress towards complying with the articles of the Convention and to examine the progress made by the other Contracting Parties.<sup>49</sup>

The Joint Convention defines “radioactive waste” as radioactive material in gaseous, liquid or solid form for which no further use is foreseen by the Contracting Party or by a natural or legal person whose decision is accepted by the Contracting Party, and which is controlled as radioactive waste by a regulatory body under the legislative and regulatory framework of the Contracting Party.<sup>50</sup>

The Joint Convention applies to spent fuel and radioactive waste resulting from civilian nuclear reactors and applications, and to spent fuel and radioactive waste from military or defence programmes if and when such materials are transferred permanently to and managed within exclusively civilian programmes, or when declared as spent fuel or radioactive waste for the purpose of the Convention by the Contracting Party. The Convention also applies to planned and controlled releases into the environment of liquid or gaseous radioactive materials from regulated nuclear facilities.

The obligations of the Contracting Parties with respect to the safety of spent fuel and radioactive waste management are based to a large extent on the principles contained in the IAEA Safety fundamentals document “The Principles of Radioactive Waste Management”, published in 1995.<sup>51</sup>

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48. Adopted on 5 September 1997, entered into force on 18 June 2001, INFCIRC/546. See generally Wolfram Tonhauser & Odette Jankowitsch, “The Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management”, *Nuclear Law Bulletin* No. 60, p. 9 (December 1997); Odette Jankowitsch-Prevor, “The Need for a Binding International Safety Regime: The Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (The Joint Convention)”, February 2003, on file with author.

49. Joint Convention, *supra*, Chapter 6. As required by Article 30 of the Joint Convention, the first Review Meeting of Contracting Parties was held from 3 to 14 November 2003.

50. Joint Convention, *supra*, Article 2(c).

51. IAEA, Safety Series Doc. No. 111-F, Vienna 1995.

They include, in particular, the obligation to establish and maintain a legislative and regulatory framework to govern the safety of spent fuel and radioactive waste management and the obligation to ensure that individuals, society and the environment are adequately protected against radiological and other hazards, *inter alia*, by appropriate siting, design and construction of facilities and by making provisions for ensuring the safety of facilities both during their operation and after their closure. Also, Contracting Parties are obliged to take appropriate steps to ensure that disused sealed sources are managed safely.

The Joint Convention imposes obligations on Contracting Parties in relation to the transboundary movement of spent fuel and radioactive waste, mainly based on the concepts contained in the IAEA Code of Practice.<sup>52</sup> The Convention defines “transboundary movement” as any shipment of spent fuel or of radioactive waste from a state of origin to a state of destination.<sup>53</sup> Every state has the right to ban the import of foreign radioactive waste into its territory, and the export from its territory of radioactive waste generated there.<sup>54</sup> If a state decides to participate in the transboundary movement of radioactive waste, it must ensure that individuals, society and the environment are adequately protected from the potential hazards associated with such movement, now and in the future. In order to do so, the state should ensure that all relevant binding international instruments as well as the provisions of the Joint Convention, and particular those of its Article 27, are complied with. The latter requires, once again, prior notification and consent for radioactive waste shipments.<sup>55</sup>

### C. The Impact of the Safety Regime on the World Trade Regime

It is a common element of the above-described safety regime concerning radioactive waste that every state possesses the autonomous right to ban the import and export of radioactive waste. Such individual decisions at national level are obviously restrictions on international trade. Furthermore, it could be argued that the required prior consent for radioactive waste shipments is a trade barrier *per se*, independently of the individual application.

These trade restrictions are based upon the general safety and security principles of nuclear law,<sup>56</sup> past experience and future fears, especially concerning the exploitation of developing countries, notably in Africa.<sup>57</sup> They also reflect certain principles adopted at the 1992 UN Conference on

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52. See above.

53. Joint Convention, *supra*, Article 2(u).

54. Joint Convention, *supra*, Preamble (xii).

55. Joint Convention, *supra*, Article 27 provides as follows: “(i) a Contracting Party which is a State of origin shall take the appropriate steps to ensure that transboundary movement is authorised and takes place only with the prior notification and consent of the State of destination; ... (iii) a Contracting Party which is a State of destination shall consent to a transboundary movement only if it has the 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 this Convention; (iv) a Contracting Party which is a State of origin shall authorise 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.”

56. See generally Carlton Stoiber et. al., *Handbook on Nuclear Law*, p. 5-7.

57. So far, no case of illicit transfer and disposal of radioactive waste, a practice commonly called “dumping”, has been reported. Furthermore, the disposal of radioactive wastes into the oceans is prohibited in the meantime. Dumping of high-level radioactive wastes has never been allowed under the so-called London Dumping Convention [Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, adopted on 29 December 1972, entered into force on 30 August 1975, 11 *International Legal Materials*, 1294 (1972)]. Since 1983 a moratorium on the dumping of low-level

Environment and Development (“Rio Conference”), notably Principle 14 of the Rio Declaration, which provides that states should co-operate to prevent the movement of materials harmful to the environment and humans, and Principle 19, which requires prior notice to potentially affected states with regard to potentially harmful activities.<sup>58</sup> In addition, the use of the prior consent approach to allow for an initial assessment of the potential risks before an activity takes place is closely connected to the precautionary principle (Principle 15), a principle becoming more and more important in international law.<sup>59</sup> Therefore, the safety regime seems to be in total accordance with international environmental law.

But when a state takes a measure to restrict the import or export of goods, the international trade order comes into play and imposes a number of “disciplines” which should be analysed in the following sections. It would, however, be beyond the scope of this article to provide a detailed analysis of the complex WTO system and the relevant case law.

### ***I. The relevant WTO disciplines with respect to the safety regime***

The first question to address is which specific WTO provisions and disciplines are relevant for trade in radioactive waste. The fact that nuclear materials are included in tariff reduction schedules of GATT Parties clearly demonstrates that, as such, the GATT is applicable to all goods including nuclear goods. Therefore, nuclear goods (nuclear materials and nuclear equipment) are not excluded *per se* from its application.<sup>60</sup>

Application of the core disciplines of GATT requires that radioactive waste can be defined as a “product” (or “good”). The problem is that there is no precise definition of “product” in the context of the GATT, and the question of whether or not waste is a product has yet to be answered conclusively. Previous discussions in the GATT Working Group on the Export of Domestically Prohibited Goods and other Hazardous Substances defined waste as being distinct from products, but the work of this group was never completed or adopted.<sup>61</sup>

Usually, “products” are defined as objects that have a positive economic value or as materials that are potential subjects of a business transaction. Since radioactive waste fulfils this prerequisite, it

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radioactive wastes has been in place; the legally binding prohibition of the dumping of all radioactive wastes entered into force on 20 February 1994.

58. Rio Declaration on Environment and Development, adopted at the UN Conference on Environment and Development (UNCED), 3-14 June 1992, reprinted in 31 *International Legal Materials*, 874 (1992). See generally Ulrich Beyerlin, *Umweltvölkerrecht*, p. 19 (München 2000).
59. The specific content of the precautionary principle is, however, still controversial. See generally Harald Hohmann, *Precautionary Legal Duties and Principles of Modern International Environmental Law*, London 1994; David Freestone & Ellen Hey (Eds.), *The Precautionary Principle and International Law: The Challenge of Implementation*, The Hague 1996; Primosch, “Das Vorsorgeprinzip im internationalen Umweltrecht”, 51 *Zeitschrift für öffentliches Recht*, p. 227 (1996). The further analysis will not examine the relevance of the precautionary principle in nuclear and WTO law.
60. See generally Report, “Nuclear Trade in a World of Increasing Globalisation”, Working Group III (Nuclear Trade) of the International Nuclear Law Association (INLA) to the “Nuclear Inter Jura 1999”, Congress held in Washington D.C. on 24-29 October 1999, on file with author.
61. See Report by the Chairman of the GATT Working Group on the Export of Domestically Prohibited Goods and other Hazardous Substances, GATT Doc. L/6872 (1991).

can be assumed that waste is a product according to the GATT.<sup>62</sup> If waste management and disposal or recovery of waste is considered a service, then the provisions of the safety regime would not fall under the disciplines of the GATT, but of the GATS.<sup>63</sup> Therefore, both WTO agreements will be examined in the following section.<sup>64</sup>

## **II. Compatibility with the GATT**

### **1. Violation of GATT principles**

As the import or export of radioactive waste depends on the permission of the country to which or from which the waste will be shipped, an infringement of Article I:1 GATT must be assumed. Moreover, the trade restrictions, which are mandated under the Joint Convention, violate the quantitative restrictions principle of Article XI:1 GATT.

It could be assumed that the trade restrictions are inconsistent also with Article III:4 GATT. However, it can be argued that the import restrictions do not have the quality of internal measures, but are only aimed at the prohibition of the import. Thus, according to the exclusive relation between

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62. This is in line with the ruling of the European Court of Justice (ECJ) in the co-called “Wallonian Waste case”, which had defined waste as a “good” within the meaning of EC rules on free movement of goods [Article 28 of the EC Treaty]. See *Commission v. Belgium*, Case C-2/90, 9 July 1992, reprinted in 1 *Common Market Law Reports*, p. 365 (1993). Belgium had argued in this case that “waste” cannot be considered “goods” because it has no commercial value.

63. The question of whether GATT or GATS would apply to certain types of nuclear trade is not problematic for trade in, for example, uranium or nuclear equipment (goods), or in design and engineering work (services). However, for some nuclear fuel cycle services the distinction may be more difficult to establish. While uranium conversion might be considered as the supply of a service, this does not necessarily mean that the resulting movement of materials is only covered by GATS and not by GATT. Although GATS allows for a service to be provided in one country to a consumer in another country, GATT would seem to apply to transactions involving the physical movement of goods across borders. It could also be considered that a substantial transformation had taken place, meaning that a new good had been produced. However, there are as yet no uniform criteria by which substantial transformation is defined. These questions are as yet unresolved. See Report, “Nuclear Trade in a World of Increasing Globalisation”, *supra*. In addition, the WTO Appellate Body stated that certain situations can be regulated by GATT and GATS at the same time and that the GATS has not superseded the GATT. See WTO, “Canada – Certain Measures Concerning Periodicals”, Report of the Appellate Body, 30 June 1997, WT/DS31/AB/R, para. 19.

64. Import and export bans are only one regulatory instrument for managing the safe storage and disposal of radioactive materials. Inasmuch as a broader regulatory framework will involve standards-related restrictions on the transboundary movement of radioactive wastes, the provisions of the so-called TBT Agreement of the WTO, which is wide-ranging and covers all kinds of technical regulations, standards, and conformity assessment procedures, will apply too. See WTO Agreement of Technical Barriers to Trade, 15 April 1994, WTO Agreement, Annex 1A, 33 *International Legal Materials*, 1125, 1154 (1994), reprinted in *WTO, The Results of the Uruguay Round*, p. 121-42; O.J. 1994 No. L 336, 86. The TBT Agreement recognises that countries have the right to establish protection, at levels they consider appropriate, for example for human, animal or plant life or health or the environment, and should not be prevented from taking measures necessary to ensure that those levels of protection are met. The agreement therefore encourages countries to use international standards where these are appropriate, but it does not require them to change their levels of protection as a result of standardisation. See generally Rex J. Zedalis, “The Environment and the Technical Barriers to Trade Agreement: Did the Reformulated Gasoline Panel Miss a Golden Opportunity?”, 44 *Netherlands International Law Review*, p. 186 (1997).

Article III:4 and Article XI:1 GATT,<sup>65</sup> only Article XI:1 GATT is applicable. Export restrictions fall exclusively under Article XI:1 GATT.

## 2. *Exceptions to the GATT*

The GATT contains limited and conditional exceptions (“escape clauses”) to all GATT obligations which Contracting Parties may apply in special circumstances, two of which could be relevant to nuclear trade: The national security exception in Article XXI GATT and the so-called “environmental exceptions” in Article XX (b) and (g) GATT.

### a) National security exception (Article XXI GATT)

Article XXI GATT, a sometimes forgotten but highly significant provision, allows governments to take actions in the name of national security.<sup>66</sup> Article XXI GATT provides as follows: “Nothing in this Agreement shall be construed... (b) to prevent any Contracting Party from taking any action which it considers necessary for the protection of its essential security interests: (i) relating to fissionable materials or the materials from which they are derived; (ii) relating to the traffic in arms, ammunition and implements of war and to such traffic in other goods and materials as is carried on directly or indirectly for the purpose of supplying a military establishment; (iii) in time of war or other emergency in international relations.”

When governments first negotiated the GATT in 1947, they insisted that the treaty include a “national security exception” allowing them to control the means to protect themselves from internal and external threats to their sovereignty. Today this security exception is part of the WTO,<sup>67</sup> the North American Free Trade Agreement (NAFTA)<sup>68</sup> and other international trade agreements. It provides a blanket exception (“catch-all clause”) for any reason related to national security. Article XXI is the most powerful exception in the GATT (or even the whole WTO system) because it permits governments to define for themselves their “essential security interests”, and to protect what they want by couching it in these terms. Even if the WTO has authority to *interpret* the national security exception contained in Article XXI of the GATT, the Member States retain authority to *define*

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65. GATT, “Canada - Administration of the Foreign Investment Review Act”, Panel Report, L/5504, adopted on 7 February 1984, paragraph 5.14: “The Panel shares the view of Canada that the General Agreement distinguishes between measures affecting the ‘importation’ of products, which are regulated in Article XI:1, and those affecting ‘imported products’, which are dealt with in Article III. If Article XI:1 were interpreted broadly to cover also internal requirements, Article III would be partly superfluous. Moreover, the exceptions to Article XI:1, in particular those contained in Article XI:2, would also apply to internal requirements restricting imports, which would be contrary to the basic aim of Article III”.

66. See generally John H. Jackson, *World Trade and the Law of GATT*, p. 748-752 (Indianapolis 1969); John H. Jackson, *The World Trading System*, p. 229-232.

67. Another security exception in the WTO system could be found in Article XXIII:1 of the WTO Agreement on Government Procurement, 15 April 1994, WTO Agreement, Annex 4, reprinted in O.J. 1994 No. L 336, 273.

68. The NAFTA is a trilateral trade agreement between the United States, Canada, and Mexico which came into force on 1 January 1994, 32 *International Legal Materials* 289 and 605 (1993), ([www.nafta-sec-alena.org](http://www.nafta-sec-alena.org)). See Articles 607 and 2102.

important elements of the exception including “national security”, “necessity” and “essential interests”.<sup>69</sup>

Article XXI of the GATT has been interpreted in the past as being a general “nuclear exception”.<sup>70</sup> Although it now appears that the GATT applies in principle to nuclear materials and equipment, as discussed above, the exception clause could still apply if countries chose to invoke its provisions. By virtue of the specific nuclear provision of Article XXI (b)(i) GATT, a certain degree of specificity is clearly recognised to nuclear trade, but the exact extent of this exception has never been clarified by case law or additional agreements.<sup>71</sup>

In one case a complaint was considered against the so-called Canadian “upgrading policy”. This policy was an export restriction under which Canadian uranium concentrates could only be exported if they had been “upgraded” as far as possible in Canada (in practice a conversion of concentrates into natural uranium hexafluoride). As a negotiated outcome was reached, no decision had to be taken on the question whether Article XXI (b)(i) GATT could be invoked to exempt this export restriction.

An implicit hint could be found to the nuclear exception in a document of the WTO Trade Policy Review Body reviewing Brazil’s trade policies, which briefly mentioned the issue of prior import licensing for nuclear substances.<sup>72</sup> The Brazilian representative merely noted that these procedures were consistent with the WTO rules on nuclear materials. There is no trace of any further discussion of the issue.

Due to the use of the security exception, in particular Article XXI (b)(iii) GATT, by the United States to impose a trade embargo against Nicaragua during the civil war in Nicaragua in the 1980s,<sup>73</sup> changes to the wording of Article XXI GATT were proposed during the Uruguay Round by Nicaragua with the support of other countries, in order to limit the discretion of the country invoking such an exception.<sup>74</sup> As other delegations were of the opinion that only the country imposing a restriction

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69. Hannes L. Schloemann & Stefan Ohlhoff, “‘Constitutionalization’ and Dispute Settlement in the WTO: National Security as an Issue of Competence”, 93 *American Journal of International Law*, p. 422, at p. 426-427 (1999).

70. See generally Report, “Nuclear Trade in a World of Increasing Globalisation”, *supra*.

71. Since the late 1940s, this national security exception has only been officially invoked a few times because, typically, countries have been very reluctant to challenge each other in this realm. In general, the GATT approach was to defer almost completely to the judgment of an invoking Contracting Party. See John H. Jackson, *The World Trading System*, p. 230-231. In 1996, for instance, the European Union complained to the WTO that the Cuban Liberty and Democratic Solidarity (Libertad) Act of 1996, widely known as the Helms-Burton Act, under which the United States can punish third party companies trading with Cuba, violates WTO agreements. After U.S. officials indicated they might invoke the security exception, the issue was finally resolved outside the WTO. See WTO, “United States – The Cuban Liberty And Democratic Solidarity Act”, 24 April 1998, WT/DS38/6.

72. WTO, Trade Policy Review Body, Doc. PRESS/TPRB/47 of 1 November 1996.

73. A GATT Panel Report ruled that the U.S. embargo did not constitute a violation of GATT. The Panel, however, noted that its mandate did not allow it to rule on whether the embargo was consistent with GATT law. See John H. Jackson, *The World Trading System*, p. 231-232.

74. GATT Doc. MTN.GNG/NG7/W/34 of 12 November 1987; MTN/GNG/NG7/W/44 of 10 February 1988; MTG.GNG/NG7/W/48 of 29 June 1988.

could judge its security interests, no consensus was reached and the wording of Article XXI GATT remained unaffected.<sup>75</sup>

At least three possible interpretations can be envisaged for the “nuclear exception”. The exception could be limited to trade restrictions (essentially export restrictions) linked to nuclear non-proliferation and nuclear safeguards. It would allow the prohibition of exports of nuclear materials to countries without a full scope safeguards regime.<sup>76</sup> Obviously, such trade restrictions are covered by the exceptions of Article XXI(b) GATT, both under (i) as nuclear materials are concerned, and under (ii) as these materials can be used for weapon production. A somewhat broader interpretation could be to include also trade restrictions to ensure security of supply, as e.g. the Euratom Supply Agency’s policy of diversification of supply sources. Finally an interpretation could be to admit, on the basis of the security exception for nuclear items, trade restrictions to defend a country’s nuclear industry against injury or to preserve its viability. The language of Article XXI GATT appears to leave a broad margin of discretion for the party invoking that provision for the three exceptions (nuclear exception, military exception, and emergency exception) because it allows measures “... which it considers necessary ... .” The failure of the attempt during the Uruguay Round to limit such a margin clearly supports the interpretation that this margin of discretion is very broad. Therefore, the two broader interpretations can be defended. Furthermore, the limitation of the exception under (i) to nuclear non-proliferation only (first possible interpretation) is problematic because the provision could be redundant as also the exception under (ii) also clearly applies to non-proliferation of weapons. Therefore, in order to allow Article XXI (b)(i) GATT to have its own meaning, also other “essential security interests” can justify trade restrictions in the nuclear field. As an example, the Euratom Treaty clearly considers “security of supply” as one of its essential interests, because this aim is set-out as one of the general tasks of the Community in Article 2: “The Community shall, ... (d) ensure that all users in the Community receive regular and equitable supply of ores and nuclear fuels.”

The national security exception, however, if given a broad interpretation could undermine the whole WTO system, and impair the security and stability of the world trading system for which the WTO has been created. On the other hand, national security is obviously extremely important to all nations, and an international organisation disregarding the importance of this subject and overriding national concerns and policy conclusions relating to it could lead powerful trading nations to ignore or disregard its rules. A key interpretation question for the national security exception is whether this exception permits a WTO Member to decide for itself, to “auto-determine”, whether the criteria for invoking the exception exist. If the answer is yes, then arguably a government need only invoke the exception to end a proceeding against it, no matter what the underlying facts of the case are.

To sum up, it is likely that the trade restrictions of the nuclear safety regime could be successfully justified under Article XXI GATT. However, due to the powerful implications of the use of this broad tool, states will most likely resort to Article XXI GATT only if no other, more precisely tailored exceptions, such as Article XX GATT do not prevail. As there is no relevant WTO case law in this area, some uncertainty still exists.

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75. Terence P. Stewart, *The GATT Uruguay Round, A Negotiating History* (1986-1992), Vol. II, 1877-1878 (Deventer 1993).

76. The IAEA Guidelines for Nuclear Transfers, INFCIRC 254, prevents exports to countries which have no full scope safeguards regime.

b) “Environmental exceptions” (Article XX GATT)

Taking into account the sovereign right of states to adopt national risk policies, Article XX GATT exempts those policies from GATT disciplines if they meet a number of conditions. Article XX is constructed as a general exception to the trade disciplines and especially to the prohibition of quantitative restrictions and non-discrimination rules. It contains a list of policy objectives that states may legitimately pursue even if the attendant measures cause trade restrictions and normally would be inconsistent with GATT.<sup>77</sup>

An analysis will first determine whether the application of a national measure falls under one of the policy exceptions listed in letters (a) to (j) of Article XX GATT. Secondly, it will examine the specific measure, as applied, under the “chapeau” of Article XX GATT.

i) *Article XX (b) GATT*

Under Article XX (b) GATT a trade-restricting measure is justified if it is “necessary to protect human, animal, or plant life and health.”<sup>78</sup> While many environmental protection measures can be subsumed under this provision, there will also be many measures falling outside the proper scope of this exception.<sup>79</sup>

Former GATT Panels have interpreted the language of Article XX (b) GATT in a number of decisions rather narrowly.<sup>80</sup> A crucial issue of its application is the question of necessity. Based on the ordinary meaning of the word “necessary”, a GATT Panel reasoned that “[A] contracting party cannot justify a measure inconsistent with other GATT provisions as ‘necessary’ ... *if an alternative measure which could reasonably be expected to employ and which is not inconsistent with other GATT provisions is available to it.* By the same token, in cases where a measure consistent with other GATT provisions is not reasonably available, a contracting party is bound to use, among the measures reasonably available to it, that which entails the least degree of inconsistency with other GATT provisions.”<sup>81</sup>

The trade restrictions of the nuclear safety regime could be justified under Article XX (b) GATT: Given the detrimental effects of radioactive wastes, the misuses of international trade as well

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77. See generally Steve Charnovitz, “Exploring the Environmental Exceptions in GATT Article XX”, 25 *Journal of World Trade*, p. 37 (1991); Jan Klabbbers, “Jurisprudence in International Trade Law: Article XX of GATT”, 26 *Journal of World Trade*, p. 63 (1992).

78. Compare similar provisions in Article 27(2) WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), 15 April 1994, WTO Agreement, Annex 1C, reprinted in O.J. 1994 No. L 336, 214, and Article XXIII:2 WTO Agreement on Government Procurement, 15 April 1994, WTO Agreement, Annex 4, reprinted in O.J. 1994 No. L 336, 273. The word “environment” is not mentioned in one of these exceptions.

79. Article XX (b) GATT was, for the first time in GATT/WTO history, invoked successfully in the WTO case “European Communities – Measures Affecting Asbestos and Asbestos-Containing Products”, Report of the Appellate Body, 12 March 2001, WT/DS135/AB/R, paragraph 157.

80. See WTO, Committee on Trade and Environment, GATT/WTO Dispute Settlement practice relating to Article XX, paragraphs (b), (d), and (g) of GATT, 26 October 1998, WT/CTE/W/53/Rev.1.

81. GATT, “United States - Section 337 of the Tariff Act of 1930”, Report of the Panel, 16 January 1989, GATT Doc. L/6439, adopted on 7 November 1989, BISD 36S/345, paragraph 5.26; see also GATT, “Thailand – Restrictions on Importation of and Internal Taxes on Cigarettes”, Report of the Panel, 5 October 1990, GATT Doc. DS10/R, adopted on 7 November 1990, BISD 37S/200, paragraph 74.

as the risks involved in the transport and transboundary disposal of waste, the restrictions of radioactive waste shipments to countries which are not able to deal with these substances in an appropriate manner can be considered as measures that protect human, animal and plant life and health. It seems conceivable that less trade-restrictive measures than an import/export ban would be available, such as the transfer of environmentally sound technology accompanying radioactive waste to certain importing states that cannot properly manage waste. On the other hand, given the broad international support of the safety regime it is possible that the trade-restrictive measures could be deemed “necessary” to achieve the objectives of the safety regime.

ii) *Article XX (g) GATT*

Article XX (g) GATT allows the adoption of measures “relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption.” It does not contain a “necessity” requirement, which would be difficult to fulfill in practice.<sup>82</sup>

It is questionable whether the trade restrictions of the safety regime could also be justified under Article XX(g) GATT. An argument can be made that one effect of the trade restrictions is to protect groundwater, soil or air which can be contaminated by leaking landfills or other improper radioactive waste facilities. However, there seem to be two reasons that Article XX (g) GATT cannot be applied in these cases. First, the primary aim of the safety regime is to protect human health and the environment,<sup>83</sup> but not in particular the conservation of exhaustible natural resources. Contamination caused by landfills may pose a significant risk, but normally not to the existence of exhaustible natural resources. Nevertheless, the protection of groundwater, soil or air cannot be excluded *per se* from the objectives of the safety regime. Second, the trade restrictions normally have no connection with restrictions on domestic production and consumption therefore it is unclear whether there is a sufficient relation to the conservation of groundwater, soil or air.

iii) *“Chapeau” of Article XX GATT*

The introductory clause, the so-called “chapeau”, of Article XX GATT reads as follows: “Subject to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade, nothing in this Agreement shall be construed to prevent the adoption or enforcement by any contracting party of measures...”<sup>84</sup>

According to the Appellate Body of the WTO, the historical function of the “chapeau” is generally the prevention of the abuse of the exceptions in subsections (a) to (h) of Article XX GATT,

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82. For a detailed interpretation of Article XX (g) GATT see WTO, “United States - Import Prohibition of Certain Shrimp and Shrimp Products”, Report of the Appellate Body, 12 October 1998, WT/DS58/AB/R, paragraph 111; Geert van Calster, “The WTO Appellate Body in Shrimp/Turtle: Picking up the Pieces”, 8 *European Environmental Law Review*, p. 111 (1999).

83. See, e.g., Joint Convention, *supra*, Article 1(i).

84. Comp. “WTO, United States - Standards for Reformulated and Conventional Gasoline”, Report of the Appellate Body, 29 April 1996, WT/DS2/AB/R, p. 24: “‘Arbitrary discrimination’, ‘unjustifiable discrimination’ and ‘disguised restriction’ on international trade may, accordingly, be read side-by-side; they impart meaning to one another. It is clear to us that ‘disguised restriction’ includes disguised discrimination in international trade.”

and to strike a balance between the rights and obligations of Members to invoke one of the exceptions and the trade rights of other Members.<sup>85</sup>

Concerning the safety regime, even a discriminatory import/export ban may be upheld if the discrimination is not “arbitrary or unjustifiable”. It could be argued that a measure that is implemented according to a multilateral agreement ratified by a large number of states cannot be described in this way;<sup>86</sup> in such cases it can be ruled out that the measure was implemented for the protection of the domestic economy or other unfair reasons. A ban that distinguishes between countries could arguably at least, pass this “soft” discrimination test because of the very different conditions in each country.

### **III. Compatibility with the GATS**

#### *1. Violation of GATS principles*

It could be assumed that the disposal or the recovery of radioactive waste is a service within the meaning of Article I:2(b) GATS. The trade restrictions discriminate against disposal or recovery services in the excluded countries and, thus, violate the MFN principle as stipulated in Article II GATS. Further, export bans accord advantages to national services in comparison to foreign disposal or recycling services. Therefore, these prohibitions may present a breach of the principles of market access in Article XVI GATS and the National Treatment principle in Article XVII GATS depending on the schedule for each member state. Since Article I:3(b) GATS excludes services supplied in the exercise of governmental authority, countries which pursue the waste related services in governmental or quasi-governmental authority, would not be affected under the GATS.

#### *2. Exceptions to the GATS*

##### *a) Security exceptions (Article XIV bis GATS)*

In connection with nuclear trade, Article XIV bis of GATS provides that: “Nothing in this Agreement shall be construed... (b) to prevent any Member from taking any action which it considers necessary for the protection of its essential security interests; and (ii) relating to fissionable and fusionable materials or the materials from which they are derived; ....” Since the wording of this clause is virtually identical to that of Article XXI of GATT, the interpretation of this provision can be expected to be similar.

##### *b) “Environmental exceptions” (Article XIV GATS)*

The GATS includes an environmental exception in Article XIV (b), which is similar to that in Article XX (b) GATT.<sup>87</sup> Therefore, the trade restrictions could be justified under Article XIV (b) GATS in the same way. However, Article XIV GATS lacks a provision that justifies measures relating to the conservation of exhaustible natural resources, in contrast to Article XX (g) GATT. Thus, the Ministerial Decision on Trade in Services and the Environment of 1994<sup>88</sup> notes that it is not clear

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85. *Id.* p. 22.

86. Several WTO cases reiterated the preference for multilateral solutions to environmental problems over unilateral measures. This approach complements the WTO’s work in seeking internationally agreed solutions for trade problems. In other words, using the provisions of an international (environmental) agreement is better than one country trying on its own to change other countries’ environmental policies.

87. See above.

88. See *WTO, The Results of the Uruguay Round*, p. 401.

whether the existing exception in Article XIV (b) GATS is sufficient to protect environmental interests while recognising that environmental measures may conflict with GATS.<sup>89</sup>

#### **IV. How likely is a WTO challenge to the safety regime?**

The question of the compatibility between the safety regime concerning radioactive waste and the WTO will only be answered finally if and when a dispute regarding national action under any of the trade restrictive provisions, *e.g.*, Article 27 of the Joint Convention, is actually brought to the WTO for adjudication.<sup>90</sup> The members of the safety regime should be mindful that a dispute might be resolved under the dispute settlement system of the WTO if a conflict arises.<sup>91</sup> Thus the strength of the safety regime will need to be assessed not in a nuclear or an environmental, but rather in a trade context.

A central aspect to a possible response by the WTO dispute settlement organs is whether or not there is broad support in the international community for the protective measures at hand.<sup>92</sup> In the case of the trade restrictive provisions contained in the safety regime, it seems unlikely that any country would bring a challenge to the WTO, at least in the short run. There exists strong political pressure not to challenge a protective measure based on an international agreement for the protection of human health or the environment, or at least not to be the first country to do so. A challenge brought to the WTO because of the trade implications of the safety regime would set an undesirable precedent.

But a WTO dispute settlement request remains at least a realistic possibility. Conflicts might arise, for instance, from countries considering an import/export ban unreasonable or beyond the scope of the exceptions provided under GATT or GATS. Drawing upon both customary international law, as recognised in the Vienna Convention on the Law of Treaties<sup>93</sup> and general principles of interpreting conflicting treaties, these potential conflict scenarios are quite difficult to analyse.<sup>94</sup> Due to the fact that the Joint Convention was signed after the WTO Agreement, and is more specifically related to radioactive waste management, the argument could be made that the Joint Convention would prevail

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89. The WTO Committee of Trade and Environment (CTE) has been asked to examine this relationship in the future. With its broad-based mandate, the CTE has contributed to bringing environmental and sustainable development issues into the mainstream of WTO's work.

90. The argument could be made that the WTO is not the appropriate forum for resolving such conflicts. However, in light of the inefficiency of the WTO dispute settlement mechanism, claims in this forum seem highly unlikely.

91. Generally, each country's status in each agreement determines which agreement to use in the event of a dispute. In the event of a dispute between Members of both the WTO and, *e.g.*, the Joint Convention, the dispute could be resolved through the dispute resolution procedure of the Joint Convention (Article 38). In contrast, a dispute between a WTO Member and Party to the Joint Convention, with a non-Party to the Joint Convention, the dispute will be resolved through the DSU of the WTO. This could weaken the role that the Joint Convention might play in international law. Only a very limited number of the 146 WTO Members are also Parties to the Joint Convention, which has been ratified by 33 countries so far.

92. Should a Party ban imports of radioactive waste pursuant to the Joint Convention, then, as between Convention Parties, there is no "conflict" because it could be argued that they have waived their WTO rights on this question, and it would seem highly unlikely that a Party would raise a complaint against another Party which was fulfilling its Convention commitments.

93. Adopted on 23 May 1969, 1155 U.N.T.S. 331, 8 *International Legal Materials*, p. 679.

94. The DSU stipulates that customary rules of interpretation of public international law have to be applied by clarifying the existing provisions of the WTO agreements [Article 3(2)].

in the event of any inconsistency between the agreements, though every attempt would be made to read the agreements as mutually supportive.

In the long run, a mixture of market forces, political pressure (especially in industrialised countries) as well as consumer confidence in the capacity of public authorities to ensure that radioactive waste management is safe will likely determine whether the safety regime establishes a workable and successful global protection that strikes the right balance between public health and environmental interests and fair international trade.

#### V. *Prior notification in other international agreements*

It should be noted that similar procedures to the prior notification and consent requirements of the safety regime, such as the one established Article 27(1) of the Joint Convention, are also incorporated into other international agreements that relate to transboundary movements of particular types of hazardous substances and materials. First, the above-mentioned Basel Convention requires prior notification and informed consent of the receiving country as a pre-condition for authorising international waste shipments.<sup>95</sup>

Second, the “PIC Convention” (Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade)<sup>96</sup> establishes a prior informed consent regime for banned or restricted chemical products and hazardous pesticide formulations that may cause health or environmental problems. The international shipment of these products would be barred without the prior notice and explicit consent of a designated national authority in the destination country.<sup>97</sup>

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95. Basel Convention, *supra*, Articles 4 and 6. Consent is also required from transit States. Furthermore, the Convention provides that Parties must prohibit the export of the waste whenever there is reason to believe that it will not be managed in an environmentally sound manner.

96. Adopted on 10 September 1998, entered into force on 24 February 2004, UN Doc. UNEP/FAO/PIC/CONF.2; 38 *International Legal Materials*, p. 1 (1999) [hereinafter PIC Convention]. Toxic pesticides and other hazardous chemicals kill or seriously sicken thousands of people every year. They also poison the natural environment and damage many wild animal species. Governments started to address this problem in the 1980s by establishing a voluntary prior informed consent (PIC) procedure. PIC required exporters trading in a list of hazardous substances to obtain the prior informed consent of importers before proceeding with the trade. In 1998, governments decided to strengthen the procedure by adopting the PIC Convention, which makes the PIC procedure legally binding. For the negotiation history of the PIC Convention, see Katharina Kummer, “Prior Informed Consent for Chemicals in International Trade: The 1998 Rotterdam Convention”, 8 *Review of European Community & International Environmental Law*, 322, 323 (1999); Jennifer Ross, “Legally Binding Prior Informed Consent”, 10 *Colorado Journal of International Environmental Law and Policy*, p. 499 (1999); Nancy Zahedi, “Implementing the Rotterdam Convention: The Challenges of Transforming Aspirational Goals into Effective Controls on Hazardous Pesticide Exports to Developing Countries”, 11 *Georgetown International Environmental Law Review*, p. 707 (1999).

97. PIC Convention, *supra*, Articles 10-12. The PIC Convention establishes a first line of defence by giving importing countries the tools and information they need to identify potential hazards and exclude chemicals they cannot manage safely. If a country agrees to import chemicals, the PIC Convention promotes their safe use through labelling standards, technical assistance, and other forms of support. It also ensures that exporters comply with the requirements.

Finally, this “PIC approach” is used once again in a similar way by the new Cartagena Protocol on Biosafety (Biosafety Protocol) to the UN Convention on Biological Diversity (CBD),<sup>98</sup> which recently entered into force.<sup>99</sup> The Biosafety Protocol seeks to promote the “safe transfer, handling and use of living modified organisms (LMOs) resulting from modern biotechnology that may have adverse effects on the conservation and sustainable use of biological diversity, taking into account risks to human health.”<sup>100</sup> Pursuant to the mandate for the protocol negotiations (Article 19(3) CBD), the control of transboundary movements of LMOs relies on a procedure called the advanced informed agreement (AIA).<sup>101</sup> The AIA procedure is preventive; it aims at controlling the movement of certain goods and materials *before* the export actually takes place. Thus, under the AIA procedure, intended transboundary movements of LMOs have to be notified to the importing party in advance and may only proceed after that state has given its explicit consent. The AIA procedure is very much in line with the PIC procedures established under the Basel and the PIC Convention. In the case of the Biosafety Protocol, however, more detailed rules for the procedure are provided, including specific time frames, the option for import Parties to rely on domestic legislation, and the explicit exclusion of implicit consent.<sup>102</sup>

In sum, the prior consent obligation of the safety regime is not a unique mechanism of nuclear law. Rather it seems to be a “well-established” concept in international environmental law to control different kinds of transboundary risks. Nevertheless, so far the prior consent obligation in the various international agreements has never been challenged by the WTO.

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98. Adopted on 5 June 1992, entered into force on 29 December 1993, 31 *International Legal Materials*, p. 818 (1992), O.J. 1993 No. L 309, 1.

99. Adopted on 29 January 2000, entered into force on 23 September 2003, [www.biodiv.org/doc/legal/cartagena-protocol-en.pdf](http://www.biodiv.org/doc/legal/cartagena-protocol-en.pdf) [hereinafter Biosafety Protocol]. See generally Barbara Eggers & Ruth Mackenzie, “The Cartagena Protocol on Biosafety”, 3 *Journal of International Economic Law*, p. 525 (2000); Karen M. Graziano, “Biosafety Protocol: Recommendations to Ensure the Safety of the Environment”, 7 *Colorado Journal of International Environmental Law and Policy*, p. 179 (1996); Paul E. Hagen & John Barlow Weiner, “The Cartagena Protocol on Biosafety: New Rules for International Trade in Living Modified Organisms”, 12 *Georgetown International Environmental Law Review*, p. 697 (2000); Arthur Steinmann & Lutz Strack, “Die Verabschiedung des ‘Biosafety-Protokolls’ – Handelsregelungen im Umweltgewand?”, 7 *Natur und Recht*, p. 367 (2000).

100. Biosafety Protocol, *supra*, Article 1.

101. *Id.* Article 7. See generally Barbara Eggers, “International Biosafety: Novel Regulations for a Novel Technology”, 6 *Review of European Community & International Environmental Law*, p. 68, 70 (1997).

102. In the Basel and the PIC Conventions, a clear-cut prohibition of exports is provided for in cases where consent by the import State is pending or has been denied. In addition, in the Basel Convention, export States accepted an obligation to take back materials moved “illegally” (that is, without the prior consent of the importing State) or to arrange for their destruction. The Biosafety Protocol contains a similar “take back” duty but refrains from stating an unequivocal prohibition of export. Instead, it adopts a less strict approach by requiring States to “adopt appropriate domestic measures aimed at preventing and, if appropriate, penalising transboundary movements of living modified organisms carried out in contravention of its domestic measures to implement this Protocol” [Article 25(1)]. At the same time, an innovative type of “enforcement” is introduced by Article 25(3), which requires that “each Party shall make available to the Biosafety Clearing-House information concerning cases of illegal transboundary movements pertaining to it.”

## VI. *The nuclear safety regime – just another case of “trade and environment”?*

The aim of the safety regime concerning radioactive waste is, *inter alia*, the protection of the environment.<sup>103</sup> Therefore, it could be argued that at least the legally binding instruments, such as the Joint Convention, could be classified as Multilateral Environmental Agreements (MEAs).<sup>104</sup>

The relationship between the word trade system and MEAs is central to the ongoing debate on “trade and environment”.<sup>105</sup> MEAs are seen as the best way to tackle global and many transboundary environmental problems, while the expansion of the world trade system is central to the liberalisation of global trade and the international economic system. While it is generally seen as desirable that any conflicts between the aims of trade liberalisation and international environmental protection are reconciled through the use of widely accepted MEAs, the use of trade restrictive measures in such MEAs continues to cause concern to those who fear that MEAs may serve protectionist purposes, as well as to those who fear that the WTO will somehow undermine the environmental objectives of MEAs by preventing or overriding the use of such trade restrictive measures.

In the WTO there has been little effective progress with respect to clarifying the relationship between trade provisions pursuant to MEAs and the WTO rules.<sup>106</sup> It is doubtful that another organisation will be able to tackle the complex relationship better than the WTO. But a convenient balance of “trade and environment” can only be achieved through consensus and negotiations, as the WTO Members need predictability.<sup>107</sup>

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103. See, e.g. Joint Convention, *supra*, Article 1(i).

104. MEAs are agreements among governments that co-operatively shared environmental problems. During recent years the importance and scope of MEAs has increased dramatically as the international community struggles to address increasing global environmental problems such as the spread of toxic pollutants, biodiversity loss, protection of the ozone layer and global warming. There are now over 200 MEAs (outside the WTO) to co-ordinate the activities of States on issues related to environmental protection in an effort to achieve sustainable development. About 20 of these include provisions that can affect trade: for example they ban trade in certain products, or allow countries to restrict trade in certain circumstances

105. See generally Daniel C. Esty, *Greening the GATT: Trade, Environment, and the Future*, Washington D.C. 1994; Meinhard Hilf, “Freiheit des Welthandels contra Umweltschutz”, *Neue Zeitschrift für Verwaltungsrecht*, p. 481 (2000); Nele Matz, “The Relation between International Agreements for the Protection of the Environment and the GATT”, in Tao Zhenghua & Rüdiger Wolfrum (Eds.), *Implementing International Environmental Law In Germany And China*, p. 163-180 (The Hague 2001); Durwood Zaelke, Paul Orbuch and Robert F. Housman (Eds.), *Trade and The Environment: Law, Economics, and Policy*, Washington D.C. 1995.

106. See generally Geert van Calster, “The World Trade Organisation Committee on Trade and Environment: Exploring the Challenges of the Greening of Free Trade”, *5 European Environmental Law Review*, p. 44 (1996); Steve Charnovitz, “A Critical Guide to the WTO’s Report on Trade and Environment”, *14 Arizona Journal of International and Comparative Law*, p. 341 (1997).

107. The Uruguay Round did not lead to a provision similar to Article 104 NAFTA, which provides certain rules for solving possible conflicts between the provisions of NAFTA and MEAs like the Basel Convention. Accordingly, it remains the task of the WTO organs to solve similar conflicts under WTO law. At least in theory, a WTO Panel might have to examine the impact of, e.g. the Basel Convention within a WTO dispute settlement proceeding between signatories to the Convention.

#### **D. Summary and Conclusions**

This article has focused on the problem of radioactive waste since it is one of the most important environmental problems that the international community is facing today. More and more radioactive waste is generated every year within the European Union and also worldwide. Radioactive waste is, by its very nature, exceptional with regard to the risks caused as well as to the applicable management solutions.

The transboundary movement of radioactive products is an adverse effect that evolved with the advent of globalisation. The main reason for transboundary movements of radioactive waste is economic: when the disposal and recovery of radioactive waste in a foreign country is cheaper, the shipment of waste will take place, sooner or later. Another key factor today is public acceptance. Stringent domestic environmental standards and a “not-in-my-backyard” attitude exists, especially in industrialised countries, which can hinder the siting of all types of radioactive waste facilities and can require exports. Conversely, in the developing world, the ill-informed public usually does not oppose the lucrative disposal activity.

It truly would be surprising if the WTO, through its dispute settlement organs, were to interpret that a measure required by the safety regime violates WTO disciplines. The truth is that it is also highly speculative and premature to predict how the WTO will deal with radioactive material and waste. The issues are highly divisive and involve concerns which the WTO is not yet equipped to handle, such as ethical and moral concerns and political interests.

One reason why the WTO agreements have had little impact on nuclear trade so far is that some of the major trading nations in this field are not presently members of the WTO, including the former States of the Soviet Union. However, all are candidates to join the WTO in the future, and thus the impact of the WTO agreements on nuclear trade could increase. Therefore, the argument could be made that it is only a matter of time before the WTO and its “effective” dispute settlement system could try to force nuclear materials (including radioactive wastes) on all countries by preempting national and regional protective measures. The threat and actual use of a WTO challenge against a certain national policy sends a message to the negotiators and drafters of legal instruments in the nuclear field that they should not use or implement potentially WTO-incompatible measures in their pursuit of safety and environmental goals. In order to construct a regulatory framework in the field of nuclear safety that will be robust to WTO challenges and unexpected developments, it is getting more and more important to recognise the rights and obligations under the WTO agreements. A better policy coordination at the national, regional and international level between trade and environmental policy-makers can help prevent disputes arising in the WTO over the use of trade measures contained in international agreements and MEAs.

There is now extensive international law, binding and non-binding, which regulates or prohibits the transboundary movement of radioactive waste. It seems likely that the trade restrictive provisions of the safety regime could be justified under the scope of Article XXI or XX (b) GATT. If a legitimate non-proliferation issue were involved it is likely that any WTO dispute settlement organ would allow governments the use of these exceptions. Thus, the emerging international radioactive waste regime seems reconcilable under the WTO system. However, further clarification by the political, not the dispute settlement, institutions of the WTO would remove any remaining uncertainty by reaffirming the requirements of current law. Achieving sustainable development requires a coherent framework of global environmental and economic governance.

## **Nuclear Law in Morocco: National and International Aspects**

**by Mohamed Nabil\***

### **I. Introduction**

“Nuclear law”, the term preferred these days to “atomic law”, covers all specific legal rules governing the social consequences of the physical phenomena of the release of energy by the fission, fusion or other transformations of atomic nuclei, including the energy from ionising radiation from whatever source.<sup>1</sup>

The peaceful applications of nuclear energy, together with all their potential benefits for mankind, are often associated in the public mind with the problems of the proliferation of nuclear weapons and nuclear war. This association is due to the fact that the materials, know-how and skills required to manufacture nuclear weapons are not always distinct from those used to produce electricity or undertake research. Another reason is that, from a historical perspective, military applications preceded the peaceful use of nuclear energy.

This explains the permanent concern of the international community to ensure that nuclear energy is used for peaceful purposes, without risk. The approach taken results from a complex set of measures at both the national and international level. While it is true that it is national authorities who are primarily responsible for regulating the use of nuclear energy, it is just as true that other countries can suffer the effects of such use. Like many other activities the effects of which can cross frontiers, regulating nuclear energy therefore requires residual responsibility to be invested in the international community – sometimes even a co-responsibility – in order to ensure, *inter alia*, uniform standards, co-ordination, the sharing of resources and services, and compliance with the rules.<sup>2</sup>

The IAEA (International Atomic Energy Agency), among other international and regional organisations, has played a central role in this respect. Article 2 of its Statute provides that it “shall seek to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity

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1. *Encyclopédie Universalis* France.

2. *Le droit nucléaire et l'énergie nucléaire : aperçu du cadre juridique*. Mohamed El Baradei, Edwin Nwogugu and John Rames.

throughout the world” and “shall ensure, so far as it is able, that assistance provided by it or at its request or under its supervision or control is not used in such a way as to further any military purpose”.

Over the last 30 years, international co-operation relating to nuclear energy has produced a set of binding legal rules, standards and recommendations. The nuclear law contained therein covers diverse aspects such as protection against ionising radiation, nuclear safety and the prevention of accidents, preparation for radiological emergencies, the management of spent fuel and radioactive waste, the transport of nuclear materials and fuel, physical protection, non-proliferation, liability for, and compensation of nuclear damage including insurance matters, and international trade in nuclear equipment and materials.

*What is the position in Morocco?*

In Morocco, nuclear law does not, strictly speaking, constitute a branch of the law, like civil law. Its provisions are adopted pursuant to existing codes and legislation. But it may be said that it constitutes a branch of the law, as broadly defined.

It may be described, first, from a national viewpoint (Part 1 *infra*) and then from the standpoint of international undertakings (Part 2 *infra*).

An analysis and critical examination of Moroccan legislation, the first example of which dates from 12 October 1971 (Act on Protection against Ionising Radiation – see *Nuclear Law Bulletin* No. 61), shows that Morocco has created the institutions and adopted the regulations necessary for its development in this sphere.

## **II. National Aspects**

Morocco has various nuclear-related institutions. We shall first describe them (A) before making a critical presentation of national regulations (B).

### **A. National Institutions in Morocco**

These are of both a technical and a legal nature, and include:

#### *a) National Centre for Nuclear Energy, Science and Technology (Centre national de l'énergie, des sciences et des techniques nucléaires – CNESTEN)*

Created by Dahir No. 1-85-98 of 14 November 1986, the Centre is governed by Decrees No. 2-68-195 of 19 January 1987 and No. 2-92-964 of 29 April 1993.

Its tasks are to:

- carry out research on nuclear energy, science and technology, and to promote their development with a view to implementing a national nuclear power programme and to using nuclear technology in Morocco's various social and economic sectors;

- carry out, at the request and on behalf of the state, all work and studies necessary for the administration to exercise control over the construction and use of nuclear installations and over the management of nuclear materials;
- import, store and distribute nuclear fuel (the Centre holds a monopoly over the exercise of these activities);
- collect and store, for the users of radioactive materials, the waste resulting from such use, in co-operation with the competent government services; and
- undertake all activities relating to the production and marketing of all processes, equipment and materials used for nuclear activities, directly by its own means or through the intermediary of subsidiaries created for this purpose.

It was under this provision that the Maâmora Nuclear Research Centre was created.

*b) Maâmora Nuclear Research Centre (Centre d'études nucléaires de la Maâmora – CENM)*

This Centre is governed by Decree No. 2-94-666 of 7 December 1994.

Its main tasks are to:

- promote nuclear technology in Morocco's social and economic sectors, including the development of applications, assistance to users and the training of experts;
- contribute towards the implementation of a national nuclear energy programme including the organisation and performance of various support activities; and
- assist the State in exercising control over nuclear activities and protecting the public and the environment from the hazards of ionising radiation.

*c) National Nuclear Energy Council (Conseil national de l'énergie nucléaire – CNEN)*

The Council was set up under the Prime Minister by Decree No. 2-90-352 of 5 May 1993, and is responsible for:

- proposing to the government the orientations and objectives of national policy on the peaceful use of nuclear energy for economic, scientific and technological development purposes, and for proposing measures to co-ordinate the implementation thereof;
- co-ordinating the nuclear scientific and technical programmes of the different departments and public bodies concerned;
- giving an opinion on all questions of nuclear regulation; and
- proposing priorities for international co-operation in the field of nuclear energy.

Various Commissions have been set up under the Council, including the Commission for the Co-ordination of Nuclear Activities (*Commission de coordination des activités nucléaires – CCAN*), a Nuclear Regulation Commission (*Commission de la réglementation nucléaire – CRN*) and a Commission responsible for International Co-operation Programmes (*Commission chargée des programmes de coopération internationale – CPCI*).

The task of the CCAN is to prepare and monitor enforcement of the Council's recommendations concerning nuclear policy and orientation.

The task of the CRN is to prepare and monitor enforcement of the Council's recommendations concerning the monitoring of national and international nuclear regulations.<sup>3</sup>

The task of the CPCI is to prepare and monitor enforcement of the Council's recommendations in relation to international nuclear co-operation.

d) *National Nuclear Safety Commission (Commission nationale de sûreté nucléaire – CNSN)*

This Commission was set up by Decree No. 2-94-666 of 7 December 1993, and is composed of:

- an independent scientific or technical expert<sup>4</sup> appointed by the Prime Minister on the proposal of the Minister for Energy, to preside the Commission for a period of four years, which may be renewed;
- representatives of the Ministers for the Interior, Public Health, Higher Education, Public Works, Transport, Agriculture, Employment, Energy, Environmental Protection and National Defence;
- the Director of the National Centre for Nuclear Energy, Science and Technology, or his representative; and
- two scientific or technical experts appointed by the Prime Minister on the proposal, respectively, of the Minister for Energy and the Minister for Public Health, for a period of four years, which may be renewed.

The Commission is convened by its chairperson. It may invite any person whose qualifications are judged useful for its work, to sit on the Commission in an advisory capacity. Its proceedings are valid only if at least half its members are present. The secretariat of the Commission is provided by the Minister for Energy.

The Commission gives its opinion on licensing applications and on the conditions attaching thereto as well as on any modification affecting the safety of a nuclear installation.

e) *National Centre for Radiation Protection (Centre national de radioprotection – CNRP)*

In the context of the policy conducted by the Minister for Health with regard to the prevention of and protection against ionising radiation, compliance with the provisions (Act of 12 October 1971) relating to protection against ionising radiation and to safety standards is of particular importance. Thus, it was decided to create the National Centre for Radiation Protection (CNRP), which has been entrusted to:

- control the import, export, transport, storage and use of sources of ionising radiation;

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3. This aspect will be studied in Part B – National Regulations in Morocco.

4. This independence remains nevertheless subject to the exclusive choice of the Minister for Energy and acceptance by the Prime Minister. Would it not be better to provide for voting by the scientific community?

- carry out prior checks of any technical installation using sources of ionising radiation;
- monitor the security arrangements and radiation protection measures in public and private installations using sources of ionising radiation;
- carry out the research and analysis needed to determine the presence of ionising radiation in various environments in which it might present a danger to the health of workers, the public and the environment;
- ensure application of radiation protection regulations;
- centralise all statistical data relating to protection against ionising radiation;
- help provide initial and advanced training to staff, and help in reskilling;
- in collaboration with the services and bodies concerned, help promote and develop health education programmes and radiation protection information;
- help inform the public about radiation protection aspects; and
- prepare and implement sectoral, bilateral and international co-operation programmes in the field of radiation protection.

*f) Association of Moroccan Nuclear Engineers (Association des ingénieurs en génie atomique du Maroc – AIGAM)*

This cultural association, created in 1985, is regulated by the Dahir of 15 November 1958. It is very active in Morocco, at both scientific and legal levels. Its chairperson plays a leading role in nuclear development in Morocco, in co-operation with the CEA (*Commissariat à l'énergie atomique – Atomic Energy Commission, France*), INLA (International Nuclear Law Association) and other international bodies. All of these bodies monitor compliance with, and the development of, national regulations.

***B. National regulations in Morocco***

As part of the effort made by Morocco to consolidate and strengthen its legal infrastructures, basic legislation has been drafted with the assistance of IAEA experts and in conformity with Morocco's international undertakings. The examination and finalisation of these texts is being carried out by the Nuclear Regulation Commission which is answerable to the National Nuclear Energy Council.

The legislation in force, sent to the government's Secretariat-General or in course of preparation, includes the following:

*a) Basic text*

This is Act No. 005-71 of 12 October 1971 on Protection against Ionising Radiation. This Act introduces the principles of the use of radioactive materials and of licensing for activities involving them. It states that the conditions for declarations and licences will be laid down by decree. It contains a mixed bag of provisions including a ban on the use of radioactive substances in toys, the punishments applicable to offences in this field, etc.

It is far from being a specific and structured piece of legislation on nuclear energy.<sup>5</sup>

b) *Act establishing the CNESTEN*

This is the Act promulgated by Dahir No. 1-85-08 of 14 November 1986, which established the National Centre for Nuclear Energy, Science and Technology (CNESTEN).

It defines the tasks of the Centre in the context of the peaceful use of nuclear energy (see I-A-a), and describes its directing and managing bodies and its resources and financial organisation.

The Decree of 29 April 1993 amends that of 19 January 1987 adopted in implementation of the Act. It provides that the minister responsible is the Minister for Higher Education and Scientific Research, and specifies the composition of its Managing Board and Technical Committee.

c) *Decree establishing the CNEN*

The National Nuclear Energy Council (CNEN) was set up by Decree No. 2-90-352 of 5 May 1993.

This Decree lays down the tasks of the National Nuclear Energy Council, and its composition, organisation and main commissions (see I-A-c).

d) *Nuclear safety*

Three decrees regulate this field:

- Decree No. 2-94-666 of 7 November 1994 on the licensing and control of nuclear installations.
- Decree No. 2-95-708 of 9 November 1995 on the appointment of the chairperson and two members of the National Nuclear Safety Commission.
- Decree No. 2-99-111 of 26 February 1999 on the construction licence for the Maâmora Nuclear Research Centre.

The Decree on the licensing and control of nuclear installations establishes a prior licensing procedure aimed at enabling effective control and continued supervision of all aspects of nuclear safety. The National Nuclear Safety Commission, provided for by this Decree, was set up in April 1996. The Commission has an advisory role which, together with its high degree of dependence on the executive, does not seem to be in harmony either with the objectives this body is aiming to achieve, or with the recommendations of the IAEA.

As regards bringing Morocco's regulations into line with the Nuclear Safety Convention of September 1994, the sub-committee responsible for the legal framework is of the opinion that the power each ministerial department has at present to legislate, license and control the fields concerning

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5. See page 17 of the *Handbook on Nuclear Law* published by the IAEA, giving an example of a structure for a comprehensive nuclear law.

it, must be reviewed so that those concerned are not in the position of being both judge and jury, and also in order to introduce more effective controls.<sup>6</sup>

e) *Protection against ionising radiation*

Two decrees deal with this matter:

- Decree No. 2-97-30 of 28 October 1997 on protection against ionising radiation (see *Nuclear Law Bulletin* No. 61); and
- Decree No. 2-97-132 of 28 October 1987 on the use of ionising radiation for medical or dental purposes (see *Nuclear Law Bulletin* No. 61).

These Decrees regulate the radiation protection aspects of the various uses of radioactive sources and substances, particularly in industry (industrial radiography) and medicine (radiotherapy).

Moroccan legislation is based on the IAEA Basic Safety Standards. The main instruments are Act No. 005-71 of 12 October 1971 on protection against ionising radiation and the two implementing Decrees, mentioned above, one of which is of general scope<sup>7</sup> and the other relates to the use of ionising radiation for medical or dental purposes.

The Act prohibits certain practices which could endanger public health, namely:

- the addition of radioactive substances in the manufacture of foodstuffs, cosmetic products and products for domestic or private use; and
- the use of radioactive substances in the manufacture of toys.

Establishments in which radioactive sources are held or used are classified in accordance with the activity and radiotoxic group of the radioelements involved (group A: very high, group B: high, group C: moderate and group D: low) and on whether the sources are sealed or not (Categories I and II).

The import, export, acquisition, manufacture, transformation, possession, use and sale of radioactive substances or sources of ionising radiation leading to the classification of the establishment concerned in one of the two above-mentioned categories, are subject to licensing, except for establishments in the second category, class 3.

When the said substances or sources, in transit in Morocco, are to be unloaded or transferred within the country, this must be notified to the National Centre for Radiation Protection, answerable to the Minister for Health, specifying the nature and quantity of the radioactive materials transported by land, air, sea or inland waterway. They are stored and handled in accordance with the directives of the Centre, and moved only with its authorisation.

Category 1 establishments are subject to the licensing system laid down by Decree No. 2-94-666 of 7 December 1994 on the licensing and control of nuclear installations.

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6. A general nuclear Bill is being drafted at present.

7. This is a fundamental piece of legislation in Morocco.

Licences for category 2, classes 1 and 2 establishments are issued by the Minister for Health. The application made to the Minister must be accompanied by a file containing detailed technical and legal information.

Licences are granted to establishments meeting the conditions required with regard to radiation protection relating to:

- the expertise of the users responsible;
- the premises which are to serve for the storage and use of radioactive sources;
- the equipment for detecting ionising radiation;
- the safety of workers;
- dosimetric and medical surveillance;
- means of transport.

Licences specify the nature, quantity, and physical form (sealed or not) of the radioactive sources, the conditions for use and the country of origin and the supplier. They may be valid for a limited period only and can be renewed on the same conditions and in accordance with the same procedure as the initial licence.

The import, export, transformation, sale, transport, storage, assignment and disposal of radioactive substances by a category 2, class 3 establishment must be notified to the Minister for Health. This notification must specify in particular the nature and geographical location of the establishment, the premises available, the characteristics of the radioactive substances and their compatibility, the specifications of the equipment used and details about the staff using them. It must be accompanied by all relevant documentation.

In addition to these basic texts which we have just analysed, other planned legislation is to be drafted:

- Joint Order of the Ministers for Health and Employment providing for the medical supervision of exposed workers;
- Decree on radiation protection in mines;
- Decree defining the health and safety conditions which industrial radiological equipment using gamma radiation must meet;
- Order laying down the content of the rules for using the monitoring documents required for the implementation of the provisions of the Decree on industrial radiography;
- Decree on the prohibition of the use of radioelements in the manufacture of lightning conductors and the marketing and import of such conductors;
- Decree or Order on the Aptitude Certificate for handling industrial radioscopic or radiographic apparatus;
- Decree on harmonising measures concerning environmental radioactivity and foodstuffs;
- Work Health Code.

f) *Planned legislation*

1) Third party liability

A Bill on third party liability with regard to nuclear damage has been submitted to the Secretariat-General of the government.

This Bill was drafted on the basis of the 1963 Vienna Convention on Civil Liability for Nuclear Damage, signed in November 1984.

2) Radioactive waste management

A draft Decree on radioactive waste management was submitted in February 2001 to the Secretariat-General of the government.

3) Transport of radioactive materials

A draft Decree on the transport of radioactive materials is being prepared. A first draft, prepared by the Minister for Energy and Mines, has been submitted to the members of the Nuclear Regulation Commission for examination and opinion.

4) Radiological emergency assistance

A plan of action in the event of a radiological emergency is being prepared. A first draft has been prepared by the Minister for Energy and Mines, with the assistance of the IAEA and in collaboration with the Civil Protection Directorate.

5) Physical protection

A draft Order regulating the physical protection of nuclear materials is being prepared. A first draft has been prepared by the Minister for Energy and Mines with the technical support of the IAEA.

6) Processing of foodstuffs

A draft Decree on the processing of foodstuffs by ionisation has been prepared by the Minister responsible for Agriculture.

### **III. International Aspects**

Before examining Morocco's commitments in the nuclear field (B), we shall briefly present its position with regard to international law, the IAEA (International Atomic Energy Agency) and its statute (A). For the Agency, of which Morocco is a member, plays a central role in relation to international nuclear law.

## A. *International law in Morocco and the IAEA*

### a) *The Moroccan Constitution*

Morocco's Constitution adopts the classic approach of the direct application of international law and its primacy over national legislation. The revised Constitution of 9 October 1992 (which reformulates, on this point, the wording of previous constitutions) provides, in Article 31, that the King "shall sign and ratify treaties". However, treaties committing public funds cannot be ratified without the prior approval of the Chamber of Representatives. Lastly, treaties which "might call into question the provisions of the Constitution shall be approved in accordance with the procedures laid down for reforming the Constitution."

It therefore clearly results from the Moroccan Constitution that ratified treaties are directly incorporated into the domestic legal system.

Lastly, the Preamble of the Constitution contains a declaration which is of importance from an international viewpoint: "Aware of the need to act in the framework of the international bodies of which it has become an active and dynamic member, the Kingdom of Morocco subscribes to the principles, rights and obligations resulting from the charters of the said bodies". Freely interpreted by the jurisprudence, this declaration consecrates the principle of the primacy of international law.

Before reviewing Morocco's international agreements and undertakings, we feel it is useful to describe the International Atomic Energy Agency (IAEA), which plays a key role in this sphere.

### b) *The International Atomic Energy Agency (IAEA), developing countries and Morocco*

The objective of the International Atomic Energy Agency is to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world (Article II of the IAEA Statute). The Statute of the Agency refers on several occasions to the need to take account of the particular requirements of developing countries (Articles 3 and 4).

Article 3 provides that the Agency shall bear in mind the under-developed areas of the world, in particular with regard to the allocation of its resources. Under Article XI, before approving a project, the Board of Governors shall give "due consideration" to the needs of under-developed areas. The Agency must ensure that general scientific levels in developing countries are raised in order to prepare the way for nuclear technology and science, introduce nuclear science applications (the use of radioisotopes in medicine, agriculture and hydrology) and help to train managers. It is obviously impossible to report on all the services supplied but it is certain that almost all the Agency's activities in the field of food supply and agriculture are exercised in the interest of developing countries. The Agency has also made it possible for a number of developing countries to accelerate the introduction of nuclear energy by developing small and medium-sized reactors. Other so-called public interest activities also concern developing countries: the work of international marine radioactivity laboratories which are studying the behaviour of radionuclides in the sea are aimed at developing countries, which derive much of their wealth from the oceans. Of all the countries which have received special fissile products and raw materials for reactors, more than 70% are classified among developing countries.

In spite of such highly positive support, the IAEA remains criticised by a large number of countries. Developing countries have often violently criticised the way in which the Agency is organised since this is designed to ensure the preponderance of nuclear states on the Governing Board,

and the primacy of the Board over the other bodies. For some of these countries, the Board thus perpetuates the preponderance of the large nuclear states and the policy of producer countries.

Thus, developing countries wonder about the real objectives of the Agency, asking themselves whether the security aspect has not definitively won out over assistance, inasmuch as the role of the Agency tends to be limited to ensuring that the aid supplied by it or at its request or under its supervision or control, is not used to further military purposes. It has become a “nuclear policeman”.<sup>8</sup>

Morocco, a moderate country, was one of the first four African states to join the IAEA. It ratified its accession by Dahir No. 1-57-173 of 8 June 1957, accepted the amendment of Article IV of the Agency’s statute by letter of 6 December 1999, and ratified the agreement on the privileges and immunities of the IAEA by Dahir No. 4-76-11 of 17 December 1976. It has adopted a positive partnership relationship with the Agency, and has acceded to almost all of its agreements.

### ***B. Morocco’s international obligations and agreements***

Morocco has signed a co-operation agreement with the United States of America, the African Regional Co-operative Agreement for Research, Development and Training related to Nuclear Energy (AFRA), as well as numerous treaties and conventions.

#### *a) Co-operation with the United States of America*

Morocco and the United States of America signed an agreement for co-operation concerning peaceful uses of nuclear energy on 30 May 1980. This agreement was renewed on 20 September 2001 for 20 years, and subsequently for renewable periods of five years.<sup>9</sup> It reaffirms the objectives of the Treaty on the non-proliferation of nuclear weapons and those of the IAEA Statute, and states that the peaceful use of nuclear energy must take into account the protection of the international environment against radioactive, thermal and chemical contamination. It provides that this co-operation is dependent on the application of the IAEA safeguards system to all nuclear activities in Moroccan territory. It provides for an amendment for each transfer of sensitive technology, of sensitive nuclear equipment or important critical component. The Agreement envisages the transfer of non-enriched uranium (less than 20% of isotope 235) for research reactors and of small quantities of special nuclear materials.

Article 5 states that the premises for storing plutonium, uranium 235 or enriched uranium must be approved by both parties. This applies also to the transfer, reprocessing and alteration of the form or content, and the enrichment of nuclear materials.

It excludes all military uses (Article 8) and refers (Article 9) to the Agreement signed on 30 January 1973 between the Kingdom of Morocco and the IAEA concerning the application of the safeguards provided for in the Non-Proliferation Treaty (NPT).

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8. Jean Marie Rainaud, “*Le droit nucléaire, que sais-je ?*” PUF.

9. The amendment provides for five-year tacit renewals unless expressly terminated six months in advance.

b) *Treaty on the Non-Proliferation of Nuclear Weapons (NPT)*

This Treaty, adopted in New York on 12 June 1968, entered into force, at international level, on 5 March 1970 and in Morocco on 27 November 1970 following its ratification on 30 July 1970 by Dahir No. 1-70-78. Morocco continues to comply with its undertakings under this Treaty.

c) *Agreement on the Privileges and Immunities of the IAEA*

The text of this Agreement was approved by the Board of Governors on 1 July 1959, and an addendum was added on 22 September 2000.

Morocco ratified it by Dahir No. 4-76-11 of 17 December 1976. The instruments of ratification were deposited on 30 March 1977 with the following reservation:

- The IAEA shall take into account national legislation and regulations concerning the acquisition and possession of real estate in Morocco;
- The privileges and immunities provided for by this Agreement do not apply to IAEA officials of Moroccan nationality working in Morocco.

In the event of a disagreement, any recourse to the International Court of Justice will be based on the agreement of all the parties concerned.

d) *Convention on the Physical Protection of Nuclear Material*

This Convention was adopted in Vienna on 26 October 1979, and entered into force at international level on 8 February 1987.

Morocco signed it on 25 July 1980 and deposited its instruments of ratification, without reservations, on 23 August 2002. It has applied to Morocco since 22 September 2002.

e) *Vienna Convention on Civil Liability for Nuclear Damage*

Adopted in Vienna on 21 May 1963, this Convention entered into force at international level on 12 November 1977. It was signed by Morocco on 30 November 1984 but has not yet been ratified.

This is a shortcoming which Morocco will have to rectify quickly, the more so in that its neighbour, Spain, has several nuclear installations. There is a nuclear power plant in the south of Spain, close to Morocco's borders, and should there be a nuclear accident, this Convention would protect Morocco's interests.

It may be noted also that Spain, too, has signed this Convention (on 6 September 1963) but has never ratified it.

However, Spain has signed and ratified the Paris Convention on Third Party Liability in the Field of Nuclear Energy, on 30 October 1961, and the two countries (Spain and Morocco) both signed, on 21 September 1988, the Joint Protocol on the application of the Vienna Convention and the Paris Convention on Third Party Liability but have not ratified it.

It is in Morocco's interests, and those of its neighbour Spain, to ratify this Protocol so as to protect property and persons on both sides of the Straits in the event of a nuclear accident occurring in one or other of the two countries.

f) *Convention on Early Notification of a Nuclear Accident*

Adopted in Vienna on 26 September 1986, this Convention entered into force on 27 October 1986. Morocco signed it on 26 September 1986 and ratified it on 28 May 1993 by Dahir No. 4-88-33. The Convention has applied to Morocco since 7 November 1993.

It may be noted that Morocco's neighbour, Spain, also ratified it and that the Convention has applied to it since 14 October 1989.

g) *Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency*

Adopted on 26 September 1986 in Vienna, this Convention entered into force on 26 February 1987. Morocco signed it on 26 September 1986 and ratified it by Dahir No. 4-88-32 of 28 May 1993. The Convention has applied to Morocco since 7 October 1993. The Convention has also been ratified by Spain, where it entered into force on 14 October 1989. France, a country with close ties to Morocco, and with which there is a strong tradition of technical assistance, has also been bound by this Convention since 6 April 1989.

h) *Convention on Nuclear Safety*

This important Convention, adopted in Vienna on 17 June 1994, entered into force on 24 October 1996. Morocco signed it on 1 December 1994 but has not yet ratified it. It is true that there is still no operating nuclear installation in Morocco (the Maâmora research reactor has not yet been installed and commissioned). It is also true that this Convention only applies to the safety of nuclear installations.

However, Morocco's peaceful nuclear ambitions are such that more attention should be paid to safety aspects. The application of this Convention's provisions by Morocco would undeniably have an impact on the development of a national safety culture.

Morocco's neighbour, Spain, ratified this Convention in 1995.

i) *Other Conventions*

Morocco has signed and ratified:

- The Moscow Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water of 5 August 1963;
- The Treaty on the Prohibition of the Emplacement of Nuclear Weapons and other Weapons of Mass Destruction on the Seabed and the Ocean Floor and in the Sub-soil Thereof, of 11 February 1971;
- The African Regional Co-operative Agreement for Research, Development and Training related to Nuclear Science and Technology (AFRA) of 21 February 1990;

- The Protocol amending the Vienna Convention on Civil Liability for Nuclear Damage of 12 September 1997;
- The Vienna Convention on Supplementary Compensation for Nuclear Damage of 12 September 1997;
- The Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management of 5 September 1997.

## **Conclusion**

The use of nuclear technology in medicine, agriculture and industry is very advanced in Morocco. This technological progress has been accompanied by fairly detailed legislation and significant involvement on the part of Morocco in international conventions and agreements. The desire to progress further with regard to research and the use of nuclear energy for peaceful purposes requires a twofold effort:

- the various pieces of national legislation on nuclear law need to be reformulated to bring them into line with the most recent rules in this sphere;<sup>10</sup>
- Morocco's international undertakings need to be revised in light of its immediate interests, certainly, but also of foreseeable developments, particularly with regard to safety and third party liability.

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10. *Handbook on Nuclear Law*, IAEA, July 2003.

# CASE LAW

## United States

### *Decision of the US District Court of Idaho on DOE management of radioactive waste (2003)\**

In the case of National Resources Defense Council v. Abraham,<sup>1</sup> the US District Court for the District of Idaho ruled that provisions of DOE Order 435.1 governing the Department's management of radioactive waste are invalid insofar as they enable the Department to determine that some waste associated with reprocessing spent nuclear fuel (SNF) is not high-level radioactive waste (HLW).

As background in 1999, the Department approved Order 435.1, entitled "Radioactive Waste Management", which prescribes procedures to be used by DOE and its contractors in the management of radioactive waste stored at atomic energy defense facilities. The Order governs waste generated as a product of reprocessing SNF and breaks down DOE's waste management activities by waste type including, *inter alia*, HLW, transuranic waste and low-level waste. It permits the Department to classify waste from reprocessing SNF as HLW or waste incidental to reprocessing (WIR) depending upon the degree of hazard the waste presents.<sup>2</sup> DOE determines whether waste is WIR by using either a citation process (encompassing specific categories of wastes which are the result of reprocessing operations) or an evaluation process (focusing on the hazard-related characteristics of waste). Wastes determined to be WIR are not HLW and are managed as transuranic or low-level waste. The National Resources Defense Council (NRDC) filed a petition for review in 2000 challenging the process and criteria used by the Department to determine whether waste constitutes HLW or WIR.

At issue is whether the Department is subject to requirements of the Nuclear Waste Policy Act of 1982, as amended (NWPA)<sup>3</sup> in the management of defense nuclear waste such as WIR at its facilities. The Department maintained that: 1) management authority at its nuclear facilities derives from the Atomic Energy Act of 1954, as amended (AEA),<sup>4</sup> Energy Reorganization Act of 1974<sup>5</sup> and

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\* This case note was kindly provided by Ms. Sophia Angelini, Attorney Adviser at the Office of Civilian Nuclear Programs of the US Department of Energy. The author alone is responsible for the facts mentioned and opinions expressed therein.

1. 271 F. Supp. 2d 1260 (2003).
2. Reprocessing is not defined in any statute but is considered by DOE to be those actions necessary to separate fissile elements and/or transuranium elements from other materials (e.g., fission products, activated metals, cladding) contained in SNF to recover the desired materials. The waste from reprocessing is stored in underground tanks at facilities managed by DOE under its AEA authority. In general, the tanks contain liquids, sludges derived from the liquid reprocessing waste, and other solids also derived from the liquid waste.
3. 42 U.S.C. 10101 *et seq.*
4. 42 U.S.C. 2011 *et seq.*

Department of Energy Organization Act<sup>6</sup>; 2) the NWPA authorizes but does *not require* disposal of defense nuclear waste at a geologic repository; and that 3) the NWPA does not supersede DOE's pre-existing authority to manage defense wastes. Citing the AEA which authorises issuance of orders governing design, location and operation of its nuclear facilities, the Department advanced that waste *management* activities are governed by the AEA and that the NWPA does not apply to defense reprocessing waste stored at INEEL (Idaho), Savannah River (South Carolina) and Hanford (Washington).<sup>7</sup>

The plaintiffs – environmental organisations and Indian tribes – argued that the NWPA governs the Department's management of HLW at its defense facilities and requires geological disposal.<sup>8</sup> They allege that DOE Order 435.1 contradicts the NWPA definition of HLW by allowing the Department to reclassify certain HLW as “incidental waste” or “waste incidental to reprocessing” and permanently store it on site in concrete storage tanks rather than removing and shipping the waste to a geologic repository constructed under the NWPA.

On 3 July 2003, the US District Court found the Order invalid and granted summary judgment to the plaintiffs, stating:

“In essence, DOE contends that it can choose whether to dispose of its defense waste at Yucca Mountain or elsewhere. This interpretation is inconsistent with NWPA. In 10107(b)(2), ... NWPA states that the Secretary ‘shall proceed promptly with arrangement for the use of one or more of the repositories’ to dispose of defense HLW. The use of the term ‘shall’ means that the direction is mandatory and does not allow for discretion on the part of the agency... Thus, DOE does not have discretion to dispose of defense HLW somewhere other than a repository established under NWPA”.

The US District Court noted that the Order redefines HLW as “incidental waste” if it meets certain criteria:

- key radionuclides must be removed to the extent technically and economically practical;
- the waste must meet safety requirements comparable to the performance objectives set out in 10 C.F.R. Part 61, Subpart C; and
- the waste must be managed in accordance with the Department's requirements for low-level waste, provided that it does not exceed concentrations limits for Class C low-level

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5. 42 U.S.C. 5814 *et seq.*

6. 42 U.S.C. 7133(a)(8)(A), (B), (C), and (E).

7. Further, the Department argues that the Order was not “final agency action” for purposes of judicial review until DOE, or one of its contractors, applies the Order on a case specific basis, and that decisions would be made on a “case-by-case” or “waste stream by waste stream” basis.

8. The plaintiffs in this case are the National Resources Defense Council, several environmental groups and two Indian tribes, the Confederated Tribes & Bands of the Yakima Nation and the Shoshone-Bannock Tribe. The Yakima Nation is a federally recognized Indian tribe with treaty rights to fish in the Columbia River Basin in the State of Washington. Fishing has long played a substantial role in the Yakima culture and a portion of the Department's Hanford site includes spawning areas for salmon. The Shoshone-Bannock Tribe is a federally recognized Indian tribe which assert a legal right to fish for rainbow trout and sturgeon below Shoshone Falls on the Snake River near the Department's INEEL site in the State of Idaho; the Shoshone-Bannock expressed concern over the threat of high-level hazardous waste from INEEL contaminating the groundwater which feeds the river.

waste set out in 10 C.F.R. 61.55 or meet alternative requirements for waste classification and characterization as the Department may authorise.<sup>9</sup>

The Court concluded that the Order – which considers technical and economic factors in waste treatment – conflicts with the NWPA’s definition of HLW which considers source and hazard and invalidated the portion of the Order dealing with waste incidental to reprocessing. The Court also concluded that liquid and solid reprocessing wastes “are treated differently by the [NWPA] Act. While the NWPA allows DOE to treat the solids to remove fission products, thereby permitting reclassification of the waste, NWPA does not offer the option of reclassification for liquid waste produced directly in reprocessing.” While the court recognised that DOE could treat solid waste derived from liquid reprocessing waste and “reclassify” it as non-HLW, it determined that DOE’s criteria for doing so were inconsistent with the NWPA.

The Department has appealed to the US Court of Appeals for the Ninth Circuit.<sup>10</sup> In its appellate brief, the Department argues that the AEA provides it with exclusive responsibility to regulate materials covered by the Act, including the authority to conduct research into military applications of atomic energy, produce atomic weapons and “provide for safe storage, processing, transportation, and disposal of hazardous waste (including radioactive waste) resulting from nuclear materials production, weapons production and surveillance programs, and naval nuclear propulsion programs.”<sup>11</sup> Also, under the DOE Organization Act, the Department was specifically assigned responsibility for military applications of nuclear energy, including the establishment of programs and temporary and permanent facilities for storage, maintenance, and ultimate disposal of nuclear wastes. Finally, the NWPA provides that the Act: 1) does *not* apply to any atomic energy defense activity<sup>12</sup> or facility used in connection therewith; and 2) *shall* apply to any repository not used *exclusively* for disposal of HLW or spent nuclear fuel resulting from atomic energy defense activities, research and development activities of the Secretary [NWPA, section 8(a) and (c)]. Thus, there is a general rule of NWPA *non-applicability* to atomic energy defense activities – with the exception that the NWPA *shall* apply to a repository not used exclusively for defense waste – such as the one to be constructed at Yucca Mountain which can provide for disposal of both defense waste and commercial spent nuclear fuel.<sup>13</sup>

Finally, the Department maintains that it has correctly interpreted the NWPA definition of HLW as “the highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations”. The District Court concluded that the phrase “contains fission products in sufficient concentrations” modifies only “solid material derived from such waste,” but not “liquid waste produced directly in reprocessing.” Accordingly it found that the NWPA allows the Department to treat solids to remove fission product and reclassify waste, it did

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9. 10 C.F.R. Part 61 is entitled “Licensing Requirements for Land Disposal of Radioactive Waste”; Subpart C concerns “Performance Objectives” and Part 61.55 at Subpart D (Technical Requirements for Land Disposal Facilities”) concerns waste classification.
  10. The Department filed its appellant’s brief on 29 January 2004. In April, when briefing is completed, the Court is expected to schedule oral argument.
  11. 42 U.S.C. 2121(a)(3).
  12. The NWPA defines the term “atomic energy defense activity” to include “any activity of the Secretary [of Energy] performed in whole or in part in carrying out [...] defense nuclear waste and materials byproducts management.”
  13. In 1985, President Reagan determined, under section 8(b) of the NWPA, that there was no need for a repository *exclusively* dedicated for disposal of HLW resulting from atomic energy defense activities.

not offer the option of reclassification for liquid waste. The Department argues that the NWPA is better interpreted to allow the agency to consider the concentration of fission products in *both* liquid waste produced directly in reprocessing and in the solids derived from that waste.<sup>14</sup> The Appellee environmental groups and Indian tribes counter that “Once the President made the decision to dispose of defense HLW in a geologic repository established by the NWPA, the terms of the Act and the constraints therein became applicable to the disposal of defense HLW. Acceptance of Defendant’s interpretation would render sections of the NWPA meaningless and essentially make compliance with the law an elective exercise for the agency.” The Court of Appeals will set a date for oral argument once briefing is completed on 29 April 2004.

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14. To uphold the WIR evaluation process in Order 435.1, the Department notes that it is sufficient that the District Court recognized that DOE may treat and classify solid reprocessing waste as low-level or transuranic waste since the WIR process applies only to SNF reprocessing wastes that have been treated and “will be incorporated in a solid physical form.”

# NATIONAL LEGISLATIVE AND REGULATORY ACTIVITIES

## **Albania**

### ***Radioactive waste management***

#### *Regulations on radioactive waste management (2004)*

These Regulations, approved in March 2004 by the Commission on Radiation Protection, contain general provisions governing the safe management of radioactive waste generated in Albania.

The Institute of Nuclear Physics is the institution responsible for the processing of all kinds of radioactive waste. The Regulations describe different methods of storage according to the type of waste: liquid radioactive waste is collected in special tanks and activity concentration is determined along with total activity. Quantities of radioactive waste which may be released into the municipal sewer are determined in accordance with the radiotoxicity of radionuclides contained therein. Solid waste with half-lives of less than 60 days is confined in special containers and is stored for a period of at least ten half-lives before treating it as conventional waste. Solid waste with half-lives of more than 60 days is sent to the Institute of Nuclear Physics for conditioning and interim storage.

The Regulations contain two appendices governing limits of radioactivity which may be released into the municipal sewer and radiotoxicity levels of groups of radionuclides.

### ***Transport of radioactive materials***

#### *Regulations for the safe transport of radioactive materials (2004)*

These Regulations were approved in March 2004 by the Commission on Radiation Protection. They are based on the IAEA Regulations for the Safe Transport of Radioactive Materials No. TS-R-1 (ST-1, Revised) and also take into account national specificities.

Packages for the transport of radioactive materials are classified into four categories (exempted packages, industrial packages, type A packages and type B packages) based on values established in Annex 1.

The Regulations provide for contamination limits on external packages for alpha, beta and gamma emitters, as well as total radiation level limits applied to vehicles.

The Regulations describe the list of documents governing the transport of radioactive materials and procedures related to their import and export. They also include two appendices governing values for the categorisation of packages for transport (see *supra*) and labelling.

## **Argentina**

### ***Organisation and structure***

*Decree on the organisation of the Ministry of Federal Planning, Public Investment and Services (2003)*

This Decree provides that the National Atomic Energy Commission (*Comisión Nacional de Energía Atómica – CNEA*) is a decentralised body under the authority of the Secretary of Energy of the Ministry of Federal Planning, Public Investment and Services. Previously it had been under the jurisdiction of the General Secretary of the Presidency (see *Nuclear Law Bulletin* No. 70). This move aims to renew the traditional links of the Atomic Energy Commission with power generation.

## **Armenia**

### ***General legislation***

*Law on amendments and additions to the Licensing Law (2004)*

A law introducing amendments and additions to the Licensing Law was adopted by parliament on 16 March 2004 and entered into force on 5 April 2004 following signature by the President and publication in the Official Gazette. The Licensing Law, which entered into force on 1 July 2001, governs all activities subject to licensing, including those in the nuclear field. It specifies the authorities responsible for delivering licenses and the procedure to be followed.

Pursuant to the amendments introduced by this Law of 2004, the Armenian Nuclear Regulatory Authority (ANRA) (see *Nuclear Law Bulletin* No. 66) is the recognised licensing authority in all fields relating to the utilisation of atomic energy, with the exception of the import and export of nuclear and radioactive materials, equipment containing such material, radioactive waste, or special materials or technologies, in respect of which the government performs licensing activities. The types of practices subject to licensing have also been specifically defined. In the previous version of the Licensing Law, the licensing authority for all activities in the atomic energy field was the government. These amendments aim to address conflicts and inconsistencies between the Law for the Safe Utilisation of Atomic Energy for Peaceful Purposes (see *Nuclear Law Bulletin* Nos. 60 and 63, the text of this law was reproduced in the Supplement to *Bulletin* No. 65) and the Convention on Nuclear Safety.

### ***Regime of radioactive materials (including physical protection)***

*Decree on the strengthening of physical protection and security measures at nuclear facilities (2003)*

This Decree was adopted on 11 September 2003 to define the principle ways of strengthening rules governing physical protection requirements applicable to nuclear facilities and nuclear materials. It establishes the duties of state authorities and other legal entities and physical persons involved in the physical protection of such facilities or materials, including in the event of incidents jeopardising their protection.

## Belarus

### *General legislation*

*Presidential Decree on licensing of certain activities and Resolution of the Council of Ministers on licensing of activities in the field of industrial safety (2003)*

The licensing regime applicable to activities in the field of nuclear and radiation safety has been considerably changed by the adoption of the above instruments. Pursuant to Presidential Decree No. 17 of 14 July 2003, which was of a temporary nature, the President defines certain types of activities which are subject to licensing and the applicable licensing procedure. Carrying out such activities without a licence is illegal. The Decree approved the Order on the Licensing of Certain Activities, laying down detailed licensing procedures, and established the List of Activities Subject to Licensing and Governmental Bodies Authorised to Issue Licences. In accordance with this list, the Directorate for Supervision of Industrial and Nuclear Safety of the Ministry for Emergencies of Belarus (*Promatomnadzor*) is responsible for licensing activities in the field of industrial safety (including nuclear and radiation safety-related activities).

Pursuant to Regulatory Resolution No. 1357 of the Council of Ministers of 20 October 2003, licences, valid for five years, are issued for the following activities involving sources of ionising radiation, nuclear materials and protective equipment:

- production and storage of radioactive materials and commodities containing radioactive materials;
- radioactive waste management (with the exception of temporary storage of radioactive waste resulting from the economic activities of an undertaking in quantities less than the minimum significant quantity as set out in Annex 19 to the Radiation Safety Norms of 2000);
- design, production, construction, mounting, adjustment, repair, servicing (including charging/recharging of radiation devices and installations with radionuclide sources) of nuclear facilities, as well as the production of technological equipment and protective devices for such facilities;
- use of radiation devices and installations containing radionuclide sources with a total activity of more than  $3.7 \times 10^{11}$  Bq, or with the activity of any one of the sources at a level more than  $3.7 \times 10^{10}$  Bq, as well as radiation devices and installations with accelerating voltage of more than 100 Kv, and nuclear facilities, use of radioactive materials (including storage), with an activity exceeding the minimum significant activity and exceeding by 1000 times the minimum significant quantity (Annex 19 to the Radiation Safety Norms of 2000), sealed radionuclide sources with an activity superior to  $3.7 \times 10^{10}$  Bq.

## Belgium

### *Regime of radioactive materials (including physical protection)*

*Act amending the Act of 15 April 1994 and providing for the transfer of certain civil servants from the Service for State Security in the nuclear field (2003)*

This Act, adopted by the Federal Public Service for Home Affairs on 2 April 2003, was published in the Official Journal (*Moniteur belge*) of 2 May 2003. It repeals the Act of 4 August 1955 on State Security in the Nuclear Field and complements the Act of 1994 on Protection of the Public and the Environment against Radiation (see *Nuclear Law Bulletin* Nos. 53, 54 and 59). The Act completes the list of definitions set out in the Act of 15 April 1994 and adds definitions for nuclear materials, national and international nuclear transport, physical protection measures, sabotage and nuclear inspectors.

The Act establishes the powers of the members of the inspection services. They are entitled to give warnings and set deadlines for those who are in breach to remedy their situation. They are furthermore authorised to prescribe any measures they deem useful to reduce or eliminate danger for the health and safety of workers, the public or the environment in relation to ionising radiation. Measures taken by members of the inspection services are open to appeal.

The Act specifies that the Federal Agency for Nuclear Control is responsible for physical protection measures and is habilitated to decide which measures should be taken to protect nuclear technology developed by Belgian nuclear institutions (classification of nuclear materials and documents relating to such classification). The transfer of nuclear materials may only be carried out by licensees. Included amongst the measures of physical protection set out in the Act is the limitation of access to zones in nuclear installations.

Finally, the Act regulates the conditions pursuant to which certain civil servants from the Service for State Security in the Nuclear Field will be transferred and their status.

### *Radioactive waste management*

*Act on funds for the dismantling of nuclear power plants and the management of irradiated fissile materials in such plants (2003)\**

1. On 11 April 2003, Belgium adopted a new Act on funds for the dismantling of nuclear power plants and the management of irradiated fissile materials in such plants.<sup>1</sup> This Act transforms the manner in which funds are set aside for the future dismantling of nuclear power plants and the management of irradiated fissile materials in such plants.

This Act essentially aims to offer certain guarantees in the face of the liberalisation of the European electricity market. It also fits into the new legal framework in Belgium characterised, *inter*

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\* This note was kindly contributed by Chloée Degros, junior scientific adviser with the Centre for the study of nuclear energy SCK-CEN at Mol in Belgium and PhD Student at the Catholic University of Louvain, Belgium. She expresses her thanks to M. Beyens, M. Braeckeveldt, T. Vandendorre, G. Vendeputte and L. Veuchelen for their comments.

1. Official Journal (*Moniteur belge*), 15 July 2003.

*alia*, by the Act of 31 January 2003 on the Phase-out of Nuclear Energy for the Purposes of the Industrial Production of Electricity.<sup>2</sup>

This Act aims, first, to guarantee through increased state control that the necessary funds will be available for the dismantling of nuclear power plants and the management of spent fissile materials in such plants. It also aims to allow operators to continue to use, to a certain extent, the important sums of money set aside as funds for this purpose.

2. Before the adoption of the Act of 11 April 2003, funds for the dismantling of nuclear power plants and the management of their spent fissile materials were managed separately. Funds for the dismantling of nuclear power plants were governed by a convention of 9 October 1985 between the Belgian state and the electricity producers. This convention set out guiding principles for funding and the practical rules and regulations were left to the Electricity and Gas Regulatory Committee. However, these funds remained mobilised within the electricity-producing companies Electrabel and SPE (see footnote 6), and the monitoring carried out by the Regulatory Committee did not include the use or the availability of these funds.

Funds for the management of spent fissile materials in these plants were set up within a legal entity separate from the electricity producers – Synatom (see footnote 5). These funds were lent for the most part to Electrabel. The Belgian state, as shareholder, exercised control over the use of such funds by Synatom. In 1994, Tractebel bought the state's shares in Synatom, i.e. 50% of the capital. Electrabel retained the other 50%. However, the state, through a Royal Order of 10 June 1994,<sup>3</sup> holds a “golden share” in Synatom which gives it *inter alia* a right to oppose decisions which are contrary to national interests in the energy field.

3. The new Act of 11 April 2003 replaces these two funding systems. In order to strengthen control over the management of these funds, three principal modifications have been introduced: a specialised Monitoring Committee has been set up, the establishment and management of funds for the dismantling of nuclear power plants and their spent fissile materials are combined into one single system; and these activities are vested in Synatom, which is now 100% controlled by Electrabel (see footnote 5).

In this way, the new system governing funding for the dismantling of nuclear power plants and their spent fissile materials is structured around four principal players:

- the Monitoring Committee established by the Act of 11 April 2003;<sup>4</sup>
- the Nuclear Funding Company (Synatom);<sup>5</sup>

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2. Official Journal (*Moniteur belge*), 28 February 2003. The text of this Act was reproduced in *Nuclear Law Bulletin* No. 71.

3. Royal Order providing the state with a special share in Synatom, published in the Official Journal (*Moniteur belge*), 28 June 1994.

4. Committee for the Monitoring of Mechanisms used for the Funding of Dismantling and for the Management of Fissile Materials (*Comité de suivi des mécanismes liés aux provisions pour le démantèlement et pour la gestion de matières fissiles*).

5. The Act defines this to mean the limited company “*Société belge des combustibles nucléaires – Synatom*” referred to in the Royal Order of 10 June 1994 and which is governed by Article 179, Section 1 of the Act of 8 August 1980 on budgetary provisions for 1979-1980. Established in 1969 by electricity producers, its

- operators of nuclear power plants (Electrabel);<sup>6</sup>
- the state and its “golden share” in Synatom.

The Nuclear Funding Company is responsible for establishing (Article 11) and managing (Article 13) funds both for the dismantling of nuclear power plants<sup>7</sup> and for the management of spent fissile materials in such plants.<sup>8</sup> Nuclear operators are required to pay the Nuclear Funding Company amounts corresponding to estimations for dismantling<sup>9</sup> and for the management of spent fissile material. If funds are deemed to be insufficient during dismantling operations or management of fissile materials, operators will be required to add the extra funds necessary for such operations (Article 11.3 and 11.4 *in fine*).

The new Act specifies that dismantling will still be carried out by nuclear operators on behalf of the Nuclear Funding Company (Article 11.3.2) and that the management of fissile materials will also be exclusively carried out by the Nuclear Funding Company (Article 11.4.2). The relevant costs for these operations will be taken by the Company from the funds it has established.

4. The new Act establishes a Monitoring Committee in order to increase state control over the viability of funds established and managed by the Nuclear Funding Company. This Monitoring Committee is an administrative authority vested with legal personality (Article 3) and is composed of six persons (Article 4).<sup>10</sup> The Director General of the Federal Agency for Nuclear Control (AFCN) and

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activities are focused on the nuclear fuel cycle. Today, it is exclusively responsible for the management of this cycle (see Agreement of 24 August 1981 between Synatom and the state). Very recently, Tractebel sold its 50% of the capital of Synatom, which it obtained in 1994, to Electrabel. Therefore, Synatom is now held at 100% by Electrabel, apart from the state’s “golden share”.

6. The Act refers here to “all operators which hold a royal licence to operate nuclear power plants or any company obtaining such rights by substitution”. In Belgium, this means Electrabel. The co-operative company for electricity production SPE is also implicated, albeit in a minimal manner, in the industrial production of electricity by nuclear fission in Belgium. A Royal Order is under preparation to specify how the Act of 11 April 2003 will apply to this company SPE, in application of Article 24 of this Act.
7. The Act defines “dismantling funds” as “funds to cover the cost of shutting down the reactor in the nuclear power plant and of removing the nuclear fuel, dismantling the nuclear installation, cleaning up the site and managing the radioactive waste resulting from these operations” (Article 2.2). These funds are established to cover, for each nuclear power plant, the total current amount of dismantling costs at the time of the planned shut-down of the nuclear power plant concerned, i.e. at latest 40 years after the date of their entry into industrial service” (Article 11.3).
8. Defined in the Act as “funds to cover the cost of managing spent fissile materials in nuclear power plants” (Article 2.3). These funds are reviewed annually by the Nuclear Funding Company according to the quantity of spent fissile material produced during the corresponding year (Article 11.4).
9. As regards dismantling funds, at the end of 2003, nuclear operators were already required to provide the Nuclear Funding Company with an amount equivalent to the amount they have already constituted for the dismantling of nuclear power plants. As from the budget year 2003, nuclear operators transferred to the Nuclear Funding Company, in trimestrial payments, a total amount which corresponds to the estimations for the dismantling fund along with the estimations for the management of the spent fissile materials for the year in question (Article 11.2).
10. These persons are: the General Administrator of the Treasury; the chairperson of the Management Board of the Electricity and Gas Regulatory Committee, the chairperson of the Insurance Supervisory Authority, the senior civil servant in charge of the budget, a person nominated by the National Bank of Belgium, and the senior civil servant in charge of the energy administration.

the Director General of the National Organisation for Radioactive Waste and Spent Fissile Materials (ONDRAF) are entitled to attend meetings of the Monitoring Committee and provide advisory opinions.

The Monitoring Committee essentially exercises an advisory and supervisory role vis-à-vis the Nuclear Funding Company (Article 5). Its opinions are binding upon the Nuclear Funding Company.<sup>11</sup> These opinions are issued at the initiative of the Monitoring Committee itself or at the request of the competent authorities. They can cover:

- methods of funding the dismantling and management of spent fissile materials, and periodic evaluation of the appropriate nature of such methods (see Article 12);
- changes to the maximum percentage of funds representing the amount which the Nuclear Funding Company can lend to nuclear operators (see Article 14.2);
- categories of capital in which the Nuclear Funding Company invests the part of the funds which it may not lend to nuclear operators (see Article 14.5).

The Committee's capacity to issue opinions is completed by a control function in relation to:

- the possibility which the Nuclear Funding Company has to lend funds to a nuclear operator (see Article 14);
- the methods used to establish funds and manner in which funds are collected by the Nuclear Funding Company (see Article 5.2.2);

As regards the existence and adequacy of funds, the resolutions of the Monitoring Committee require the agreement of ONDRAF.

5.1 The new Belgian Act contains a particular characteristic, i.e. the possibility for the Nuclear Funding Company to lend operators part of the funds for dismantling and the management of spent fissile material (Article 14). This possibility is at the heart of the tension between the two simultaneous objectives of the law: to ensure the availability of funds when the time comes and not to unjustly penalise Belgian nuclear operators in the context of the liberalisation of the European energy market.

These loans are governed by a double set of agreements. A general agreement is signed between the Nuclear Funding Company, the Belgian state and the nuclear operators which sets out the solvability criteria that operators must demonstrate in order to borrow part of the funds from the Nuclear Funding Company. This was concluded on 3 May 2004 between the Nuclear Funding Company, the Belgian State and Electrabel.<sup>12</sup> The second agreement is the loan agreement itself, which is concluded between the Nuclear Funding Company and each operator.

The Act requires that in order to obtain a loan from the Nuclear Funding Company, two essential conditions should be met:

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11. See Parliamentary Documents, Chamber, 2002-2003, No. 50-2238/01, p. 7. The Nuclear Funding Committee may appeal such opinions before the Council of Ministers (Article 6).

12. For SPE, see footnote 6.

- the sum lent may not represent more than 75% of the total amount of these funds except during the transitory period;
- the Company may only loan money to nuclear operators which can be considered to be “good debtors” (credit quality).

Therefore, the Nuclear Funding Company may lend 75% of the funds, under commercial conditions and at rates used for industrial credit, to nuclear operators which can be considered to be “good debtors”. However, during a transitional period established by the Act, the Company can lend 100% of these funds to the same nuclear operators (Article 14.1 *in fine*).

The remaining 25% which may not be loaned are to be invested by the Nuclear Funding Company in various and diverse shares which are not nuclear-related (Article 14.5). Furthermore, the Nuclear Funding Company must retain at all times sufficient liquid assets, in the form of shares or available stock, in order to finance all expenses linked to dismantling and management of spent nuclear materials for the following three years of operations (Article 14.6).

5.2 The granting and extent of the loan depend on the credit quality of the operator. The Act evaluates this based on two financial indicators (1) a ratio of debt vis-à-vis independent capital on the consolidated accounts of the operator and (2) a credit rating from an financial agency of international reputation. The more severe of the above criteria takes precedence. A conversion scale is used to evaluate the loan which may be granted to each operator vis-à-vis its credit quality (Article 14.2). This scale is established by the general agreement of 3 May 2004 concluded between the State, the Nuclear Funding Company and the nuclear operators.<sup>13</sup>

The terms and conditions of the loan, including reimbursement, are controlled by the Monitoring Committee (Article 14). The Nuclear Funding Company can increase or decrease the percentage of funds which may be lent to a particular nuclear operator, depending on how that operator’s credit quality evolves, according to the established scale (Article 14.2.2).<sup>14</sup> Apart from during the transitional period, this percentage may not go beyond 75% of the assets of the Nuclear Funding Company.

5.3 The Act provides the Nuclear Funding Company with a general preferential right in favour of the property of nuclear operators, in the same manner as the Monitoring Committee requires the Nuclear Funding Company to totally or partially reimburse the loans concerned up to the amount of the reimbursements (Articles 16 and 17).

Furthermore, each loan agreement must include a “negative promise” clause which prevents the operator from reducing his assets by way of a mortgage or other security. The only real exception is the establishment of an equivalent security in favour of the Nuclear Funding Company, although there can always be ad hoc exceptions for existing securities, securities concluded in the normal course of business and securities to acquire new assets (Article 16.3).

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13. For SPE, see footnote 6.

14. The Monitoring Committee may choose not to lower this percentage but to establish a property or personal guarantee in favour of the Nuclear Funding Company (Article 14.2.3). If the Committee reduces the percentage of funds which the Company can lend, it indicates the amount which should be reimbursed and the shortest possible deadline (Article 15).

Administrative fines may be imposed by the Monitoring Committee if the information requirements in Articles 7 and 12 are violated (Article 22).<sup>15</sup> There are also fines for breach of Article 18. This probably refers to the information obligation contained in Article 19 of the Act.<sup>16</sup>

6. The Act of 11 April 2003 only concerns nuclear power plants<sup>17</sup> and does not change the funding arrangements or management for operators or owners of other nuclear installations or contaminated sites in Belgium. Today, there are three dismantling and rehabilitation funds which are supervised by ONDRAF. They deal with the Centre for the study of nuclear energy CEN-SCK site, the Belgoproces (1 and 2) site and the Institute for Radioelements site.

## **Brazil**

### *Organisation and structure*

#### *Order establishing an emergency response committee for nuclear emergencies (2003)*

This Order No. 777 was adopted on 30 October 2003 by the Minister for Science and Technology, and was published in the Official Journal of 31 October 2003.

It aims to establish an Emergency Response Committee for Nuclear Emergencies in the municipality of Angra dos Reis. This Committee is to assist the Commission for the Co-ordination of the Protection of the Brazilian Nuclear Programme (COPRON) in relation to emergency response to incidents in the Almirante Álvaro Alberto nuclear power plant (hereinafter referred to as the AAANPP).

Pursuant to Section 5 of the order, the Committee is in charge of:

- examining proposals for amendments of standards and directives governing the activities of the Protection System for the Brazilian Nuclear Programme (SIPRON) vis-à-vis the AAANPP;
- drafting of studies, reports and suggestions concerning the powers of COPRON in relation to the activities of SIPRON for the AAANPP;
- drafting of proposals to update the legislation governing the activities of SIPRON for the AAANPP;
- planning and submission to COPRON of an annual report on SIPRON's activities for the AAANPP;
- planning and co-ordination of exercises on response on nuclear emergencies in the AAANPP, pursuant to the annual report on SIPRON's activities;

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15. See the remarks of the legislative section of the Council of State in relation to the possible requalification of these administrative sanctions into criminal sanctions (Opinion No. 34, 184/1, Parliamentary Documents, Chamber, 2002-2003, No. 50-2238/01, p. 25).

16. The authors of the Act do not seem to have taken into account the modifications to the terms of Article 18 in the first draft Act (Parliamentary Documents, Chamber, 2002-2003, No. 50-2238/01, p. 22) which was transferred to Article 19 of the Act as adopted.

17. Defined by the Act as "any nuclear installation which industrially produces electricity".

- drafting and co-ordination of a programme for verification, planning and response in relation to nuclear emergencies in the AAANPP;
- evaluating the development of nuclear emergency exercises carried out under the conditions envisaged by this programme, as well as the proposal and adoption of measures and procedures necessary to improve existing standards;
- follow-up of planning and public information in respect of emergency situations at the AAANPP;
- establishing training programmes for staff in relation to emergency response.

## **Democratic Republic of the Congo**

### ***Radiation protection (including nuclear emergency planning)***

*Act on protection against the dangers of ionising radiation and on the physical protection of nuclear materials and installations (2002)*

This Act No. 017/2002 was adopted and entered into force on 16 October 2002. It aims to protect the public, workers and the environment against the dangerous effects of ionising radiation. It also covers the physical protection of nuclear installations and materials and regulates radiological emergencies.

Any activity involving exposure to ionising radiation is subject to a licence and must take place in accordance with the basic radiation protection and safety standards defined by the International Atomic Energy Agency.

The regulatory control of nuclear activities is vested in the National Committee on Protection against Ionising Radiation (*Comité national de protection contre les rayonnement ionisants* – CNPRI). The members of this entity, which has legal personality, are nominated by the President of the Republic upon proposal of the Minister holding the portfolio governing scientific and technological research.

Its principal tasks are:

- preparation of regulations and codes on radiation protection and safety, plus the amendment of existing texts;
- control of the application by authorised persons of protective measures and monitoring for the personnel, the installations and equipment;
- safety control in all field of use of ionising radiation;
- establishing dose limits applicable to workers and the population;
- emergency measures to be taken in the case of risk or radiological emergency.

The CNPRI is furthermore empowered to deliver licences for the use and possession of radiation sources. It is assisted by the National Radiation Protection Institute whose objective is to promote measures and methods for ionising radiation protection at the national level.

The Act regulates the functions of qualified radiation protection agents designated by the CNPRI, who have inspector status. They may control establishments or installations where radioactive substances or ionising radiation-generating equipment is held, and they are authorised to take the necessary measures for execution of the Act.

A National Advisory Commission on Radiation Protection is also established. It provides reasoned opinions on all questions linked to radiological safety. Its organisation and operations are set out in a Decree of the President of the Republic.

Licence-holders for nuclear materials are responsible for safety, radiation protection, physical protection and emergency response plans.

Finally, the Act governs the physical protection of nuclear materials and installations. It divides nuclear materials into three categories and sets out conditions for the storage and use of nuclear materials according to these categories. The Act contains provisions governing the physical protection of nuclear materials during their transport on national territory, as well as during international transport. Nuclear materials which are being used or stored are also subject to physical protection rules established by the Act. It defines those measures which the operator is required to take (inventory, access to zones where nuclear materials are kept, regular evaluations of physical protection systems).

Penal provisions apply in the case of non-authorised possession of nuclear materials or breach of the provisions of this Act.

## **Croatia**

### ***General legislation***

#### *Act on Nuclear Safety (2003)\**

The new Act on Nuclear Safety was adopted by the Croatian parliament on 15 October 2003 and promulgated by the president on 21 October 2003. This Act repeals and replaces the nuclear safety provisions of the legislation inherited from the former Yugoslavia, namely the Act on Ionising Radiation Protection and Nuclear Plants and Facilities Safety Measure of 1981 and the Act on Radiation Protection and the Safe Use of Nuclear Energy of 1984. The radiation protection provisions of these Acts had already been repealed and replaced with the adoption of the Act on Protection against Ionising Radiation in 1999 (see *Nuclear Law Bulletin* No. 65; the text of the Act is reproduced in the Supplement to that *Bulletin*).

The primary purpose of the Act on Nuclear Safety is stated in its Article 1 to be the regulation of safety in relation to the use of nuclear materials and equipment, and the establishment of the State Office for Nuclear Safety. A user of nuclear material or specified equipment is solely responsible for safety and protective measures in the performance of a nuclear activity. Adequate financial resources and a sufficient number of qualified staff to ensure nuclear safety must be guaranteed. Licences to perform nuclear activities must be obtained from the state body with jurisdiction over nuclear safety (see *infra*) with the exception of permits to transport or to import or export nuclear material or specified equipment.

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\* The text of this Act is reproduced in the Supplement to this edition of the *Bulletin*.

Nuclear safety and protection principles as outlined in this Act and in the international agreements to which Croatia is a Party must be taken into account when determining the siting, planning, construction, operation and decommissioning of nuclear facilities. Similarly, work having an impact on nuclear safety must be carried out in accordance with quality assurance requirements.

A user of nuclear materials or specified equipment is required to:

- monitor radioactivity in the vicinity of the installation where the activity is performed;
- ensure the professional qualifications and training of workers in such facilities;
- maintain records on nuclear material and submit reports on such records to the state body with jurisdiction over nuclear safety;
- develop an emergency plan and programme for measures to be taken in the event of a nuclear incident.

A Technical Support Centre shall prepare and implement the necessary expert and technical activities of the national programme for emergency preparedness and response. In the event of an incident, the Technical Support Centre shall offer expert assistance to the national crisis response organisation.

This Act establishes the state body with jurisdiction over nuclear safety, namely the State Office for Nuclear Safety (SONS). This Office shall, *inter alia*, carry out the following tasks:

- issue licences for the performance of nuclear activities;
- conduct safety analyses and issue certifications concerning siting, planning, construction, operation and decommissioning of nuclear facilities;
- monitor safety conditions at nuclear power plants in the region;
- supervise the implementation of this act and secondary legislation based upon it;
- carry out inspections;
- ensure expert assistance for nuclear emergency plans and measures against illicit trafficking;
- co-operate with domestic and international organisations in the fulfilment of Croatia's international commitments;
- support research and development activities.

The Director of the SONS shall be appointed by the government. The Act provides that the Ministry of the Economy shall carry out the tasks of the SONS until such time as it commences operations, which shall not be later than 1 January 2004. The SONS shall also be attributed a number of civil servants from the Ministry in proportion to the tasks it has assumed.

A Council for Nuclear Safety is also established as an advisory body of the Croatian parliament. It shall provide its opinion on draft legislation based on the provisions of this Act and other implementing legislation, submit proposals concerning development strategy for and organisation of nuclear safety at national level, and monitor international co-operation in this field. The Council is composed of five experts in the nuclear safety field who shall be appointed and dismissed by the parliament upon proposal by the government.

The Act sets out penalties for violation of its requirements, ranging in monetary terms from 1 000 Croatian kuna (HRK) to HRK 100 000.<sup>18</sup>

## **Finland**

### ***General legislation***

#### *Amendment to the Nuclear Energy Act (2004)*

1 January 2004 saw the entry into force of an amendment to the Nuclear Energy Act (see *Nuclear Law Bulletin* Nos. 21, 26, 29, 35, 41, 43, 55; the text of the Act is reproduced in the Supplement to *Bulletin* No. 41). This Amendment added some new minor tasks to the charter of the Finnish State Nuclear Waste Management Fund. The Fund is now obliged to collect monies from the two Finnish nuclear companies and VTT, which is a state research centre which operates a small research reactor. Such monies shall finance nuclear research, with a view to guaranteeing that certain nuclear expertise is available to the state agencies controlling and supervising nuclear operations in Finland. Previously, this was taken care of by the relevant agencies in co-operation with the companies on a voluntary basis. This will add some EUR 3 million annually to the capital of the Fund, which is approximately EUR 1.3 billion at present.

## **France**

### ***Organisation and structure***

#### *Order on the organisation of the Ministry of Defence in relation to the operation of military nuclear systems and major nuclear installations classified as secret in the fields of nuclear security (2003)*

This Order, adopted on 27 November 2003, repeals the Order of 27 July 2001 on the same subject (see *Nuclear Law Bulletin* No. 69).

This Order aims to clarify the roles of those responsible for the design, construction, use and dismantling of military nuclear systems, major nuclear installations classified as secret and associated supporting equipment, which are subject to special nuclear security rules.

From now on, the responsibilities of the Ministry of Defence as operator of such systems and installations, or in relation to the transport of associated fuel components, are vested in the General Delegate for Procurement, the Chief of Naval Staff and the Chief of Air Force Staff. The Order provides that the General Delegation for Procurement and the Atomic Energy Commission are responsible for certifying and approving systems and installations, and for quality control.

The General Delegate for Procurement, the Chief of Naval Staff and the Chief of Air Force Staff each have, in their own field of activity, quality control including in particular a form of internal control for which an inspector for nuclear security measures reports directly to them.

From now on, responsibilities are divided between:

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18. This corresponds to a scale between EUR 140 and EUR 14 000.

- the authorities which identify general organisational principles in order to reach and maintain the desired level of safety for military nuclear systems, major nuclear installations classified as secret or transport of associated fuel components;
- the authorities in charge of implementation which deploy the necessary material and human resources;
- the territorial military authorities which co-ordinate actions taken by the authorities and the state authorities which are responsible for preventing accidents or incidents, on measures to be taken in the event of an accident/incident and for the radiological monitoring of the environment.

*Order establishing a commission on ionising radiation sources (2004)*

This Order of 27 January 2004 establishes a Commission on Ionising Radiation Sources within the Radiation Protection Section of the Higher Commission on Public Health. This Commission shall:

- propose opinions or recommendations on all radiation protection subjects linked to the use of ionising radiation;
- participate in the drafting of regulations and technical instructions on these subjects.

The field of activity of the Commission covers artificial and natural sources of radionuclides as well as sources of ionising radiation generated by electrical apparatus, with the exception of questions concerning the protection of persons exposed for medical purposes.

***Radiation protection (including nuclear emergency planning)***

*Order on the organisation of a national network to measure radioactivity in the environment (2003)*

This Order, adopted on 17 October 2003, establishes a national network to measure radioactivity in the environment, pursuant to Article R. 1333-11 of the Public Health Code, which was inserted pursuant to the Decree of 4 April 2002 on the General Protection of Persons against Ionising Radiation (see *Nuclear Law Bulletin* No. 70).

The Order aims to set down criteria governing the organisation of this network, measures for information of the public and standards which must be met by certified laboratories.

As regards organisation of the national network, its general principles are established by the General Directorate for Nuclear Safety and Radiation Protection (*Direction générale de la sûreté nucléaire et de la radioprotection* – DGSNR) following the opinion of a pilot committee whose members are nominated by an order of the Minister for Health.

The Institute for Radiation Protection and Nuclear Safety (*l'Institut de radioprotection et de sûreté nucléaire* – IRSN) performs secretariat functions for this committee and manages the national network. For this purpose it ensures:

- the centralisation and use of the results of tests;
- the validation and application of the results of these tests;

- that this data is made available and disseminated to administrative authorities responsible for nuclear activities and the public;
- conservation and archiving of such data.

The IRSN drafts a management report each year on the national network and a summary report on the radiological state of the environment where the data collected by the network is conclusive. This summary report is complemented by a presentation on estimates of the radiological impact of the major nuclear activities. This is submitted to the pilot committee, then transferred to the DGSNR.

The information gathered through the national network is made available to the Public Health Institute (*Institut de veille sanitaire*). Finally, the data collected, the opinions of the pilot committee and the annual report on the management of the national network established by the IRSN are released to the public.

The second part of the Order is devoted to criteria on the authorisation and certification of laboratories which measure the radioactivity in the environment. A Certification Commission is responsible for delivering or refusing requests for certification submitted by the laboratories. The Commission is composed of 12 members who are nominated by Order of the Minister for Health. Certification is delivered by joint Order of the Minister for the Environment and the Minister for Health for a maximum period of four years. The Order specifies for which categories of analysis the certification is valid.

Certification requires the laboratory to submit the results of its radiological analysis of the environment to the IRSN which is allowed to put them to use. Without prejudice to possible judicial proceedings, any laboratory which includes false declarations in the file supporting its request for certification shall be subject to withdrawal of that certification. If any conditions attached to the certification are violated, the certification can be temporarily suspended or withdrawn by joint decision of the Minister for the Environment and the Minister for Health, upon the opinion of the Certification Commission.

In the event of a radiological emergency, where the tests carried out by the IRSN reveal an abnormal contamination rate which could lead to the annual dose rate of 1 mSv being exceeded, the DGSNR and competent police authority are informed without delay and they set up the necessary measures to inform the public. Laboratories which are certified by the Minister for the Environment and the Minister for Health provide the IRSN promptly with the results of their tests.

*Order defining the certification conditions for bodies carrying out radiation protection monitoring (2004)*

This Order was adopted on 9 January 2004. It defines the conditions governing certification of bodies responsible for monitoring the organisation and efficiency of technical measures for the management of radioactive sources. It sets out in particular the list of documents which must be annexed to the request for certification, which should be addressed to the General Directorate for Nuclear Safety and Radiation Protection. The initial certification is delivered for a maximum duration of one year, but may be renewed for three years.

The activities of certified bodies are themselves controlled by health inspectors or engineers pursuant to Article L. 421-61 of the Public Health Code. Their certification can therefore be suspended

or revoked at any moment for reasons relation to qualifications of staff, materials used or the quality of monitoring reports.

According to the Order, such reports should set out the identified breaches and propose preventive or corrective measures which should be implemented. They are addressed to the director of the establishment, plus also to the Health Inspector, the Prefect and the General Director for Nuclear Safety and Radiation Protection. Furthermore, each body must draft an annual report indicating the number and nature of controls carried out, as well as the principal lessons learned.

*Order setting out exemption levels in respect of licensing of nuclear activities set out in Article R. 1333-26 of the Public Health Code (2003)*

This Order, adopted on 2 December 2003, aims to set out exemption levels in respect of licensing of nuclear activities listed in Article R. 1333-26 of the Public Health Code, with the exception of those used for medicine, dentistry, human biology and biomedical research:

- manufacture of radionuclides;
- manufacture of products or equipment containing such products;
- import or export of radionuclides, or of products or equipment containing radionuclides;
- distribution of radionuclides, or of products or equipment containing radionuclides;
- use of apparatus emitting X-rays or radioactive sources and the use of accelerators other than electronic microscopes;
- the irradiation of products of any nature, including foodstuffs.

*Order on methods for training of persons specialised in radiation protection and certification of the service provider (2003)*

This Order of 29 December 2003 was adopted pursuant to Article R. 231-106 of the Labour Code which provides that “the person competent for radiation protection purposes may not be designated until he/she has successfully followed radiation protection training provided by certified bodies.”

The Order sets out conditions governing radiation protection training for such persons. A training certificate which is valid for five years shall be granted after an examination. Following expiry of this period, a further examination is carried out under similar conditions.

*Order on criteria for certification of authorities in charge of individual monitoring of ionising radiation workers (2003)*

This Order was adopted on 6 December 2003 in application of Decree No. 2003-296 of 31 March 2003 on the Protection of Workers against the Dangers arising from Ionising Radiation (see *Nuclear Law Bulletin* No. 71). It sets out criteria and conditions governing certification of in-house medical services, laboratories for medical tests and bodies which measure the exposure of ionising radiation workers.

The Order also sets out conditions governing individual dose monitoring for radiation workers, specifies which materials and methods should be used and establishes procedures for transmission of dosimetric results.

### ***Regime of radioactive materials (including physical protection)***

*Order regarding the protection of national defence secrecy in the field of nuclear material control and protection (2004)*

This Order, adopted on 26 January 2004 in application of Decree No. 98-608 of 17 July 1998 on the Protection of National Defence Secrecy, repeals and replaces the Order of 24 July 2003 on the same subject (see *Nuclear Law Bulletin* No. 72). The Order classifies certain measures, procedures, objects, documents, electronic data and files concerning nuclear materials as a national security secret. It specifies that the only information which should be classified is that which might jeopardise or gravely threaten the physical protection of nuclear materials in relation to the prevention of actions of ill intent or proliferation, if it were released.

## **Germany**

### ***Radiation protection***

*X-Ray Ordinance*

On 30 April 2003, the Federal Minister for the Environment, Nature Conservation and Nuclear Safety published a consolidated version of the Ordinance on the Protection against Damage caused by X-Rays (X-Ray Ordinance) as last amended on 18 July 2002 (see *Nuclear Law Bulletin* No. 70) in *Bundesgesetzblatt* 2003 I p. 605.

### ***Transport of radioactive materials***

*Ordinance on the Transportation of Dangerous Goods by Road and Rail (2003)*

On 10 September 2003, a consolidated version of the Ordinance on the Transportation of Dangerous Goods by Road and Rail was published in *Bundesgesetzblatt* 2003 I p. 1913. The new version contains, in particular, the amendments introduced by the Ordinance of 28 April 2003 (*Bundesgesetzblatt* 2003 p. 1 I p. 595) and the Ordinance of 11 December 2001 (*Bundesgesetzblatt* 2001 I p. 3529), which partly entered into force on 1 July 2001 and partly on 1 January and 6 May 2003. Pursuant to Section 6, paragraph 3, the Federal Office for Radiation Protection is competent for the implementation of the Ordinance in the field of transport of radioactive materials.

*Ordinance on the Transportation of Dangerous Goods by Internal Waterways (2004)*

A new Ordinance on the Transportation of Dangerous Goods by Internal Waterways was issued on 31 January 2004 (*Bundesgesetzblatt* 2004 I p. 136). The Ordinance applies to the transportation of dangerous goods on all navigable waterways in the territory of Germany including the border-crossing transportation of dangerous goods on the Rhine and the Mosel rivers (Section 1). The competent

authority for the implementation of the Ordinance regarding the transport of radioactive material is the Federal Office for Radiation Protection, in accordance with Section 6, paragraph 6.

*Ordinance on the Transportation of Dangerous Goods on the Rhine and Mosel rivers (2003)*

A new version of the Ordinance on the Transportation of Dangerous Goods on the Rhine and Mosel rivers was issued on 12 July 2003 (*Bundesgesetzblatt* 2003 II p. 648 and Annex volume).

*Ordinance on the Maritime Carriage of Dangerous Goods (2003)*

On 4 November 2003, a new Ordinance on the Maritime Carriage of Dangerous Goods was published in *Bundesgesetzblatt* 2003 I p. 2286. This Ordinance complements the previous Ordinances on transportation by internal waterways. The competent authority for the implementation of the Ordinance is the Federal Office for Radiation Protection pursuant to Section 6, paragraph 9 of the Ordinance.

***Regulations on nuclear trade (including non-proliferation)***

Since the last report in *Nuclear Law Bulletin* No. 67, p. 35, the regulations on nuclear trade have been amended on a number of occasions. The amendments are partly designed to implement applicable European Union regulations, in particular in the field of dual use:

*Amendments of the 1961 Foreign Trade Act*

The 1961 Foreign Trade Act (See *Nuclear Law Bulletin* Nos. 46, 54 and 59) has been amended frequently [*Bundesgesetzblatt* 1996 I p. 1850; 1997 I p. 966 (967), 1430 (1439), 3108 (3115); 1998 I p. 1242 (1254); 1999 I p. 2822; 2000 I p. 632 (634), 1956 (1959); 2001 p. 1254 (1260), 2785 (2813), 2992 (2997); 2002 I p. 3165 (3166)]. The Foreign Trade Act was last amended by Article 118 of the Ordinance on Adapting Competences of 27 November 2003 [*Bundesgesetzblatt* 2003 I p. 2304 (2318)].

*Amendments to the Nuclear Trade Ordinance (2001-2003)*

The 55<sup>th</sup> to 61<sup>st</sup> Amendments to the Nuclear Trade Ordinance are to be found at *Bundesanzeiger* 2001 p. 14621; 2002 p. 6077, 7189, 26497; 2003 p. 5293, 19421. The latest amendment is the 61<sup>st</sup> Ordinance to Amend the Nuclear Trade Ordinance of 26 November 2003 (*Bundesanzeiger* 2003 p. 25473).

*Amendments to the Import List (2000-2003)*

The 143<sup>rd</sup> to 148<sup>th</sup> Ordinance to Amend the Import List are to be found at *Bundesanzeiger* 2000, p. 24069; 2001 p. 16105, 25505; 2002 p. 7765, 22813, 26681; 2003 p. 19917. The latest amendment is the 148<sup>th</sup> Ordinance of 15 December 2003 (*Bundesanzeiger* 2003 p. 26137).

### *Amendments to the Export List (2000-2003)*

The 98<sup>th</sup> to 102<sup>nd</sup> Ordinance to Amend the Export List are to be found at *Bundesanzeiger* 2000, p. 18579; 2001 p. 22581; 2002 p. 7069, 26498. The latest amendment is the 102<sup>nd</sup> Ordinance of 26 November 2003 (*Bundesanzeiger* 2003 p. 25473).

## **Hungary**

### ***General legislation***

#### *Amendment of the 1996 Atomic Energy Act (2003)*

The 1996 Atomic Energy Act (see *Nuclear Law Bulletin* Nos. 59 and 60; the text of the Act is reproduced in the Supplement to *Bulletin* No. 60) was amended by Section 81 of Act XLII of 2003 which entered into force on 1 August 2003. This amendment provides that governmental tasks relating to the safe use of nuclear energy, nuclear safety and radiation protection as described in that Act shall be carried out by the Hungarian Atomic Energy Authority (HAEA) and the Ministers concerned, whose work shall be co-ordinated by the Atomic Energy Co-ordination Council. The Council also monitors the enforcement of nuclear legislation and the application of the regulatory regime in this field.

The amendment provides that the HAEA is a central administrative body vested with regulatory independence. It is supervised by a Minister appointed by the Prime Minister, and shall be funded by a separate budgetary line within that Ministry. The Director General of the HAEA and his/her deputies shall be appointed and dismissed by the Prime Minister. The HAEA shall monitor the general trends of international development in the atomic energy field and make proposals for domestic measures on this basis. It shall further monitor the enforcement of legal regulations within its field of competence and make proposals for amending or enacting appropriate legislation.

Decree No. 114/2003 on the Scope of Duties, Authority and Competence to Impose Penalties of the Hungarian Atomic Energy Authority, and on the Activities of the Atomic Energy Co-ordination Council was adopted on 29 July 2003 to provide further details in this respect (see *Nuclear Law Bulletin* No. 72).

## **Italy**

### ***Radioactive waste management***

#### *Decrees on radioactive waste management (2003)*

Since March 2003, various decrees and ordinances have been adopted in Italy addressing decommissioning of nuclear installations and management of radioactive waste. These measures primarily address the need to ensure security conditions for nuclear installations and radioactive waste, in particular in the current climate of risk of international terrorism.

In connection with the above, a Prime Minister's Decree adopted on 7 March 2003 laid down conditions and requirements in the field of radioactive waste management and called upon the Company for the Management of Nuclear Installations (*Società per la Gestione degli Impianti Nucleari* – SOGIN) to take all necessary actions to ensure that relevant operations be carried out

safely. The Decree provides for further measures, a number of which have been implemented by Ordinances (by the Chairperson of SOGIN, who was appointed ad hoc Commissioner by the Prime Minister's Decree).

An important element of the 7 March Decree concerned the identification of one or more sites for the disposal of radioactive waste. In this connection, a further Decree (No. 314 of 14 November 2003) was adopted by the government with immediate effect, and was to be converted into law (i.e. approved by the parliament as per the Italian constitution) within 60 days. The identified site was situated in Scanzano Jonico, in the region of Basilicata (southern Italy). However, the very strong opposition by the local population caused the Decree to be extensively amended during discussion in parliament, and the Decree-Law finally adopted (No. 368 of 24 December 2003, published in Official Journal No. 6 of 9 January 2004) is based on the following precepts:

- the (national) repository is intended for category III waste (high-level radioactive waste) only;
- the location of the repository shall be identified within one year from the entry into force of this Decree-Law, having acquired the opinion of an ad hoc technical-scientific Commission, composed of 19 highly qualified experts. The site selection is to be validated by the Council of Ministers within one year, on the basis of the opinions of the above-mentioned Commission and other concerned bodies (National Research Council – CNR; National Environmental Protection Agency – APAT; National Agency for New Technologies, Energy and the Environment – ENEA);
- the repository will host the waste referred to above and irradiated fuel for final disposal. The safe storage of category I and II waste (low- and medium-level radioactive waste) will be governed by a Prime Minister's decree and SOGIN will take care of the operational aspects;
- local economic incentives shall be provided to regions where nuclear power stations and fuel cycle installations are situated until such installations are definitively decommissioned.

## **Romania**

### ***Organisation and structure***

*Decision approving the internal rules of the National Commission for the Control of Nuclear Activities (CNCAN) (2003)*

This Governmental Decision No. 1627 was adopted on 23 December 2003 and was published in Official Gazette No. 69 of 27 January 2004. The legal basis for this Decision was Article 4 of the 1996 Law on the Safe Conduct of Nuclear Activities, as amended (see *Nuclear Law Bulletin* Nos. 59, 61, 68 and 72; the text of the Law is reproduced in the Supplement to *Bulletin* No. 59). The CNCAN is a public institution of national interest, has legal personality and is financially independent. It is responsible for:

- issuing regulations expanding on general requirements relevant to nuclear safety, radiation protection, quality assurance, non-proliferation of nuclear weapons, physical protection, transport of radioactive materials, management of radioactive waste and spent nuclear fuel, intervention in the case of a nuclear accident;

- issuing regulations regarding authorisation and control procedures in the nuclear field;
- initiating legislation in the nuclear field;
- reviewing existing regulations to ensure consistency with the relevant international standards and conventions ratified by Romania;
- ordering the necessary measures to be taken for the enforcement of regulations in the nuclear field;
- approving nuclear emergency intervention plans;
- ensuring co-operation with the competent international and regional institutions;
- organising public information in the nuclear sector.

This Decision provides further details on the CNCAN's licensing and control functions. It also contains detailed provisions on the role and duties of the CNCAN Chairperson and on the organisational structure of the CNCAN, including the Management Council and the Consultative Council.

The CNCAN shall finance its activities entirely from its revenue, namely licensing fees, contributions of international bodies and economic entities and interest on its available funds.

#### *Decision on the organisation of the Nuclear Agency (2003)*

Government Decision No. 1425 of 4 December 2003 approving the regulations for the organisation and functioning of the Nuclear Agency was published in Official Gazette No. 904 of 17 December 2003. The legal basis for this Decision was the Ordinance on the Use of Nuclear Energy Exclusively for Peaceful Purposes of 2003 (see *Nuclear Law Bulletin* No. 72). That Ordinance provided for the establishment of a Romanian Nuclear Agency through the reorganisation of the National Agency for Atomic Energy within the Ministry of Education, Research and Youth. This Decision provides more detailed provisions on the functions, responsibilities and structure of the Nuclear Agency.

#### *Ordinance on the Reorganisation of the Central Public Administration (2004)*

This Government Emergency Ordinance No. 11 of 2004 was published in Official Gazette No. 266 of 2004. Pursuant to this instrument, the Prime Minister is to co-ordinate the National Commission for the Control of Nuclear Activities (CNCAN) and the Nuclear Agency through its Chancellor's Office.

### ***Radiation protection***

#### *Norms for operational radiation protection for the conduct of non-destructive control practices involving ionising radiation (2003)*

These Norms were approved by Order No. 155 of 2 October 2003 of the Chairperson of the National Commission for the Control of Nuclear Activities (CNCAN) and were published in Official Gazette No. 873 of 2003. They are amongst those measures adopted to implement Directive 96/29/Euratom of 13 May 1996 laying down basic safety standards for the health of workers and the

general public against the dangers arising from ionising radiation. These Norms apply to non-destructive control practices with ionising radiation involving the risk of exposure to radiation generated by installations using sealed sources, X-ray generators and electron generators. They establish the responsibilities of licensees to establish and maintain an adequate operational radiation protection system and the duties incumbent upon operators and radiological protection experts in order to obtain a licence from the CNCAN.

*Norms on radiological safety in diagnosis and interventional radiology procedures (2003)*

These Norms were approved by Order No. 173 of 16 October 2003 of the Chairperson of the CNCAN and were published in Official Gazette No. 924 of 2003. They apply to all medical, professional and general public exposures, including potential exposure. They establish the requirements for licensing and inspection by the CNCAN of diagnostic and interventional radiology procedures. The licensee is required to engage in an effective safety and prevention campaign, assisted by staff who are appropriately qualified and have benefited from special training. The licence-holder is required to develop, implement and document a radiation protection programme which is consistent with the nature and degree of risk associated with that particular radiological procedure.

*Norms on radiological safety of decommissioned mining and/or processing facilities for uranium and/or thorium ores (2003)*

The full title of these Norms is “Norms on radiological safety of decommissioned mining and/or processing facilities for uranium and/or thorium ores – Criteria for the release from the authorisation requirements of the CNCAN for the purpose of assigning a different use to buildings, materials, installation waste dumps and land that has been contaminated during mining and/or processing of uranium or thorium ore”. They were approved by Order No. 207 of 24 November 2003 of the Chairperson of the CNCAN and were published in Official Gazette No. 933 of 2003. These Norms were intended to complete the provisions of the Basic Norms for Radiological Safety adopted in 2000 (see *Nuclear Law Bulletin* No. 66), by adding requirements concerning the decommissioning and release of buildings, materials, installations etc. which have been contaminated during such mining activities.

***Radioactive waste management***

*Decision on the organisation of the National Agency for Radioactive Waste (2003)*

Government Decision No. 1601 of 23 December 2003 which was published in Official Gazette No. 33 of 15 January 2004 regulates the organisation and functions of the National Agency for Radioactive Waste (NARW). This Decision was adopted pursuant to the Ordinance of 2003 on the Management of Spent Nuclear Fuel and Radioactive Waste (see *Nuclear Law Bulletin* No. 72). The NARW, a legal entity under the authority of the Ministry of Economy and Commerce, is the national authority competent for the nationwide co-ordination of the safe management of spent nuclear fuel and radioactive waste, including final storage. The NARW has the following functions:

- it submits to the Nuclear Agency for approval the Medium and Long Term National Strategy regarding the management of spent nuclear fuel and radioactive waste, including final storage, and the decommissioning of nuclear and radiological installations (the National Strategy) and the Annual Plan of Action (APA);

- through its authorised representatives, it registers offences and applies sanctions as set out in Government Ordinance No. 11/2003 on the Management of Spent Nuclear Fuel and Radioactive Waste;
- it issues guidelines setting out requirements and technical specifications regarding the management of spent nuclear fuel and radioactive waste.

NARW activities are financed by direct annual contributions of licensees (see Decision No. 1568 *infra*), donations, sponsorship or financial assistance, and other sources of funds as approved by the government.

*Decision on contributions to the National Agency for Radioactive Waste (2003)*

Government Decision No. 1568 of 18 December 2003, which was published in Official Gazette No. 16 of 8 January 2004, set out the amount of the direct annual contributions to be paid by licensees to the National Agency for Radioactive Waste (NARW). This Decision was adopted pursuant to the Ordinance of 2003 on the Management of Spent Nuclear Fuel and Radioactive Waste (see *Nuclear Law Bulletin* No. 72). There are two types of direct annual contributions for licensees: in respect of spent nuclear fuel, it is calculated according to the power generated annually or the amount of heat released annually by a research reactor. In respect of low- or medium-level radioactive waste, a levy is calculated for each cubic metre prepared for the purpose of interim or permanent storage.

## **Slovenia**

***Radiation protection (including nuclear emergency planning)***

*Regulation on the Expert Council for Radiation and Nuclear Safety (2003)*

This Regulation was adopted on 12 March 2003 and published on 11 April 2003 (Official Gazette RS 35/2003). It determines the working procedures of the Expert Council for Radiation Protection and Nuclear Safety in relation to the physical protection of nuclear materials and facilities, safeguards applicable to nuclear goods, radioactivity and radiation protection in the environment and the use of radiation sources other than in health and veterinary care. The Regulation also establishes the frequency of the sessions of the Expert Council, which performs the tasks as defined in the 2002 Act on Protection against Ionising Radiation and Nuclear Safety (see *Nuclear Law Bulletin* No. 70). It is responsible for providing opinions and making proposals in relation to:

- drafting of regulations pursuant to the Act;
- the annual report on radiation protection and nuclear safety;
- the annual programme of work of the Slovenian Nuclear Safety Administration (SNSA); and
- other issues where requested by the SNSA or by the Ministry of Environment, Spatial Planning and Energy.

*Regulation on the Expert Council on issues relating to protection of the population against ionising radiation, radiological procedures and the use of radiation sources in health and veterinary care (2003)*

This Regulation was adopted on 12 June 2003 and published on 27 June 2003 (Official Gazette RS 62/2003). It determines the working procedures of the Expert Council, the frequency of its sessions, deadlines for providing opinions, and other matters ensuring its efficient operation. The Expert Council provides opinions and makes proposals in relation to:

- drafting of regulations pursuant to the 2002 Act on Protection against Ionising Radiation and Nuclear Safety (see *Nuclear Law Bulletin* No. 70);
- the annual report on radiation protection and nuclear safety;
- the annual programme of work of the Slovenian Radiation Protection Administration (SRPA); and
- other issues where requested by the SRPA or by the Ministry of Health.

*Regulation on conditions for the use of radiation sources in health care (2003)*

This Regulation was adopted on 24 October 2003 and published on 13 November 2003 (Official Gazette RS 111/2003). It lays down general principles governing the protection of patients and other persons exposed to ionising radiation for medical purposes during medical diagnosis and/or treatment; preventive medical surveillance of workers; systematic screening programmes; voluntary participation in testing programmes; therapeutic or bio-medical research; and medico-legal procedures. The Regulation also deals with the protection of individuals who help in the care of patients and other persons exposed to ionising radiation in medicine.

*Regulation on conditions and methods of assessment of doses for the protection of workers and the population against ionising radiation (2003)*

This Regulation was adopted on 24 October 2003 and published on 24 November 2003 (Official Gazette RS 115/2003). It lays down the conditions for issuing a licence in cases when planned doses exceed dose limits established for an individual exposed worker who is carrying out exceptional tasks, and the obligatory measures which must be taken to reduce the consequences of excessive exposure of the worker. It also establishes provisions governing the radiation protection assessment of exposed workers, deadlines and other criteria in relation to the submission, review and approval of amendments to radiation protection assessments of such workers; methodology in relation to the evaluation of doses resulting from external radiation and doses resulting from internal radiation due to the intake of radionuclides. It sets out dose limits for workers or members of the public exposed to radon and the methods to be used for data collection and management of documentation.

*Regulation on medical surveillance of exposed workers (2003)*

This Regulation was adopted on 23 December 2003 and published on 15 January 2004 (Official Gazette RS 2/2004). It sets out procedures governing the medical surveillance of exposed workers working in supervised and controlled areas; criteria for deciding upon special medical surveillance; and the decontamination and further treatment of exposed workers in cases where dose limits are exceeded. The Regulation also lays down criteria on the basis of which an approved medical

practitioner may carry out medical surveillance after the worker in question has ceased all professional activities involving exposure.

*Regulation on obligations of the person carrying out a radiation practice and of the user of a radiation source (2003)*

This Regulation was adopted on 28 November 2003 and published on 12 February 2004 (Official Gazette RS 13/2004). It sets out measures for the classification of working areas as supervised or controlled areas and the working conditions and obligations of employers with respect to radiation protection in these areas; the classification of exposed workers into categories A and B; and the conditions, method, scope and frequency of radiation protection assessments in the workplace. The Regulation also determines the method to be used for dose assessment in cases where direct measurements are not possible; the type and quality of the measuring equipment; the method and scope of reports on the results of assessments and dose limitations under normal and exceptional circumstances. Further provisions also govern obligations of employers in relation to education and training of radiation workers.

*Regulation on the qualifications of experts in the area of ionising radiation (2004)*

This Regulation was adopted on 30 January 2004 and was published on 27 February 2004 (Official Gazette RS 18/2004). It sets out the respective requirements for qualifications and examinations necessary to carry out the tasks of approved radiation protection experts, those responsible for technical checks of radiation sources, persons involved in dosimetric services and medical physics experts.

*Regulation on the personal dose data of radiation workers (2004)*

This Regulation was adopted on 19 March 2004 and published on 6 April 2004 (Official Gazette RS 33/2004). It establishes deadlines for conveying information to the central register of personal doses, as well as obligations and methods to be used in the transmission of information from the central register to the Ministry competent for the environment, to exposed workers and to employers. It also sets out methods to be used for the maintenance of data on radiological procedures and personal doses.

***Regime of nuclear installations***

*Decree on restrictions on the use of land surrounding a nuclear facility and on conditions for construction in such areas (2004)*

This Decree was adopted on 1 April 2004 and published on 13 April 2004 (Official Gazette RS 36/2004). It lays down the criteria determining restrictions on the use of land in the vicinity of a nuclear facility and details concerning prohibition or limitation of construction in these areas. For certain types of construction, it shall be necessary to attach an approval from the Slovenian Nuclear Safety Administration to the application for a construction licence.

*Decree on compensation due to the limited use of land surrounding a nuclear facility (2003)*

This Decree was adopted on 18 December 2003 and published on 30 December 2003 (Official Gazette RS 134/2003). It lays down the criteria determining the amount of compensation which must be paid on a monthly basis to the local community on whose territory a nuclear facility is installed. Such facilities include nuclear power plants in operation, spent fuel storage facilities, radioactive waste repositories and nuclear power plants which are shut-down or being decommissioned where spent nuclear fuel is still stored on site.

## **Spain**

### ***Radioactive waste management***

*Decree on activities performed by ENRESA and their financing (2003)*

On 31 October 2003, Royal Decree No. 1349/2003 on the governance of activities performed by the *Empresa Nacional de Residuos Radiactivos, SA* (ENRESA) and their financing was adopted by the government through the competent body of the Ministry of Economy (MINECO).

This Decree revises and upgrades the National Framework for the Performance of Radioactive Waste Management in Spain to take into account changes and developments which have occurred in recent years.

The principle elements of change are as follows:

- a revised mandate for ENRESA, including an upgraded and more comprehensive description of tasks;
- changes to the drawing up and periodicity of the General Radioactive Waste Plan:
  - a. Every four years, and at any other time where requested by MINECO, ENRESA will perform a revision of the plan in force including appropriate proposals for technical actions to be undertaken and the corresponding revision of financial estimates.
  - b. Before the middle of each year, a report shall be carried out to analyse activities already performed during the fiscal year in comparison to the objectives and budget defined for such period. Also, an updated revision of costs must be provided.
  - c. Before 30 November, a technical-economical report shall be carried out to examine the proposed budget for the next fiscal year and its projection over the following three years.
- a revised definition of the fund to finance the General Radioactive Waste Plan and identification of the capital used to establish it;
- within that fund, a distinction is made between activities that are to be financed via the electricity tariff and those to be financed from financial yields;
- modified rules for the financial management of the fund as well as for the functions of the Tracking and Control Committee for transitory investments.

## Sweden

### *Radioactive waste management*

#### *Committee for the management of non-nuclear radioactive waste (2002)*

A Committee for the Management of Radioactive Waste unrelated to Nuclear Technology (i.e. outside the nuclear fuel cycle) was established in May 2002 by the Swedish government.

The main objective of this Committee is to elaborate proposals for a national system for the management of all types of non-nuclear radioactive waste, taking into account in particular the polluter-pays principle and the responsibility of the producers.

A state-governed funding system already exists to collect funds for the management and final storage of waste generated by nuclear power. The nuclear power sector pays a flat fee per kilowatt-hour. However there is no similar system to secure funding for non-nuclear radioactive waste. If a company goes bankrupt and leaves a legacy of radioactive waste, it might be left to taxpayers to pay for its safe management. This is because the holder of the waste is responsible for its disposal. The costs become manifest at the time of disposal and it is usually the last owner or holder of a radioactive product that has to pay. If that person does not have the necessary money available, such waste might be kept longer than is warranted before disposal or may become orphan waste. In order to avoid this type of scenario, the Committee proposes a funding system in parallel to the system governing nuclear waste. The principle is that the cost of the future management and disposal of the waste will be included in the price of goods using radioactive sources. It should be the responsibility of the producer of goods containing radioactive sources to guarantee the funding for the handling of waste by making advance payments to the state funds.

The Committee divides non-nuclear radioactive waste into three main categories: waste from products, waste from industrial activities and other waste. Waste from products includes household products as well as products used in research, industry, hospitals, etc. As the manufacture or placing on the market of such products requires a licence from the Swedish Radiation Protection Authority pursuant to the Radiation Protection Ordinance as amended in 1999 (see *Nuclear Law Bulletin* No. 63), it is easy to identify the producer. Waste from industrial activities includes technology-enhanced naturally occurring radioactive materials and biofuel ashes from combustion plants. Most of these processes are licensed under the Environmental Code and funding for the management of the radioactive waste emanating from such practices can be settled in the licensing procedure along with specific conditions on the generation and handling of the waste. The last category, other waste, includes waste with no known owner such as orphan sources and radioactive waste discovered in scrap metal. This category is a minor component of waste compared to the two previous groups and the surplus from the funding system may well cover the costs for the management of this waste.

This proposal has been sent to different organisations and stakeholders for review. Their comments will be considered before making a decision on presenting a bill to parliament.

## **Ukraine**

### ***General legislation***

#### *Amendment to the Law on the Use of Nuclear Energy and Radiation Safety (2004)*

Law No. 1417-IV to Amend the Law on the Use of Nuclear Energy and Radiation Safety (the text of this Law is reproduced in the Supplement to *Bulletin* No. 56; see *Nuclear Law Bulletin* No. 61 for the 1997 Amendment) was adopted by the parliament on 3 February 2004 and entered into force on 27 February 2004. The principal modifications introduced by this Amending Law are as follows:

- the term “radioactive materials” is introduced, and is defined to mean sources of ionising radiation, nuclear materials and radioactive waste;
- suppliers which act as intermediaries and which participate in the conclusion of any contract for the supply of nuclear materials shall be required to retain all documents pertaining to transactions performed by them or on their behalf for at least one year following the expiry of the contract governing such supply. This documentation shall include the names of the contracting parties, the date on which the contract was signed, data on quantity/amount, form and composition of nuclear materials;
- the State Nuclear Regulatory Committee of Ukraine shall not refuse a license for the transport on Ukrainian territory of radioactive waste arising from the reprocessing of nuclear fuel which is returning to its country of origin for storage and final disposal, where a licence was granted for the primary transportation of spent nuclear fuel and where such transport shall be carried out in line with Ukrainian legislation;
- shipment of radioactive waste from Ukraine to foreign countries shall not be allowed if the State Nuclear Regulatory Committee concludes that the countries concerned lack the appropriate technical and other capacity for the safe treatment of such waste;
- the import and export of ionising radiation sources into and from Ukraine shall be permitted pursuant to the consignee’s licence for the utilisation of such sources;
- as regards the international transportation of radioactive materials, a shipping agent or final receiver must be a legal entity registered in Ukraine.

## **United States**

### ***Organisation and structure***

#### *Establishment of the Office of Legacy Management (2003)*

On 15 December 2003, the Department of Energy (DOE) established the Office of Legacy Management which is responsible for the long term care of legacy liability of former nuclear weapons production sites following completion of the environmental management cleanup effort. The Office will have responsibility for sites that are closed and no longer support ongoing national security, energy and science missions. Legacy liabilities stem from activities of the DOE and predecessor agencies, particularly during World War II and the Cold War which left a legacy of radioactive chemical waste, environmental contamination, and hazardous materials at over 100 sites in the country. The Office’s primary functions will include: management of the land and associated

resources as a federal trustee, surveillance and maintenance associated with environmental remedies, records and information management and the management of port-closure liabilities.

The sites transferring to authority of the Office of Legacy Management will include:

- the Office of Environmental Management closures sites (Pinellas Plant, Weldon Spring Site);
- Uranium Mills Tailings Radiation Control Act sites; and
- Formerly Utilized Sites Remedial Action Program (FUSRAP) sites where remediation is complete.

As more sites are successfully remediated and closed by Environmental Management, site surveillance and maintenance functions will be transferred to the new Office for long-term management.

# INTERNATIONAL REGULATORY ACTIVITIES

## **European Union\***

Since 1 May 2004, there are ten new Member States in the European Union: upon that date the Czech Republic, Cyprus, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, the Slovak Republic and Slovenia became Members of the Union and Parties to the treaties upon which it is based, as amended and completed.

The criteria governing this enlargement, the largest to date within the European Union, were established by an act annexed to the Accession Treaty of each of the ten new Member States signed in Athens on 16 April 2003.

### ***General legislation***

#### *Nuclear Safety Convention – Euratom Declaration*

The European Atomic Energy Community acceded to the Nuclear Safety Convention in 2000. As required by this Convention, a Declaration of competences was then deposited with the Director General of the International Atomic Energy Agency, which was limited to radiation protection issues and, partially, to aspects of radiological emergency preparedness.

The Commission was not satisfied with this Declaration and therefore seized the European Court of Justice of the matter. In its judgement of 10 December 2002, the Court of Justice declared that the Euratom Declaration of competences should have also referred to Articles 7, 14, 16(1) and (3) and Articles 17 to 19 of the Nuclear Safety Convention.

In execution of this ruling, a Council Decision was adopted on 15 December 2003 (not published) which modifies the wording of the Declaration to be made by Euratom pursuant to Article 30(4)(iii) of the Nuclear Safety Convention. According to Commission Decision 2004/491/Euratom, of 29 April 2004, amending Commission Decision 1999/819/Euratom of 16 November 1999 concerning the accession to the 1994 Convention on Nuclear Safety by the European Atomic Energy Community (Euratom) with regard to the Declaration attached thereto (OJEU L 172, p. 7), a new Euratom Declaration was transmitted on 12 May 2004 to the IAEA.

The new Declaration was also modified to include the ten new Member States that joined the European Union as from 1 May 2004.

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\* This update on legislative and regulatory activities of the European Union was kindly provided by Blanca Andres-Ordax and Nathalie Cornuel of the Directorate-General for Transport and Energy in the European Commission.

### ***Radiation protection (including emergency planning)***

#### *Council Directive 2003/122/Euratom on the Control of High Activity Sealed Sources and Orphan Sources (2003)*

This Directive was formally adopted by the Council on 22 December 2003 (OJEU L 346, p. 57). The so-called “HASS Directive” supplements Directive 96/29/Euratom laying down basic safety standards for the health protection of the general public and workers against the dangers of ionising radiation (see *Nuclear Law Bulletin* Nos. 52, 58 and 61), and sets up a control system allowing for source traceability within the EU. This control system provides that:

- prior authorisation is required for any practice involving a high activity sealed source, including taking possession of a source; it thus enlarges the authorisation obligation under Directive 96/29 to all sources considered as being of concern;
- each holder shall keep records of all sources under his responsibility, their location and their transfer to another holder. Records shall be transmitted to the authorities at precise moments and be available for inspection;
- national authorities must keep up-to-date records of authorised holders and of the sources they hold, and of transfers of sources;
- obligations on holders include the requirement to verify the location of the source and to promptly notify of any loss or theft, and to ascertain that, before a transfer is made, the recipient holds the appropriate authorisation;
- sources have to be identified by a unique number and be accompanied by relevant written information.

The Directive contains two provisions on financial requirements. The first of these provides that, before issuing authorisation, Member States shall ensure that adequate provision (by way of financial security or any other equivalent means) has been made to guarantee the safe management of the source when it becomes a disused source, including the case where the holder becomes insolvent or goes out of business. The second mechanism deals with intervention costs relating to the recovery of orphan sources. Member States are required to set up a system of financial security (or any equivalent means) on the basis of arrangements to be decided at national level.

Member States are required to completely adapt their national provisions to the requirements of this Directive by 31 December 2005.

#### *Decisions in relation to civil protection (2003)*

On 29 December 2003, the Commission adopted a Decision laying down rules for the implementation of Decision 2001/792/EC, Euratom, establishing a Community mechanism to facilitate reinforced co-operation in civil protection assistance interventions (Decision 2004/277/EC, Euratom, OJEU L 87, p. 20). The Community civil protection mechanism was established in 2001 in order to improve the manner in which the European Union reacts to major natural, technological, radiological or environmental disasters. It aims to provide support, upon request, in the event of a major emergency and to improve the co-ordination of emergency interventions carried out by Member States and by the Community within or outside the European Union.

The Decision of 29 December 2003 establishes a procedure for the communication of information on available resources for civil protection assistance interventions in the countries which participate in this system. It sets up a Monitoring and Information Centre which is accessible and able to react immediately 24 hours a day and it establishes a common emergency communication and information system (CECIS). It describes the tasks of experts and rules for interventions within and outside the Community.

Participation in this mechanism is open to Member States, candidate countries having signed a memorandum of understanding with the Commission, and to Norway, Iceland and Liechtenstein.

### ***Environmental protection***

#### *Directive 2004/35/EC on Environmental Liability with regard to the Prevention and Remedying of Environmental Damage (2004)*

On 21 April 2004, the European Parliament and the Council jointly adopted the Directive on environmental liability with regard to the prevention and remedying of environmental damage (Directive 2004/35/EC, OJEU L 143, p. 56). The Directive entered into force on 30 April 2004. Member States have a period of three years to implement the directive in their national law. This text was in discussion since January 2002 (see *Nuclear Law Bulletin* No. 72)

The Directive establishes a framework based on the polluter-pays principle to ensure the prevention and remedying of environmental damage. It establishes the requirement for operators to take the necessary measures to prevent situations where there is an imminent threat of damage to the environment and to remedy such damage when it occurs.

The scope of application of the Directive extends to damage to species and habitats protected at European Union level, damage to water resources covered by Directive 2000/60/EC establishing a framework for Community action in the field of water policy, as well as land contamination which creates a significant risk to human health. The Directive distinguishes between high-risk professional activities, listed in an exhaustive fashion, which are subject to a strict liability regime for all environmental damage which they may cause, and other professional activities for which only damage caused to protected species and natural habitats are covered in the event of fault or negligence on the part of the operator.

The Directive does not apply to nuclear environmental damage or risks, nor does it apply to an imminent threat of such damage arising from Euratom Treaty-related activities or from an incident or activity in respect of which liability or compensation falls within the scope of any of the following international instruments, listed at Annex V, including any future amendment to those instruments:

- the Paris Convention of 29 July 1960 on Third Party Liability in the Field of Nuclear Energy and the Brussels Supplementary Convention of 31 January 1963;
- the Vienna Convention of 21 May 1963 on Civil Liability for Nuclear Damage;
- the Convention of 12 September 1997 on Supplementary Compensation for Nuclear Damage;
- the Joint Protocol of 21 September 1988 relating to the Application of the Vienna Convention and the Paris Convention;

- the Brussels Convention of 17 December 1971 relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material.

The Commission shall present a report on the implementation of the Directive including any appropriate proposals for amendment within ten years of the entry into force of the directive. This report should address, *inter alia*, the regime excluding activities covered by the international liability regimes, including the nuclear third party liability regime, taking into account in particular experience gained in relation to these international agreements, their implementation in Member States and differences between liability levels in Member States.

*Commission Recommendation 2004/2/Euratom on standardised information on radioactive airborne and liquid discharges into the environment from nuclear power reactors and reprocessing plants in normal operation (2003)*

This Recommendation, adopted on 18 December 2003 (OJEU L 2, p.36) is addressed to Member States and defines the format and content of information to be reported to the Commission on radioactive discharges into the environment from nuclear power stations and spent fuel reprocessing plants in the European Union. It provides clear guidance to Member States on the assessment and reporting of data relating to radioactive discharges. In this way, the Commission aims to achieve a higher degree of consistency and utility with respect to the information it receives from across the Union.

The implementation of the Recommendation will allow the Commission to boost the quality of the reports it publishes on radioactive discharges and on their impact on the population of the European Union.

### ***Third party liability***

*Council Decisions authorising the Member States to sign and ratify the Protocol to Amend the Paris Convention, or to accede to it (2003 and 2004)*

On 27 November 2003, the Council adopted a Decision authorising the Member States which are Contracting Parties to the Paris Convention of 29 July 1960 on Third Party Liability in the Field of Nuclear Energy to sign, in the interest of the European Community, the Protocol amending that Convention (Decision 2003/882/EC, OJEU L 338, p.30) (see *Nuclear Law Bulletin* No. 72). A second decision authorising these same Member States to ratify the amending protocol, or to accede to it, was adopted by the Council on 8 March 2004 (Decision 2004/294/EC, OJEU L 97, p. 53) following the Parliament's assent to this proposal on 26 February 2004.

The signature and ratification of the protocol, or accession to it, are within the jurisdiction of the Community and the Member States. The Community has exclusive jurisdiction with regard to the amendment of Article 13 of the Paris Convention in that this amendment affects the Community rules established in Council Regulation (EC) No. 44/2001 of 22 December 2000 on jurisdiction and the recognition and enforcement of judgements in civil and commercial matters. The Member States retain their jurisdiction over matters covered by the Protocol which do not affect Community law.

The Member States were exceptionally authorised to sign and ratify the Protocol in the interest of the Community and the Member States, because the Paris Convention and its amending protocol are not open to the participation of regional organisations. Austria, Ireland and Luxembourg, which are

not Party to the Paris Convention, are not required to give effect to these decisions. These three States will continue to apply the Community rules as established in Regulation (EC) No. 44/2001 in the field covered by the Paris Convention and its amending protocol. Furthermore, Denmark, which is not bound by the Regulation of 22 December 2000, did not participate in the adoption of these decisions.

The Member States which are Party to the Paris Convention signed the Protocol in the interest of the Community on 12 February 2004 in accordance with the Council decision of 27 November 2003. They shall endeavour to ratify the Protocol before 31 December 2006.

### ***Regulations on nuclear trade (including non-proliferation)***

#### *Council Decision approving a Commission Regulation on the Application of Euratom Safeguards (2004)*

On 29 April 2004, the Council adopted a decision approving a Commission Regulation on the application of Euratom Safeguards.

The Regulation, which still has to be adopted by the Commission, is designed to replace Commission Regulation No. 3227/76/Euratom of 19 October 1976 which is currently in force. Adopted in implementation of Article 79 of the Treaty establishing the European Atomic Energy Community, the new Regulation reviews the obligations of operators in relation to safeguards in order to take account developments to the legal framework and technological advancements.

The new Regulation will allow the Commission to fulfil its obligations under the Additional Protocols to the Safeguards Agreements concluded between the Community, the Member States and the International Atomic Energy Agency (IAEA). Signed on 22 September 1998, the Additional Protocols entered into force on 30 April 2004. In this regard, the Regulation sets out new provisions concerning declarations on sites and on waste with a view to fulfilling requirements arising from the additional protocols. It also provides a new format for declarations.

# AGREEMENTS

## BILATERAL AGREEMENTS

### **Brazil – United States**

#### *Agreement concerning co-operation in nuclear energy (2003)*

This Agreement was signed in Washington DC on 20 June 2003 between the Department of Energy of the United States and the Ministry of Science and Technology of the Federative Republic of Brazil. Its objective is to establish a framework for collaboration between the Parties for research and development of advanced nuclear technologies. The Parties share an interest in developing advanced concepts and breakthroughs in nuclear fission and reactor technology to address the principal technical, societal and economic obstacles to the expanded peaceful use of nuclear energy. They also seek to promote and maintain nuclear science and engineering infrastructure in their respective countries to sustain the capabilities necessary for the development and use of nuclear energy. They desire to promote the exchange of scientific and technological information and collaborative research and development between the US and Brazilian agencies and research organizations focused on advanced technologies for improving nuclear power systems.

The Department of Energy proposes to engage in co-operative nuclear research and development (R&D) activities under the Agreement as part of its International Nuclear Energy Research Initiative whose goal is to undertake, through bilateral agreements between the Department of Energy and International Counterpart Governmental entities, Research and Development to develop safe, cost effective, proliferation resistant and sustainable nuclear technologies to meet future global energy needs. The areas of co-operation include: 1) advanced reactor developments for future generation energy systems; 2) advanced reactor fuel and reactor fuel cycle integration; 3) life management and upgrading of current operating reactors; 4) advanced fuel and material irradiation and use of experimental facilities; 5) environmental and safety issues related to new reactor and fuel cycle technologies; 6) other areas as the parties may agree in writing. The Agreement entered into force upon signature for five years with automatic five years renewals unless, prior to expiration, either party notifies in writing of intent to terminate.

### **Germany – Russian Federation**

#### *Agreements on the elimination and disposal of nuclear weapons*

On 16 July 2003, the German Foreign Office published an Agreement between the government of the Federal Republic of Germany and the government of the Russian Federation on Assistance for the Russian Federation regarding the Reduction/Elimination of Nuclear and Chemical Weapons by the Russian Federation. That Agreement was already signed on 16 December 1992 and entered into force on 11 May 1993 (Bundesgesetzblatt 2003 II p. 815). It is a Framework Agreement which requires

implementing agreements to be concluded by the Parties (Article 2). In accordance with Article 1 of the Agreement, Germany renders gratuitous assistance in relation to the elimination of nuclear and chemical weapons on Russian territory on the basis of international agreements. According to Article 6 paragraph 1, the Parties mutually waive the bringing of claims for the compensation of damage caused in connection with the implementation of the Agreement. Paragraph 2 of the same Article stipulates that third-party damage will be compensated by that Party in whose territory the damage occurs. The Agreement was concluded for an unlimited period of time but it may be terminated by giving six months notice (Article 10).

An Agreement to implement the above Framework Agreement was concluded on 16 December 1992 between the German Foreign Office and the Ministry for Atomic Energy of the Russian Federation on co-operation to ensure the safety of the disposal of nuclear weapons. The Agreement, in accordance with its Article 8, entered into force on 11 May 1993; it was published on 16 July 2003 in *Bundesgesetzblatt* 2003 II p. 817. Pursuant to its Article 1, the German Foreign Office will provide the Russian Ministry for Atomic Energy (Minatom) with services and equipment as listed in the Annex to the Agreement. This Annex contains ten categories including vehicles for radiation measurements, manipulators, electricity generators and other equipment. The Agreement was originally concluded for a period of one year, but has been tacitly prolonged on a year-to-year basis.

On 6 October 2003, the German Foreign Office and the Russian Ministry of Defence signed an Agreement on Co-operation to Ensure Physical Protection of Nuclear Material and of Nuclear Weapons to be Disposed of (*Bundesgesetzblatt* 2003 II p. 1917), which entered into force on the date of its signature. It is limited in time but it will be terminated when the above-mentioned Framework Agreement is terminated.

The Preamble of this Agreement states that it is designed to implement the Framework Agreement and the 1998 German-Russian Agreement on Nuclear Liability in Connection with Deliveries from Germany for Nuclear Installations in the Russian Federation (see *Nuclear Law Bulletin* No. 63). Article 1, paragraph 1 expressly stipulates that the provisions of both Agreements apply to all activities performed under the 2003 Agreement. This reference to the German-Russian Liability Agreement confirms therefore that its liability provisions take precedence.

The German Party undertakes to support the Russian Party by providing gratuitous financial and technical assistance and training with a view to:

- improving the conditions for safe and reliable storage of certain nuclear weapons to be decommissioned;
- improving emergency preparedness and the equipment of personnel in dangerous nuclear facilities;
- laying down conditions for the safe and reliable transportation of the nuclear weapons to be disposed of;
- improving the equipment of specialised incident management forces;
- performing technical-economic studies and other relevant projects as agreed between the parties.

Article 2 provides that the total cost of equipment and services to be rendered by the German Party must not exceed the financial means expressly appropriated for this purpose in the German state budget. The Parties establish a joint expert group to implement the agreement. The German Party, its personnel, the contractors and their personnel, within the framework of the Russian legislation, are

exempted from taxes and similar charges. They may freely import and export equipment necessary for the implementation of the Agreement (Article 4).

Representatives of the German government, the German parliament and those entities which perform activities within the framework of the agreement are entitled to control the use of equipment and services rendered at sites where assistance activities are carried out (Article 5).

## MULTILATERAL AGREEMENTS

### **Signature of the Protocols to amend the Paris and Brussels Conventions (2004)**

The Protocols to amend the Paris Convention on Third Party Liability in the Field of Nuclear Energy and the Brussels Convention Supplementary to the Paris Convention were signed on 12 February 2004 at OECD headquarters. Although negotiations to revise these conventions had already concluded by the end of 2002 (see *Nuclear Law Bulletin* No. 70), certain procedural issues remained to be resolved in light of the transfer of jurisdiction in relation to the amendment of Article 13 of the Paris Convention from EU Member States to the Union pursuant to Council Regulation (EC) No. 44/2001 of 22 December 2000 on jurisdiction and the recognition and enforcement of judgements in civil and commercial matters. As described under the “International Regulatory Activities” section of this *Bulletin*, the EU Member States were exceptionally authorised to sign and ratify the Paris Protocol in the interest of the Community and the Member States.

The Protocol to revise the Paris Convention will enter into force upon ratification, by two-thirds of the Signatories of that Convention; the Protocol to revise the Brussels Convention will enter into force upon ratification of all Signatories.

The amendments to the regime introduced by these Protocols were described in *Nuclear Law Bulletin* No. 70. An analytical article on the revised regime will be published in the next edition of the *Bulletin*.

### **Multilateral Nuclear Environmental Programme in the Russian Federation**

The Framework Agreement on a Multilateral Nuclear Environmental Programme in the Russian Federation and the Protocol on Claims, Legal Proceedings and Indemnification to the Framework Agreement on a Multilateral Nuclear Environmental Programme in the Russian Federation were signed in Stockholm on 21 May 2003 (see *Nuclear Law Bulletin* No. 71).

Article 18(1) of the Framework Agreement and Article 4(1) of the Protocol provide for entry into force of these instruments on the thirtieth day following the date of receipt of instruments of ratification, acceptance or approval from the Russian Federation and from one other Signatory.

Sweden ratified the Framework Agreement and its Protocol on 11 July 2003. Norway approved the Framework Agreement and its Protocol on 16 October 2003 as did Denmark on 16 December 2003. The European Bank for Reconstruction and Development deposited its instrument of accession on 4 March 2004. Following the ratification by the Russian Federation of the MNEPR Framework Agreement and its Protocol on 15 March 2004, these instruments entered into force on 14 April 2004.

#### *Status of the MNEPR Framework Agreement and Protocol*

<b>State</b>	<b>Signature</b>	<b>Instrument</b>	<b>Date of deposit</b>	<b>Entry into force</b>
Belgium	21 May 2003			
Denmark	21 May 2003	approval	16 December 2003	14 April 2004
Finland	21 May 2003			
France	21 May 2003			
Germany	21 May 2003			
Netherlands	21 May 2003			

<b>State</b>	<b>Signature</b>	<b>Instrument</b>	<b>Date of deposit</b>	<b>Entry into force</b>
Norway	21 May 2003	approval	16 October 2003	14 April 2004
Russian Federation	21 May 2003	ratification	15 March 2004	14 April 2004
Sweden	21 May 2003	ratification	11 July 2003	14 April 2004
United Kingdom	21 May 2003			
United States*	21 May 2003			
European Atomic Energy Community	21 May 2003			
European Community	21 May 2003			
EBRD		accession	4 March 2004	14 April 2004

## **Status of Conventions in the Field of Nuclear Energy**

### ***1979 Convention on the Physical Protection of Nuclear Materials***

Since the last update in *Nuclear Law Bulletin* No. 72, 11 states, namely Azerbaijan, Burkina Faso, Equatorial Guinea, Honduras, Kuwait, Madagascar, New Zealand, Qatar and Senegal have become Contracting Parties to this Convention (accession). Therefore, as of 21 May 2004, there are 104 Parties to this Convention.

### ***1986 Convention on Early Notification of a Nuclear Accident***

Since the last update in *Nuclear Law Bulletin* No. 72, Algeria has become Contracting Party to this Convention (ratification). Therefore, as of 21 May 2004, there are 92 Parties to this Convention.

### ***1986 Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency***

Since the last update in *Nuclear Law Bulletin* No. 72, three states, namely, Algeria, Bolivia and Portugal have become Contracting Parties to this Convention. Therefore, as of 21 May 2004, there are 89 Parties to this Convention.

### ***1996 Comprehensive Nuclear Test Ban Treaty***

Since the last update in *Nuclear Law Bulletin* No. 72, four states, namely, Bahrain, Belize, Libyan Arab Jamahiriya and Seychelles have become contracting Parties to this instrument. Therefore, as of 21 May 2004, there are 112 Parties to the Treaty.

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\* The United States only signed the Framework Agreement on a Multilateral Nuclear Environmental Programme in the Russian Federation and not the Protocol.

***1997 Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management***

Since the last update in *Nuclear Law Bulletin* No. 67, nine states, namely Australia, Austria, Belarus, Belgium, Japan, Republic of Korea, Lithuania, Luxembourg and the United States have become Contracting Parties to this Convention. Therefore, as of 21 May 2004, there are 34 Parties to this Convention, as set out in the table below.

*Status of Signatures, ratifications, acceptances, approvals or accessions*

<b>State</b>	<b>Date of Signature</b>	<b>Date of deposit of instrument</b>
Argentina	19 December 1997	14 November 2000 (ratification)
Australia	13 November 1998	05 August 2003 (ratification)
Austria	17 September 1998	13 June 2001 (ratification)
Belarus	13 October 1999	26 November 2002 (ratification)
Belgium	08 December 1997	05 September 2002 (ratification)
Brazil	31 October 1997	
Bulgaria	22 September 1998	21 June 2000 (ratification)
Canada	07 May 1998	07 May 1998 (ratification)
Croatia	09 April 1998	10 May 1999 (ratification)
Czech Republic	30 September 1997	25 March 1999 (approval)
Denmark	09 February 1998	03 September 1999 (acceptance)
Estonia	05 January 2004	
Finland	02 October 1997	10 February 2000 (acceptance)
France	29 September 1997	27 April 2000 (approval)
Germany	01 October 1997	13 October 1998 (ratification)
Greece	09 February 1998	18 July 2000 (ratification)
Hungary	29 September 1997	02 June 1998 (ratification)
Indonesia	06 October 1997	
Ireland	01 October 1997	20 March 2001 (ratification)
Italy	26 January 1998	
Japan		26 August 2003 (accession)
Kazakhstan	29 September 1997	
Korea, Republic of	29 September 1997	16 September 2002 (ratification)
Latvia	27 March 2000	27 March 2000 (acceptance)
Lebanon	30 September 1997	
Lithuania	30 September 1997	16 March 2004 (ratification)
Luxembourg	01 October 1997	21 August 2001 (ratification)
Morocco	29 September 1997	23 July 1999 (ratification)
Netherlands	10 March 1999	26 April 2000 (acceptance)
Norway	29 September 1997	12 January 1998 (ratification)
Peru	04 June 1998	
Philippines	10 March 1998	

<b>State</b>	<b>Date of Signature</b>	<b>Date of deposit of instrument</b>
Poland	03 October 1997	05 May 2000 (ratification)
Romania	30 September 1997	06 September 1999 (ratification)
Russian Federation	27 January 1999	
Slovak Republic	30 September 1997	06 October 1998
Slovenia	29 September 1997	25 February 1999 (ratification)
Spain	30 June 1998	11 May 1999 (ratification)
Sweden	29 September 1997	29 July 1999 (ratification)
Switzerland	29 September 1997	05 April 2000 (ratification)
Ukraine	29 September 1997	24 July 2000 (ratification)
United Kingdom	29 September 1997	12 March 2001 (ratification)
United States of America	29 September 1997	15 April 2003 (ratification)

# BIBLIOGRAPHY & NEWS BRIEFS

## BIBLIOGRAPHY

### **OECD Nuclear Energy Agency**

#### *Overview on Nuclear Legislation in Central and Eastern Europe and the NIS, 2003, 214 pages*

This overview published by the OECD Nuclear Energy Agency, in English and French, examines the legislation and regulations governing the peaceful uses of nuclear energy in the central and eastern European countries (CEEC) and the New Independent States (NIS). It also contains information on the national bodies responsible for the regulation and control of nuclear energy.

The nuclear energy sector has not escaped from the changes that have affected the political, economic and social climates in these countries over the past 15 years. This study was first prepared in 1997 to enlighten readers on the proliferation of legislative and regulatory texts governing nuclear energy in this region and in light of the interest generated by this phenomenon. This is the second time that this overview has been revised (the first revision was in 2000) which reflects the important developments that have continued to take place in this sector over recent years. The scope has also been enlarged to cover countries that we not originally included in this overview.

#### *Overview on the Regulatory Control of Radioactive Waste Management, 2004, 205 pages*

The NEA Radioactive Waste Management Committee (RWMC) provides a forum for exchange and comparison of information on national regulatory practices and maintains an informal international network for discussing issues of common concern. This report presents the initial work of the RWMC Regulators' Forum. Information is provided in respect of 15 NEA member countries in a format that allows easy accessibility to specific aspects and comparison between different countries. It includes an array of facts about national policies for radioactive waste management, institutional frameworks, legislative and regulatory frameworks, available guidance, classification and sources of waste and the status of waste management. It also provides an overview of current issues being addressed and related R&D programmes.

## **Austria**

*Atomhaftungsgesetz 1999, by Monika Hinteregger and Susanne Kissich, Vienna, 2004, 176 pages*

This book, published in the German language, includes first of all a comprehensive overview of the international nuclear third party liability regime, including the Vienna, Paris and Brussels Conventions as amended.

Its principal objective is to analyse and provide comment on the 1999 Federal Act on Civil Liability for Damage caused by Radioactivity (see *Nuclear Law Bulletin* No. 62; the text of this Act is reproduced in the Supplement *NLB* No. 63), referring in particular to international standards.

The authors emphasise the fact that the Austrian Act diverges from some of the key provisions of the above-mentioned conventions. Therefore, its adoption may hinder the adhesion of Austria to these instruments. The Act does not provide for the channelling of liability. Moreover, it requires that when damage occurs in Austria, cases should be heard by national judges applying Austrian law.

However, the Act does not seem to entirely exclude the possibility of Austria acceding to the amending protocols and additional agreement signed since 1997 which amend and complete the Vienna, Paris and Brussels conventions. In this context, the 1999 Act requires that the Austrian federal government regularly report to the parliament on the evolution of international nuclear third party liability law, and on available funds for compensation.

French and English versions of the law are reproduced in the annex to this book.

## **NEWSBRIEFS**

*Seminar on Nuclear Law and the Protection of the Environment, Cluj-Napoca (Romania), July 2004*

A seminar on nuclear law and the protection of the environment will be held from 5 to 9 July 2004 at the Babes-Bolyai University, Cluj-Napoca, Romania. This seminar, which will be conducted in French, is being organised by the OECD Nuclear Energy Agency in co-operation with the Romanian National Commission for the Control of Nuclear Activities (CNCAN), the Romanian National Nuclear Power Company (*Nuclearelectrica* S.A.), ROMATOM, Babes-Bolyai University, the University of Montpellier and the International School of Nuclear Law, the French section of the International Nuclear Law Association (INLA), the *Société française de l'énergie nucléaire* (SFEN – Law and Insurance section) and the University Agency for the French Language (*l'Agence universitaire de la francophonie*). The European Commission has also granted its support to this venture.

Nuclear and environmental law are two closely interrelated branches of law. The seminar will cover a series of topical subjects for environmental protection in the context of nuclear activities:

- safety of nuclear installations and radiological protection;
- legal and policy issues related to radioactive waste management;
- management of nuclear accidents and radiological emergencies;
- liability and compensation for nuclear damage;

- nuclear security;
- public participation and information.

Further information on this Seminar is available on the Web site of the NEA at [www.nea.fr/html/law/isnl/romania/index.htm](http://www.nea.fr/html/law/isnl/romania/index.htm)

### ***2004 Session of the International School of Nuclear Law***

The 2004 Session of the International School of Nuclear Law will take place at the University of Montpellier 1 from Monday 23 August to Friday 3 September 2004 inclusive.

The programme for the 2004 Session will include the following classes: protection against ionising radiation (including the use of radiation sources); safety of nuclear installations; radioactive waste management; transport of nuclear materials; nuclear security (including physical protection and illicit trafficking of nuclear materials); non-proliferation; international regulation of nuclear trade; third-party liability and the indemnification of nuclear damage.

The programme is open to law students pursuing their studies at doctoral or masters level, who wish to follow an introductory course on nuclear law and familiarise themselves with career opportunities open to them in this field, and also to young professionals who are already active in the nuclear sector and who wish to develop their knowledge.

Participants enrolled in the ISNL programme have the possibility of applying for a University Diploma (*Diplôme d'Université* – D.U.) in International Nuclear Law. The diploma shall be awarded to candidates on the basis of continual assessment in lectures and seminars during the ISNL course and following successful performance in the written examinations which are organised in the form of a “take-home exam” at the close of each annual session. It is further required to submit a dissertation on nuclear law.

Further information on the ISNL is available on the website of the NEA at [www.nea.fr/html/law/isnl/index.html](http://www.nea.fr/html/law/isnl/index.html)

### ***International Nuclear Law Association – 10th INLA Regional Meeting of the German Branch***

The German Branch of the International Nuclear Law Association will hold its 10<sup>th</sup> regional meeting on 2 and 3 September 2004 in Celle. The theme of the conference will be “Internationalising Nuclear Law”. Subjects of national, comparative and international law shall be presented and discussed under this general theme, extending to such varied topics as the disposal of radioactive waste including decommissioned nuclear weapon systems as an international problem, nuclear safety – an international task, the establishment of a global nuclear liability regime and selected issues of German atomic energy law.

The meeting will take place in German and English with simultaneous translation.

Further information on this conference may be obtained from Dr. Norbert Pelzer, Institut für Völkerrecht, Platz der Göttinger Sieben 5, 37073 Göttingen, Germany.

# LIST OF CORRESPONDENTS TO THE NUCLEAR LAW BULLETIN

<i>ALBANIA</i>	Mr. F. YLLI, Director, Institute of Nuclear Physics
<i>ARGENTINA</i>	Mr. J. MARTINEZ FAVINI, Consultant, National Atomic Energy Commission
<i>ARMENIA</i>	Mr. A. MARTIROSYAN, Armenian Nuclear Regulatory Authority
<i>AUSTRALIA</i>	Ms. M. HUXLIN, INIS Information Officer, Australian Nuclear Science and Technology Organisation
<i>AUSTRIA</i>	Mr. M. REITERER, Office of the Legal Adviser, Federal Ministry for Foreign Affairs
<i>BELARUS</i>	Ms. O. PIOTUKH, Department of Nuclear and Radiation Safety Regulation, Promatomnadzor
<i>BELGIUM</i>	Mr. F. MOLITOR, Engineer-Director, Technical Safety of Nuclear Installations, Ministry of Employment and Labour
<i>BRAZIL</i>	Mr. E. DAMASCENO, National Commission for Nuclear Energy Mrs. D. FISCHER, Brazilian Association of Nuclear Law
<i>BULGARIA</i>	Mr. Y. TCHAVEEV, Senior Legal Adviser, Committee on the Use of Atomic Energy for Peaceful Purposes
<i>CANADA</i>	Ms. K. MOORE, Senior Counsel, Legal Services Unit, Canadian Nuclear Safety Commission
<i>CHINA</i>	Ms. Zhaohui LI, Director of the Law Office, China National Nuclear Corporation Mr. Xiao Qing WANG, Division of Law and Regulation, Department of Policy, Law and Regulation, China Atomic Energy Authority
<i>CROATIA</i>	Mr. V. ŠOLJAN, Chair of Trade Law and International Economic Law, Faculty of Law, University of Zagreb Mr. I. VALCIC, Head, Department for Nuclear Safety, Ministry of Economic Affairs
<i>CZECH REPUBLIC</i>	Mr. F. SURANSKY, Director, Nuclear Energy Section, Ministry of Industry and Trade
<i>DENMARK</i>	Mr. J. RØN, Head of Section, Law Department, Ministry of Justice

<b><i>EGYPT</i></b>	Mr. A.-M. MAREI, Assistant Lecturer, Nuclear Law Department, National Centre for Nuclear Safety, Atomic Energy Authority
<b><i>ESTONIA</i></b>	Ms. E. TANNER, Head of Department, Regulations and Standards, Estonian Radiation Protection Centre
<b><i>FINLAND</i></b>	Mr. Y. SAHRAKORPI, Ministerial Counsellor, Energy Department, Ministry of Trade and Industry
<b><i>FRANCE</i></b>	Mrs. D. DEGUEUSE, General Directorate for Nuclear Safety and Radiation Protection, Ministry of Industry  Ms. F. TOUITOU, Legal Directorate, Atomic Energy Commission
<b><i>GERMANY</i></b>	Professor N. PELZER, Institute of Public International Law, University of Göttingen
<b><i>GREECE</i></b>	Professor L. CAMARINOPOULOS, President, Greek Atomic Energy Commission
<b><i>HUNGARY</i></b>	Dr. L. CZOTTNER, Senior Legal Adviser, Hungary Atomic Energy Authority  Professor V. LAMM, Institute for Legal Studies, Academy of Sciences
<b><i>INDONESIA</i></b>	Mr. M. POERNOMO, Senior Officer, Nuclear Energy Control Board  Mr. S. SULCHĀN, Head, Legal and Organisation Division, National Atomic Energy Commission
<b><i>IRELAND</i></b>	Ms. M. KELLY, Information Officer, Radiological Protection Institute
<b><i>ITALY</i></b>	Mr. F. NOCERA, Legal Adviser, Radioactive Waste Processing and Conditioning Department, National Agency for New Technologies, Energy and the Environment
<b><i>JAPAN</i></b>	Mr. E. TAKEUCHI, First Secretary, Japanese Delegation to the OECD  Mr. T. YAMAMURA, International Cooperation and Nuclear Material Control Division, Japan Nuclear Cycle Development Institute
<b><i>KAZAKHSTAN</i></b>	Mrs L. NOVOZHILOVA, Legal Advisor, Kazakhstan Atomic Energy Committee
<b><i>REPUBLIC OF KOREA</i></b>	Dr. K.-G. PARK, Associate Professor, Faculty of Law, Korea University
<b><i>LATVIA</i></b>	Mr. A. SALMINS, Director, Radiation Safety Centre
<b><i>LITHUANIA</i></b>	Mr. M. ABRAITIS, Chief Legal Adviser, VATESI
<b><i>LUXEMBOURG</i></b>	Dr. M. FEIDER, Radiation Protection Division, Health Directorate, Ministry of Health
<b><i>MACEDONIA</i></b>	Mr. D. NEDELKOVSKI, Radiation Protection Department, Republic Institute for Public Health

**MEXICO** Mr. J. GONZALEZ ANDUIZA, Legal Affairs Department, Federal Commission on Electricity

Mr. M. PINTO CUNILLE, Head of the Legal and International Affairs Department, National Commission on Nuclear Safety and Safeguards

**MOLDOVA** Mr. I. APOSTOL, Head, Radiation and Chemical Protection Division, Department of Civil Protection and Emergency Situations

**MOROCCO** Ms. L. ZIDI, Management Assistant, National Centre of Nuclear Energy, Science and Techniques

**NETHERLANDS** Dr. N. HORBACH, Director, Centre for Transboundary Damage and Compensation

Mr. R. VAN EMDEN, Counsellor, Insurance Division, Ministry of Finance

**NORWAY** Mr. S. HORNKJØL, Senior Executive Officer, Norwegian Radiation Protection Authority

**POLAND** Mr. A. SOLTAN, Director, International Relations & European Integration Department, Nuclear Atomic Energy Agency

Mr. R. MAJDA, Researcher, University of Łódź

**PORTUGAL** Ms M. MONTEIRO, Legal Adviser, Nuclear and Technological Institute

**ROMANIA** Mr. L. BIRO, President, National Commission for the Control of Nuclear Activities

Mr. V. CHIRIPUS, Attorney at Law, SN Nuclearelectrica S.A.

**RUSSIAN FEDERATION** Professor A. I. IOYRISH, Professor of Law, Institute of State and Law, Academy of Sciences

Ms. E. MOLODTSOVA, Institute of State and Law, Academy of Sciences

Dr. O. SUPATAEVA, Institute of State and Law, Academy of Sciences

**SLOVAK REPUBLIC** Mr. M. POSPISIL, Legal Director, Nuclear Regulatory Authority

**SLOVENIA** Mr. A. ŠKRABAN, Counsellor to the Government, Slovenian Nuclear Safety Administration

**SOUTH AFRICA** Mr. R. ELK, Head of Legal Department, Council for Nuclear Safety

**SPAIN** Mrs. L. CORRETJER, Legal Adviser, Nuclear Safety Council

Mr. J. R. MARTIN HERNANDEZ, Legal Adviser, Nuclear Safety Council

Ms. E. MENENDEZ-MORAN, Sub-Directorate of Nuclear Energy, Ministry of Economy

**SWEDEN** Mr. C. MARTENSSON, Chief Legal Adviser, Swedish Radiation Protection Institute

Mr. I. PERSSON, Senior Legal Adviser, Swedish Nuclear Power Inspectorate

**SWITZERLAND** Mr. R. TAMI, Head, Legal Service, Federal Office of Energy

**THAILAND** Ms. N. TANTASATHIEN, Senior State Attorney, Legal Council Office

**TUNISIA** Mr. M. CHALBI, Ministry of Education and Science, National School of Engineering

**TURKEY** Mrs. G. ERKUL, Energy Adviser, Delegation of Turkey to the OECD

**UKRAINE** Ms. S. PILGUN, Main Specialist, Department of Planning, Co-ordination and Development, State Nuclear Committee of Ukraine

Mr. V. SHVYTAI, State Expert, National Security and Defense Council of Ukraine

**UNITED KINGDOM** Mr. P. THOMPSON, Legal Adviser, Department of Trade and Industry

**UNITED STATES** Ms. S. ANGELINI, Attorney Adviser, Office of Civilian Nuclear Programs, Department of Energy

Ms. M. NORDLINGER, Senior Attorney, Office of the General Counsel, United States Nuclear Regulatory Commission

**URUGUAY** Professor D. PUIG, Professor of Nuclear Law, College of Law, University of Uruguay

**UZBEKISTAN** Mr. K. YUNUSOV, Head, Inspectorate for the Supervision of Nuclear Safety and Radiation Protection, State Committee on Safety in Industry and Mining

**IAEA** Mr. J. RAUTENBACH, Director, Office of Legal Affairs

**EC** Ms. N. COMMEAU-YANNOUSIS, Head of Unit TREN C.1, Energy Policy and Security of Supply, Directorate-General Energy and Transport

Ms. N. CORNUEL, Directorate-General Energy and Transport

Mrs. B. ANDRÉS ORDAX, Directorate-General Energy and Transport

**WHO** Ms. G. PINET, Director, Health Legislation

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Volume 2004/1

**Croatia**

Act on Nuclear Safety (promulgated  
on 21 October 2003)



Legal Affairs

**NUCLEAR LAW**  
**Bulletin**

**SUPPLEMENT TO No. 73**

**Croatia**

Act on Nuclear Safety  
(promulgated on 21 October 2003)

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NEA No. 5314

NUCLEAR ENERGY AGENCY  
ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

## ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Pursuant to Article 1 of the Convention signed in Paris on 14th December 1960, and which came into force on 30th September 1961, the Organisation for Economic Co-operation and Development (OECD) shall promote policies designed:

- to achieve the highest sustainable economic growth and employment and a rising standard of living in member countries, while maintaining financial stability, and thus to contribute to the development of the world economy;
- to contribute to sound economic expansion in member as well as non-member countries in the process of economic development; and
- to contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations.

The original member countries of the OECD are Austria, Belgium, Canada, Denmark, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The following countries became members subsequently through accession at the dates indicated hereafter: Japan (28th April 1964), Finland (28th January 1969), Australia (7th June 1971), New Zealand (29th May 1973), Mexico (18th May 1994), the Czech Republic (21st December 1995), Hungary (7th May 1996), Poland (22nd November 1996), Korea (12th December 1996) and the Slovak Republic (14 December 2000). The Commission of the European Communities takes part in the work of the OECD (Article 13 of the OECD Convention).

## NUCLEAR ENERGY AGENCY

The OECD Nuclear Energy Agency (NEA) was established on 1st February 1958 under the name of the OEEC European Nuclear Energy Agency. It received its present designation on 20th April 1972, when Japan became its first non-European full member. NEA membership today consists of 28 OECD member countries: Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Luxembourg, Mexico, the Netherlands, Norway, Portugal, Republic of Korea, the Slovak Republic, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The Commission of the European Communities also takes part in the work of the Agency.

The mission of the NEA is:

- to assist its member countries in maintaining and further developing, through international co-operation, the scientific, technological and legal bases required for a safe, environmentally friendly and economical use of nuclear energy for peaceful purposes, as well as
- to provide authoritative assessments and to forge common understandings on key issues, as input to government decisions on nuclear energy policy and to broader OECD policy analyses in areas such as energy and sustainable development.

Specific areas of competence of the NEA include safety and regulation of nuclear activities, radioactive waste management, radiological protection, nuclear science, economic and technical analyses of the nuclear fuel cycle, nuclear law and liability, and public information. The NEA Data Bank provides nuclear data and computer program services for participating countries.

In these and related tasks, the NEA works in close collaboration with the International Atomic Energy Agency in Vienna, with which it has a Co-operation Agreement, as well as with other international organisations in the nuclear field.

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# CROATIA

**Act on Nuclear Safety\***

**adopted on 15 October 2003**

**promulgated on 21 October 2003**

## I. GENERAL PROVISIONS

### *Article 1*

This Act regulates safety and protective measures governing the use of nuclear materials and specified equipment and the performance of nuclear activities, and establishes the State Office for Nuclear Safety.

### **Definitions**

#### *Article 2*

For the purpose of this Act, the following terms shall have the meanings indicated:

*Batch*: a portion of nuclear material regarded as a unit for record-keeping purposes at a key measurement point, and whose composition and quantity are defined by a single set of specifications or measurements.

*Batch data*: the total mass of each element of nuclear material, as well as the isotope composition in the case of plutonium and uranium.

*Controlled area*: an area in which safety and protective measures are applied in connection with a nuclear activity.

*Depleted uranium*: uranium containing a lower amount of the isotope  $^{235}\text{U}$  than natural uranium, i.e. less than 0.72%.

*Disposal*: permanent storage of radioactive waste originating in the nuclear fuel cycle in a waste deposit facility, with no intention of further use.

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\* Unofficial translation kindly provided by the Croatian authorities.

*Enriched uranium:* uranium enriched in the isotopes  $^{235}\text{U}$  or  $^{233}\text{U}$ , that is, uranium containing isotopes  $^{235}\text{U}$  or  $^{233}\text{U}$ , or both, in such an amount that the ratio of the sum of these isotopes to isotope  $^{238}\text{U}$  is greater than the ratio of isotope  $^{235}\text{U}$  to isotope  $^{238}\text{U}$  found in nature.

*Enrichment:* the proportion of the combined weight of  $^{233}\text{U}$  and  $^{235}\text{U}$  to the weight of the given uranium in total.

*Fission:* the splitting of an atomic nucleus into two roughly identical nuclei, which move at a high velocity after being split, emitting several fast neutrons and gamma radiation.

*INES scale:* a categorisation of nuclear events, incidents and accidents as defined by the International Atomic Energy Agency.

*Material balance area:* an area inside or outside a facility where a nuclear activity is performed, in which it is possible, at a given time (when necessary), to carry out a physical inventory of the nuclear material and, at any time, to determine the quantity of such material transferred into or out of the area.

*Nuclear accident:* an event or series of events arising as the result of an unusual event at a facility where a nuclear activity is performed, with a high degree of danger that radioactivity will spread outside the controlled area. According to the INES scale, a nuclear accident ranges from level 4 to level 7.

*Nuclear activities:* the production, processing, use, storage, disposal, transport, import, export, possession or other handling of nuclear material or specified equipment.

*Nuclear fuel cycle:* this comprises all activities connected with the production of nuclear energy, including: finding raw materials and producing nuclear fuel, using nuclear fuel in a nuclear reactor, terminating the work of a nuclear reactor and decommissioning it, disposing of radioactive waste originating from nuclear installations, and all research performed in connection with these activities.

*Nuclear incident:* an event or series of events arising as the result of an unusual event at a facility where a nuclear activity is performed, with a low degree of danger that radioactivity will spread outside the controlled area. According to the INES scale, a nuclear incident ranges from level 1 to level 3.

*Nuclear material:* source material or special fissile material subject to a system of controls and protective measures.

*Nuclear material user:* a legal entity whose activities include the production, processing, use, possession or storage of nuclear material, or which is the holder of a licence to perform a nuclear activity.

*Physical inventory:* the sum total of all measured or estimated quantities of nuclear material in batches that is available at a given time within a particular material balance area.

*Source material* includes:

- a. uranium containing the mixture of isotopes occurring in nature;
- b. uranium depleted in the isotope  $^{235}\text{U}$ ;

- c. thorium;
- d. any of the foregoing in the form of a metal, alloy, chemical compound or concentrate;
- e. any other material containing one or more of the foregoing in a concentration determined by the state administration body with jurisdiction over nuclear safety.

The term “source material” does not pertain to ores and ore residues.

*Special fissile material* is material on which fission may be carried out, including:

- a.  $^{239}\text{Pu}$ ;
- b.  $^{233}\text{U}$ ;
- c. uranium enriched in the isotopes  $^{235}\text{U}$  or  $^{233}\text{U}$ ;
- d. any other material containing one or more of the foregoing;
- e. other kinds of fissile material as determined by the state administration body with jurisdiction over nuclear safety.

*Specified equipment*: equipment and non-nuclear material which is used in peaceful nuclear activities, but may also be employed to produce nuclear weapons. These are referred to as dual-purpose commodities, and are listed in Annex II of the Protocol Additional to the Agreement between the Republic of Croatia and the International Atomic Energy Agency for the Application of Safeguards signed in connection with the Treaty on the Non-Proliferation of Nuclear Weapons (Official Gazette – International Treaties, No. 7/00).

*Specified equipment user*: a legal entity whose activities include the production, processing, use, possession or storage of specified equipment, or which is the holder of a licence to perform a nuclear activity.

*Storage*: the keeping of nuclear material and other materials originating in the nuclear fuel cycle in a facility which ensures their safety and protection, with the possibility of further use.

*Storage facility*: a facility suitable for storing nuclear material and other materials originating in the nuclear fuel cycle.

*Unusual event*: an event in connection with nuclear activities which is caused by unforeseen circumstances, and which may, as a result, expose workers performing a nuclear activity or the local population to increased radiation levels, or radioactively contaminate the environment.

*Waste disposal facility*: a facility suitable for the disposal of radioactive waste originating in the nuclear fuel cycle.

## II. NUCLEAR SAFETY

### *Article 3*

A nuclear material or specified equipment user must grant due priority to safety and protective measures in performing a nuclear activity. To this end, the nuclear material or specified equipment user must secure the appropriate financial resources and a sufficient number of qualified staff.

The nuclear material or specified equipment user shall be solely responsible for safety and protection in performing a nuclear activity.

### **Performing a nuclear activity**

#### ***Article 4***

A legal entity that intends to perform any kind of nuclear activity must declare its intention and submit an application for the issue of a licence to perform a nuclear activity.

A legal entity under the preceding paragraph of this article must declare its intention to perform a nuclear activity to the state administration body with jurisdiction over nuclear safety within the period defined by the ordinance prior to submitting an application for the issue of a licence to perform a nuclear activity.

A legal entity must submit its application for the issue of a licence to perform a nuclear activity to the state administration body with jurisdiction over nuclear safety, except in the case of an application for the issue of a permit to transport nuclear material and an application for the issue of a licence to import or export nuclear material or specified equipment.

An application for the issue of a permit to transport nuclear material shall be submitted to the state administration body with jurisdiction over the transport of radioactive material, while the state administration body with jurisdiction over nuclear safety shall give its consent during the permit approval procedure.

#### ***Article 5***

A legal entity may perform a nuclear activity only if, based on an application for the issue of a licence to perform a nuclear activity, the state administration body with jurisdiction over nuclear safety has issued a decision in favour of granting a licence to perform a nuclear activity.

The decision of the state administration body with jurisdiction over nuclear safety under the preceding paragraph of this article shall be final. An administrative appeal may be lodged against this decision.

#### ***Article 6***

A nuclear material or specified equipment user must declare its intention to import or export nuclear material to the state administration body with jurisdiction over nuclear safety no later than 30 days prior to the planned import or export of nuclear material or specified equipment.

A legal entity must submit an application for the issue of a licence to import or export nuclear material or specified equipment to the state administration body with jurisdiction over trade, while the state administration body with jurisdiction over nuclear safety shall give its consent during the licence approval procedure.

### *Article 7*

A list of nuclear materials, nuclear activities and specified equipment, the procedure for declaring an intention to perform nuclear activities and submitting an application for the issue of a licence to perform such activities, and the form and content of official forms shall be set forth in the ordinance.

## **Conditions for nuclear safety and protection**

### *Article 8*

In the process of determining the siting, planning, construction, operation and decommissioning of a facility in which a nuclear activity is to be performed, the conditions for nuclear safety and protection set forth in this Act and in conventions and other international agreements ratified by the Republic of Croatia, as well as international recommendations and standards in the area of nuclear safety, must be met.

Conditions for nuclear safety and protection with regard to the siting, planning, construction, operation and decommissioning of a facility in which a nuclear activity is to be performed shall be set forth in the ordinance, having first obtained the consent of the minister with jurisdiction over spatial planning and construction and the minister with jurisdiction over health care.

### *Article 9*

The state administration body with jurisdiction over nuclear safety shall establish special conditions for nuclear safety and protection during the procedure for issuing siting permits, building permits, and permits for decommissioning facilities in which a nuclear activity is performed.

A building permit for the construction of a facility in which a nuclear activity is to be performed or a permit for decommissioning this facility cannot be issued without confirmation from the state administration body with jurisdiction over nuclear safety that the principal project or preliminary design is in accordance with the special conditions under paragraph 1 of this Article and with the provisions of Article 8 of this Act.

## **Quality assurance**

### *Article 10*

In determining the siting, planning, construction, operation and decommissioning of a facility in which a nuclear activity is to be performed, work having an impact on nuclear safety must be carried out in accordance with quality assurance (QA) requirements.

The aforementioned requirements are defined by international recommendations and standards in the area of quality assurance for nuclear activities.

**Monitoring radioactivity in the vicinity of a facility  
where a nuclear activity is performed**

*Article 11*

A nuclear material user shall be obliged to carry out an appropriate examination of the content of radioactive matter in the vicinity of a facility in which a nuclear activity is performed, within a timeframe and in a manner conforming to state regulations and international recommendations and standards in the area of nuclear safety.

The programme for the aforementioned examination shall be approved by the state administration body with jurisdiction over nuclear safety.

**Staff qualifications in a facility  
where a nuclear activity is performed**

*Article 12*

Work related to the management of the production process or supervision of this process in a facility where a nuclear activity is performed may be assigned to workers who meet special requirements regarding professional qualifications and supplementary training, as defined by state regulations and international recommendations and standards in the area of nuclear safety.

**Record-keeping**

*Article 13*

A nuclear material user must keep records on all of its nuclear material.

*Article 14*

The obligation to keep records on nuclear material shall commence at the moment when possession of the nuclear material is assumed, and shall cease when the nuclear material:

- is exhausted;
- becomes diluted to such an extent that it is no longer usable for any nuclear activity;
- changes users (is transferred to another user, sold, exported, etc.).

*Article 15*

Records on nuclear material shall be kept separately for each material balance area and each nuclear material batch.

The material balance area shall be established by the state administration body with jurisdiction over nuclear safety.

The nuclear material user may not transfer nuclear material into a facility before the state administration body with jurisdiction over nuclear safety has established the material balance area for that facility.

#### ***Article 16***

The nuclear material user must submit a report for each material balance area, based on its nuclear material records, to the state administration body with jurisdiction over nuclear safety within the deadlines set forth in the ordinance.

A physical inventory report that contains each batch separately, identifying the material and giving the batch data, should be annexed to the material balance report.

#### ***Article 17***

The state administration body with jurisdiction over nuclear safety shall maintain a register of nuclear activities, a register of nuclear material, and a register of specified equipment in the Republic of Croatia.

The method by which records on nuclear material are to be kept, the manner in which the nuclear material user is to report to the state administration body with jurisdiction over nuclear safety, and the method by which the state administration body with jurisdiction over nuclear safety is to maintain the register of nuclear activities, the register of nuclear material, and the register of specified equipment shall be set forth in the ordinance.

### **Procedure in the event of a nuclear incident or accident**

#### ***Article 18***

A nuclear material user in a facility in which a nuclear activity is performed shall be obliged to develop a plan and programme for measures to be taken in the event of a nuclear incident or nuclear accident, which must be approved by the state administration body with jurisdiction over nuclear safety.

The plan and programme under paragraph 1 of this Article shall also include the obligation to verify the proper functioning of individual parts (units) within specified deadlines.

### **Technical Support Centre**

#### ***Article 19***

The purpose of the Technical Support Centre shall be to prepare and implement the necessary expert and technical activities of the Republic of Croatia's national programme for preparedness and response in the event of a threat of a nuclear accident at nuclear power plants, especially in neighbouring countries.

In the event of a nuclear accident, the goal of the Technical Support Centre shall be to offer expert assistance to the Republic of Croatia's crisis response organisation, in particular the state administration body functioning as the executive organisation in crisis situations.

#### *Article 20*

The tasks and duties of the Technical Support Centre shall include the following in particular:

- gathering data and information on nuclear accidents;
- co-operating with corresponding centres in other countries;
- analysing and assessing the potential consequences of a nuclear accident; and
- providing substantial expert evaluations on which to base decisions regarding measures for protecting and saving the population.

#### *Article 21*

The Technical Support Centre shall operate as an organisational unit of the state administration body with jurisdiction over nuclear safety.

Besides employees of the state administration body with jurisdiction over nuclear safety, experts from other state administration bodies or expert organisations shall be appointed to the Technical Support Centre, with the approval of the heads of such bodies or organisations.

### III. STATE OFFICE FOR NUCLEAR SAFETY

#### *Article 22*

The State Office for Nuclear Safety, as the state administration body with jurisdiction over nuclear safety, is hereby established.

For the purpose of implementing measures for nuclear safety and protection, the State Office for Nuclear Safety shall:

1. issue licences to perform nuclear activities in connection with nuclear material or specified equipment;
2. conduct independent safety analyses and issue decisions or certificates regarding the siting, planning, construction, operation and decommissioning of a facility in which a nuclear activity is to be performed;
3. keep records on the licences, approvals, decisions and certificates which it has issued within the scope of its authority;
4. carry out administrative supervision of the implementation of this Act and regulations adopted on the basis of this Act;

5. carry out inspections to ensure the implementation of the provisions of this Act and regulations adopted on the basis of this Act;
6. ensure expert assistance in implementing the national plan and programme for procedures in the event of a nuclear accident, via the work of the Technical Support Centre;
7. ensure expert assistance in activities for preventing illicit trafficking in nuclear material to state administration bodies with jurisdiction over such activities;
8. monitor safety conditions at nuclear power plants in the region and carry out assessments of the threat of nuclear accidents there, especially the Krško Nuclear Power Plant in Slovenia and the Paks Nuclear Power Plant in Hungary;
9. fulfil the obligations which the Republic of Croatia has assumed through international conventions and bilateral agreements concerning nuclear safety and the application of protective measures aimed at the non-proliferation of nuclear weapons;
10. co-operate with international and domestic organisations and associations in the area of nuclear safety, and appoint its own expert representatives to take part in the work of such organisations and associations or to monitor their work;
11. co-ordinate technical cooperation with the International Atomic Energy Agency for all participants from the Republic of Croatia;
12. stimulate and support research and development activities in accordance with the demands and requirements of the development of nuclear safety in the Republic of Croatia;
13. issue instructions for implementing international recommendations and standards in the area of nuclear safety and protection;
14. carry out other activities under its jurisdiction based on this Act, regulations adopted on the basis of this Act, and other regulations.

### *Article 23*

The State Office for Nuclear Safety shall be headed by a director.

The director shall be appointed by the government of the Republic of Croatia.

### **Expert Organisations**

#### *Article 24*

Certain kinds of work in the area of nuclear safety may also be performed by expert organisations that satisfy special conditions for individual activities, based on international recommendations and standards in the area of nuclear safety.

Special conditions for the aforementioned individual activities shall be defined by the director of the State Office for Nuclear Safety.

## **Council for Nuclear Safety**

### ***Article 25***

The Council for Nuclear Safety (hereinafter referred to as “the Council”), an advisory body of the Croatian Parliament, shall be established to assess the state of nuclear safety in the Republic of Croatia.

The Council shall carry out the following activities:

1. give its opinion on proposed subordinate legislation to be adopted based on the provisions of this Act, as well as other subordinate legislation necessary for its implementation;
2. submit proposals and opinions to the Croatian Parliament regarding:
  - the development strategy for nuclear safety;
  - the organisation of nuclear safety in the Republic of Croatia;
  - international cooperation in the area of nuclear safety, in particular accession to and implementation of international treaties in this area;
  - other aspects of nuclear safety in the Republic of Croatia.
3. submit annual reports on the state of nuclear safety in the Republic of Croatia to the Croatian Parliament.

The Council shall have five members, one of whom shall be its president.

The president and other members of the Council shall be appointed and dismissed from office by the Croatian Parliament, based on nominations by the Government of the Republic of Croatia. Members of the Council shall be chosen from among experts in the area of nuclear safety.

The vice-president of the Council shall be nominated by its president and chosen by a majority of Council members.

The Council’s work shall be regulated by its rules of procedure.

Expert and technical work for the Council shall be performed by the State Office for Nuclear Safety.

## **IV. FINANCIAL RESOURCES**

### **Financing by a legal entity**

#### ***Article 26***

Financial resources for the implementation of safety and protective measures in performing nuclear activities shall be secured by the legal entities obliged to implement such measures under this Act.

The director of the State Office for Nuclear Safety shall prescribe the amount and manner of payment of costs for the licences and approvals issued by the State Office for Nuclear Safety, including the costs of any additional independent safety analyses.

Costs under paragraph 2 of this article shall be borne by the applicant.

## V. SUPERVISION

### *Article 27*

Administrative supervision of the implementation of this Act and regulations adopted on the basis of this Act shall be carried out by the State Office for Nuclear Safety.

### *Article 28*

Inspections based on this Act shall be carried out by inspectors from the State Office for Nuclear Safety (hereinafter referred to as “nuclear safety inspectors”).

The work of nuclear safety inspectors may be performed solely by persons who have attained the 7<sup>th</sup> level of education in technical or natural sciences.

Nuclear safety inspectors are appointed by the director of the State Office for Nuclear Safety.

Should it be ascertained during an inspection that this Act or another regulation adopted on the basis of this Act has been violated, a nuclear safety inspector shall, by means of a decision:

1. temporarily or permanently prohibit the performance of a nuclear activity in connection with nuclear material or specified equipment;
2. prohibit workers who do not meet the conditions for working with nuclear material from performing their duties;
3. prohibit the handling of nuclear material or specified equipment if this is not in accordance with the regulations.

In the cases specified in items 1 and 3, the decision by the nuclear safety inspector under paragraph 4 of this Article shall also define the further treatment and handling of nuclear material or specified equipment, at the expense of the holder of the licence to perform a nuclear activity.

The decision by the nuclear safety inspector under paragraph 4 of this Article shall be final. An administrative appeal may be lodged against this decision.

Supervision related to radiological safety, pressurised containers, and fire prevention in facilities in which a nuclear activity is performed shall be carried out by nuclear safety inspectors in cooperation with the state administration bodies having jurisdiction over such activities.

## VI. PENALTIES

### *Article 29*

A monetary fine in an amount ranging from HRK 10 000 to 50 000 shall be applied as a penalty for the following violations:

- failure by a legal entity to declare its intention of performing nuclear activities (Article 4, paragraph 1);
- failure by a nuclear material or specified equipment user to keep records on all of its nuclear material (Article 13);
- failure by a nuclear material or specified equipment user to submit a report for each material balance area, based on its nuclear material records, to the state administration body with jurisdiction over nuclear safety (Article 16, paragraph 1).

In the case of the violations specified under paragraph 1 of this Article, the responsible person of the legal entity or the nuclear material or specified equipment user shall also be penalised by a monetary fine in an amount ranging from HRK 1 000 to 5 000.

### *Article 30*

A monetary fine in an amount ranging from HRK 30 000 to 70 000 shall be applied as a penalty for a violation where a nuclear material user, in a facility where a nuclear activity is performed:

- does not carry out an appropriate examination of the content of radioactive matter in the vicinity of the said facility, within a timeframe and in a manner conforming to state regulations and international recommendations and standards in the area of nuclear safety (Article 11, paragraph 1);
- employs workers who do not meet special requirements regarding professional qualifications and supplementary training, as defined by state regulations and international recommendations and standards in the area of nuclear safety, for work related to the management of the production process or supervision of this process in the facility in which a nuclear activity is performed (Article 12);
- transfers nuclear material into the facility before the state administration body with jurisdiction over nuclear safety has established the material balance area for that facility (Article 15, paragraph 3);
- has not developed a plan and programme for measures to be taken in the event of a nuclear incident or nuclear accident, which must be approved by the state administration body with jurisdiction over nuclear safety (Article 18, paragraph 1).

In the case of the violations specified under paragraph 1 of this Article, the responsible person of the nuclear material user in the facility where a nuclear activity is performed shall also be penalised by a monetary fine in an amount ranging from HRK 3 000 to 7 000.

### ***Article 31***

A monetary fine in an amount ranging from HRK 50 000 to 100 000 shall be applied as a penalty for the following violations:

- failure by a nuclear material or specified equipment user to implement safety and protective measures in performing nuclear activities (Article 3);
- performance of a nuclear activity by a legal entity even though the state administration body with jurisdiction over nuclear safety has not issued a decision in favour of granting a licence to perform a nuclear activity (Article 5).

In the case of the violations specified under paragraph 1 of this Article, the responsible person of the nuclear material or specified equipment user or legal entity shall also be penalised by a monetary fine in an amount ranging from HRK 5 000 to 10 000.

## VII. TRANSITIONAL AND FINAL PROVISIONS

### ***Article 32***

Until such time as the State Office for Nuclear Safety begins its work, activities relating to nuclear safety and cooperation with the International Atomic Energy Agency shall be carried out by the Ministry of the Economy.

When the State Office for Nuclear Safety begins its work, it shall take over responsibility for activities relating to nuclear safety and cooperation with the International Atomic Energy Agency from the Ministry of the Economy.

In proportion to the work it has assumed, the State Office for Nuclear Safety shall also take over equipment, archives and other documentation, material supplies, financial resources, and rights and obligations from the Ministry of the Economy within a period of 60 days following the date on which the State Office for Nuclear Safety begins its work.

### ***Article 33***

The State Office for Nuclear Safety shall take over civil servants and employees from the Ministry of the Economy in proportion to the work it has assumed.

Until a decision is reached regarding the allocation of duties, based on the Rules of Internal Order of the State Office for Nuclear Safety, civil servants and employees shall retain all the rights and obligations deriving from civil service according to decisions valid hitherto.

### ***Article 34***

The Ministry of the Economy shall undertake preparations for the State Office for Nuclear Safety to begin its work within one year of the date on which this Act enters into force.

The State Office for Nuclear Safety shall begin its work no later than 1 January 2005.

***Article 35***

The regulations under Articles 4, 7, 8, 16 and 17 and the special conditions under Article 24 hereof shall be adopted by the director of the State Office for Nuclear Safety within one year of the date on which the State Office for Nuclear Safety begins its work.

Until such time as the regulations under paragraph 1 of this Article enter into force, the regulations adopted on the basis of the acts under Article 36 of this Act shall apply.

***Article 36.***

The Act on Measures for Protection against Ionising Radiation and Safety in the Use of Nuclear Facilities and Installations (Official Gazette, No. 18/81) and the Act on Protection against Ionising Radiation and Special Safety Measures in Using Nuclear Energy (Official Gazette, No. 53/91) shall cease to be valid as of the date on which this Act enters into force.

**Entry into force**

***Article 37***

This Act shall enter into force on the eighth day following its date of publication in the Official Gazette.

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