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ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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Cover photos: Dismantling work, Caorso nuclear power plant, Italy (SOGIN); prevention and detection of the illegal transfer of radioactive material (IAEA Nuclear Security 2012).

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Global nuclear law in the making? Joint exercise of public powers in the nuclear field: the case of the revision of the International Basic Safety Standards

*by Zoltán Turbék**

The revision process of the *International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources* (BSS), Safety Series No. 115, 1996 (hereinafter referred to as 1996 BSS[1]) has reached its final stage. After the review of the 1996 BSS in 2005, the revision process started in 2006 and the final draft of the revised BSS[2] was submitted to the Board of Governors of the International Atomic Energy Agency (IAEA or Agency) in August 2011 for approval. Subsequent to the decision of the IAEA Board of Governors adopted on 12 September 2011, the competent organs of the other potential sponsoring organisations also started to adopt or acknowledge, as appropriate, the text, which then will come into force one year after the date of the respective adoption or acknowledgement by the relevant organisation.

The BSS revision process is an example of joint exercise of public powers by multiple and diverse actors aiming at normative development, the outcome of which is a special type of "global nuclear law". This article will analyse the BSS revision process from the institutional legal point of view with particular attention to (1) the multiple actors involved in the revision process; (2) the legal framework within which the revision process took place; (3) the nature of revision process; and (4) the legal nature of the revised BSS[3] itself.

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1. IAEA (1996), *International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources* (BSS), Safety Series No. 115, available at: www-pub.iaea.org /mtcd/publications/pdf/ss-115-web/pub996_web-1a.pdf.
2. IAEA (2011), "Draft Safety Requirements: Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards – Revision of IAEA Safety Series No. 115", IAEA Document GOV/2011/42.
3. For the interim edition of the revised BSS, see IAEA (2011), "Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards, Interim Edition", IAEA Document General Safety Requirements Part 3, No. GSR Part 3 (Interim) (hereinafter referred to as Interim Edition of the revised BSS), available at: www-pub.iaea.org /MTCD/ Publications/PDF/p1531interim_web.pdf.

Background

International nuclear law and safety standards

Similarly to other fields of international law, there is a plurality of sources in international nuclear law. The categories of sources and their significance in the different fields, however, are not necessarily the same. While customary law and the judgements of the International Court of Justice are common and highly significant sources of other fields, such as international environmental law, they play less relevant roles in international nuclear law.[4]

Multilateral conventions and more specific bilateral treaties concluded in the nuclear field are perhaps the most important elements of international nuclear law. The normative instruments (non-treaties with certain normative implications) that are adopted, published, issued, etc., by international organisations fall into another category of sources of international nuclear law. Among these normative instruments, we find "hard law" instruments such as the United Nations (UN) Security Council resolutions adopted pursuant to Chapter VII of the UN Charter on non-proliferation, security and anti-terrorism,[5] and also "soft law" instruments like safety standards, codes of conduct, and other advisory/recommendatory documents.

According to Article III.A.6 of the IAEA Statute,[6] the Agency is authorised to establish or adopt safety standards. In addition to the BSS, a high number of safety standards have been adopted over the years, some of them individually by the IAEA, while others in cosponsorship with other institutions.[7] According to the IAEA, "of 130 planned safety standards, 115 are established of which 111 are published; 43 drafts are in the development process (24 to revise 30 published Safety Standards); and 3 draft DPPs [document preparation profiles] are approved by the Coordination Committee of which 1 to revise 1 published Safety Standards".[8]

The 1996 Basic Safety Standards

The Board of Governors of the IAEA first approved radiation protection and safety measures in March 1960.[9] After its approval by the Board in June 1962, the first Basic Safety Standards was published by the IAEA as Safety Series No. 9.[10] A revised version was published in 1967,[11] and it was followed by a third revision[12] that was already an instrument sponsored jointly by the IAEA, the International Labour Organization (ILO),

4. The two 1974 Nuclear Tests Cases, i.e. the *Nuclear Tests (Australia v. France), Judgement, I.C.J. Reports 1974*, p. 253 and the *Nuclear Tests (New Zealand v. France), Judgement, I.C.J. Reports 1974*, p. 457 can be mentioned as rare examples.
5. e.g. UN Documents S/RES/1373(2001); S/RES/1540(2004); S/RES/1673(2006).
6. Statute of the IAEA (1956), available at: www.iaea.org/About/statute_text.html, accessed 3 April 2012.
7. List of all valid Safety Standards, www-ns.iaea.org/standards/documents/pubdoc-list.asp?s=11&l=96, accessed 3 April 2012.
8. IAEA (2012), *Long Term Structure of the IAEA Safety Standards and Current Status, March 2012*, p. 2, available at: www-ns.iaea.org/committees/files/CSS/205/status.pdf.
9. IAEA (1960), "The Agency's Health and Safety Measures", IAEA Document INFCIRC/18 (31 May 1960); IAEA (1976), "The Agency's Safety Standards and Measures", IAEA Document INFCIRC/18/Rev.1 (April 1976).
10. IAEA (1962), "Basic Safety Standards for Radiation Protection", Safety Series No. 9, IAEA, Vienna.
11. IAEA (1967), "Basic Safety Standards for Radiation Protection (1967 Edition)", Safety Series No. 9, IAEA, Vienna.
12. IAEA (1982), "Basic Safety Standards for Radiation Protection (1982 Edition)", Safety Series No. 9, IAEA, Vienna.

the Nuclear Energy Agency of the Organisation for Economic Co-operation and Development (OECD/NEA), and the World Health Organization (WHO).

In 1990, an important step towards the international harmonisation of radiation protection and safety took place: the Inter-Agency Committee on Radiation Safety (IACRS) was constituted as a forum for consultation on and collaboration in radiation safety matters among international organisations.[13] The IACRS initially comprised the Commission of the European Communities, the Council for Mutual Economic Assistance (CMEA) (now defunct), the Food and Agriculture Organization of the United Nations (FAO), the IAEA, the ILO, the OECD/NEA, the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) and the WHO. The Pan American Health Organization (PAHO) joined subsequently. The International Commission on Radiological Protection (ICRP), the International Commission on Radiation Units and Measurements (ICRU), the International Electrotechnical Commission (IEC), the International Radiation Protection Association (IRPA) and the International Organization for Standardization (ISO) have observer status in the IACRS. Within this framework, the sponsoring organisations established the so-called Joint Secretariat for the preparation of the 1996 BSS. The Joint Secretariat was co-ordinated by the IAEA.

The unprecedented international effort to draft and review the standards involved hundreds of experts from the member states of the sponsoring organisations and from other organisations.[14] The meeting of the Technical Committee that endorsed the 1996 BSS in December 1993 was attended by 127 experts from 52 countries and 11 organisations. The IAEA Board of Governors approved the document at its 847th meeting on 12 September 1994,[15] subsequent to which the other cosponsors also approved or acknowledged it during 1994 and 1995.

The revision of the Basic Safety Standards

Actors

This part of the article describes briefly the institutions involved in the BSS revision project, demonstrating that it was an exercise in which a number of actors with very diverse legal status and mandate had worked together in a collaborative manner in order to revise the 1996 BSS.

The cosponsoring organisations

The cosponsoring organisations were the most important actors in the BSS revision exercise. The cosponsors of the 1996 BSS were the IAEA, the ILO, the WHO, the PAHO, the FAO, and the OECD/NEA. Two other organisations, the United Nations Environment Programme (UNEP) and the European Commission (EC/EURATOM) were not cosponsors of the 1996 BSS, but both actively participated in the revision process.

13. IAEA (1990), "The Annual Report for 1990", IAEA Document GC(XXXV)/953 (July 1991), p. 86.
14. The preparation of the final draft for the 1996 BSS required a high number of meetings (e.g. Technical Committee Meetings; Senior Experts Meeting; Consultants Meetings; ad hoc Working Group on Dose Limitation in Specific Occupations; ad hoc Working Group on Potential Exposures, etc.). See 1996 BSS, p. 341.
15. 1996 BSS, Foreword.

As recognised by the cosponsors, the IAEA was the "central organisation in this process" and was responsible to "lead the development of the BSS revision".[16] There are a number of internal IAEA organs that have played important roles in this exercise. The General Conference, composed of all member states, is the highest policy-making organ of the IAEA and, as such, exercises supervision and control over all IAEA activities. It is also the organ which provided the explicit mandate for the revision of the BSS.[17]

The IAEA Board of Governors is composed of 35 member states elected by the General Conference, and it is the organ that approves the safety requirements such as the revised BSS. The Board may make decisions by a majority of those present and voting. In theory, it means that for the adoption of safety standards that will bind the IAEA itself and has normative implications for all member states requesting IAEA assistance, no express consent of the member states is needed, but a majority decision of the Board of Governors composed of only 35 member states is sufficient.[18]

The IAEA Secretariat had the "overall responsibility" for the revision of the BSS, and it was also responsible to "chair the co-ordination of the BSS revision", as well as the "meetings of cosponsoring organizations".[19] The IAEA Secretariat also has the power to prepare draft document preparation profiles (DPPs) (including the one for the BSS revision), to prepare drafts for safety standards – individually or in co-operation with other cosponsors, to compile the comments made by member states and other actors on draft safety standards, and to set up advisory organs like the Commission on Safety Standards (CSS) or the safety standards committees, to assign significant powers to them, and to decide on their composition.

There are four safety standards committees, namely the Nuclear Safety Standards Committee (NUSSC), the Radiation Safety Standards Committee (RASSC), the Waste Safety Standards Committee (WASSC), and the Transport Safety Standards Committee (TRANSCC) that also played important part in the BSS revision process. These committees were established by the IAEA Deputy Director General and the Head of the Department of Nuclear Safety and Security[20] and are composed of senior experts in the respective fields appointed by the Deputy Director General from candidates nominated by IAEA member states. Their objective is to achieve consensus, quality, coherence, and consistency in the development of safety standards.

The safety standards committees have been granted and exercise the powers to review document preparation profiles prior to their submission to the CSS to review draft safety standards, to approve the text of draft safety standards prior to their submission to member states for comment and again prior to their submission to the CSS as well as to ensure broad international input in the preparation and review of

16. Commission on Safety Standards, Twentieth meeting, 21-22 November 2006, IAEA Headquarters, Vienna, Report of the meeting, www-ns.iaea.org/committees/files/css/204/CSSrpt20final_1.pdf, accessed 4 April 2012.
17. See e.g. IAEA (2006), Document GC(50)/RES/10 (September 2006).
18. IAEA Board of Governors, www.iaea.org/About/Policy/Board/, accessed 5 April 2012.
19. See IAEA (2006), "The Secretariat to coordinate the Revision of the BSS" (hereinafter referred to as the BSS Secretariat Terms of Reference), adopted in October 2006, Working Methods, points 2, 5, 6.
20. In fact, by the IAEA Secretariat that only acted via the Deputy Director General. See IAEA (1996), "Measures to Strengthen International Co-operation in Nuclear, Radiation and Waste Safety", IAEA Document GC(40)/INF/5 (30 August 1996), Paragraph 20, which was noted by the IAEA General Conference in IAEA Document GC(40)/DEC/12 (20 September 1996).

safety standards.[21] Their powers are based on their terms of references approved by the CSS,[22] but – according to the SPESS – established by the IAEA Director General.[23]

In this regard, the safety standards committees have been criticised for not being adequately representative. European member states are over-represented, while the number of experts from developing countries is very low, despite of the fact that these states are the ones that usually request IAEA assistance and as a result of that become bound by these safety standards.

Although it is not specified in their terms of references, it is understood that these advisory committees work on the basis of consensus and not through formal voting procedures. If no consensus is reached, the dissenting views have to be explained to allow their superiors (i.e. the CSS and the Deputy Director General) to judge the significance of the advice and to resolve any open questions.

For the BSS revision, the RASSC functioned as the so-called "lead committee" and its chairperson was "responsible for reviewing and verifying changes resulting from the review by the Safety Standards Committees".[24]

The CSS is "a standing body of senior government officials holding national responsibilities for establishing standards and other regulatory documents relevant to nuclear, radiation, transport and waste safety". The CSS has been granted – among others – the power "to resolve outstanding issues referred to it by the Committees involved in the preparation and review process for safety standards", as well as the power "to endorse the texts of the Safety Requirements" (including the revised BSS) "to be submitted to the Board of Governors for approval".[25]

According to the SPESS, the terms of reference of the CSS were established by the IAEA Director General.[26] The powers of the CSS have been conferred upon it by the IAEA Secretariat that created the CSS[27] (via the IAEA Director General who established its terms of reference). Just as in the case of the safety standards

21. IAEA, *Terms of Reference of the Safety Standards Committees*, available at: www-ns.iaea.org/downloads/standards/ss-committees-tor.pdf.
22. Commission on Safety Standards, Twenty-seventh meeting, 17-19 March 2010, IAEA Headquarters, Vienna, Draft report of the Meeting, p. 14, available at: www-ns.iaea.org/committees/files/css/204/CSSrpt27draft301092010clean.pdf: "It was also noted that, as the new term for the Committees would begin at the end of 2010, discussions would take place on these topics at the June meetings of the Committees. It was agreed that the four Safety Committees should review the proposed revisions of the Terms of Reference at their June 2010 meetings, and present the proposed revisions to the 2 CSS meeting for review/approval, with the goal of having the revised Terms of Reference in place for the new SSC terms that begin January 2011 [Annex III, Action 27.12]."
23. "Their terms of reference are established by the IAEA Director General for a three year mandate." See IAEA (2011), "Strategies and Processes for the Establishment of IAEA Safety Standards (SPESS)", Version 1.1 – 10 March 2011 (hereinafter referred to as SPESS), p. 48, available at: www-ns.iaea.org/downloads/standards/spess.pdf.
24. RASSC, Report of the Twenty-ninth Meeting, 7-9 December 2010, p. 16, available at: www-ns.iaea.org/committees/files/rassc/191/ReportRASSC29final.pdf.
25. CSS Terms of Reference, www-ns.iaea.org/downloads/standards/css-tor.pdf, accessed 4 April 2012.
26. SPESS, p. 47.
27. "The Secretariat has introduced a uniform preparation and review process covering all areas. To this end, it has created a set of advisory bodies with harmonized terms of reference to assist it in preparing and reviewing all documents – namely, the Advisory Commission for Safety Standards, the Nuclear Safety Standards Advisory Committee, the Radiation Safety Standards Advisory Committee, the Waste Safety Standards Advisory Committee and the Transport Safety Standards Advisory Committee." See IAEA (1996), IAEA Document GC(40)/INF/5 (30 August 1996) Paragraph 20.

committees, it has to be noted that while the Director General in his/her decisions on the composition of the CSS shall seek "to ensure a balance of regional approaches and experience in the areas covered by the Agency's safety standards",[28] European and other developed member states are highly over-represented in the CSS. Although it is not specified in its terms of reference, the CSS also works on the basis of consensus and not through formal voting procedures.[29]

Similar to the IAEA, various organs of the other cosponsors were involved in the revision process. Like the IAEA Secretariat, their secretariats had also been very active in the development of the new text. It is determined by the internal law ("rules of the organization"[30]) of the given cosponsor which internal organ is mandated to approve the final draft of the revised BSS.[31]

The limited length of this article does not allow the thorough exploration of the specific nature of the internal procedures within each cosponsor in relation to the revision process.[32] However, in order to offer an indication for the complexity of these internal procedures, the case of the OECD/NEA is shortly described. The OECD/NEA was actively engaged in the preparation of the revised BSS drafts. This included OECD/NEA participation in BSS meetings of various types [drafting, Expert Group on the Impact of ICRP Recommendations (EGIR) review, BSS Secretariat, RASCC or IAEA technical meetings] in order to develop and improve the document. OECD/NEA experts and members of the Secretariat participated in these meetings and provided expertise, drafting, comment analysis and consolidation, secretariat services and other inputs. During the revision process, each cosponsor was expected to perform a review of the draft of the revised BSS through its own mechanisms. For this reason, the OECD/NEA held two EGIR[33] review meetings, one in Tokyo (27-28 April 2010) and one in Paris (6-7 May 2010), and a final set of OECD/NEA comments was presented at the BSS Topical Session of the 68th Committee on Radiation Protection and Public Health (CRPPH)[34] annual meeting (18 May 2010) prior to its submission to the IAEA at the end of May 2010. Between January 2007 and November 2010, the total number of BSS-related meetings attended by the

28. See CSS Terms of Reference.
29. Advisory Commission on Safety Standards (ACSS), First meeting, 18-20 March 1996, IAEA Headquarters, Vienna, Draft Report of the meeting, p. 6, available at: www-ns.iaea.org /committees/files/css/204/css1-17.zip.
30. Vienna Convention on the Law of Treaties between States and International Organizations or between International Organizations (1986), Article 2, 1, (j).
31. In the case of the 1996 BSS, the following procedures had been completed: The IAEA's Board of Governors approved the standards at its 847th meeting on 12 September 1994. For PAHO, the XXIV Pan American Sanitary Conference endorsed the standards on 28 September 1994 following a recommendation from the 113th meeting of the PAHO Executive Committee on 28 June 1994. The Director-General of the FAO confirmed the FAO's technical endorsement of the standards on 14 November 1994. WHO completed its adoption process for the standards on 27 January 1995 when the Director-General's report on the subject was noted by the Executive Board at its 95th session. The ILO's Governing Body approved publication of the standards at its meeting on 17 November 1994. The OECD/NEA Steering Committee approved the standards at its meeting on 2 May 1995. This completed the authorisation process for joint publication by all the Sponsoring Organisations. See 1996 BSS, p. 9.
32. For more information on the main features and respective mandates of the cosponsors, see 1996 BSS, pp. 351-353.
33. Expert Group on the Implications of ICRP Recommendations (EGIR), www.oecd-nea.org/rp/egir.html, accessed 4 April 2012.
34. Committee on Radiation Protection and Public Health, www.oecd-nea.org/rp/crpph.html, accessed 4 April 2012; Mandate of the Committee on Radiation Protection and Public Health (CRPPH), www.oecd-nea.org/rp/crpph-mandate.html, accessed 4 April 2012.

OECD/NEA Secretariat and experts was 56.[35] The revised BSS as approved by the IAEA Board of Governors were presented to and approved by the OECD/NEA Steering Committee during its 123rd meeting held on 27-28 October 2011.[36]

Joint bodies

The Secretariat to Coordinate the Revision of the BSS or BSS Secretariat was another major player in the BSS revision process. The BSS Secretariat was set up in 2006 by the IAEA "with participation of the other cosponsors".[37] It is composed of the cosponsors of the 1996 BSS (IAEA, ILO, WHO, PAHO, FAO, OECD/NEA), as well as the EC/EURATOM and the UNEP, and in addition to them, ICRP and IRPA act as observers. The IAEA chairs the BSS Secretariat meetings and serves as its administering organisation. The BSS Secretariat has been mandated specifically "to support and facilitate the revision of the BSS, by ensuring that the interests, views and responsibilities of each cosponsoring organisation are fully taken into account"; "to provide a forum for cosponsor organizations to inform each other of developments that may need to be taken into account"; and "to coordinate the approval process of the cosponsoring organizations for the revised BSS".[38]

According to the joint views of the cosponsors, the BSS Secretariat was set up as "an essential, non-decisional body that will facilitate the BSS revision and assure that all relevant viewpoints are taken into account in developing draft text". It was also supposed to "ensure that there are no conflicts with existing international instruments developed by cosponsoring organizations, and … [to] appropriately ensure that any disagreements between cosponsoring organizations are fully addressed and resolved in a timely fashion".[39]

The BSS Secretariat operates on the basis of consensus. It is interesting to note that its terms of reference granted specific, extra powers to the cosponsor most competent in a given field, by providing that the "[d]iscussion among cosponsors shall facilitate the resolution of differences with regard to draft texts addressing cross-cutting issues. In general, resolution of such issues shall defer to the judgement of the most relevant organization, for example, WHO/PAHO for medical issues, or ILO for occupational exposure issues."[40]

There is another joint body, the Inter-Agency Committee on Radiation Safety (IACRS), which – as was mentioned above – functioned as one of the major actors in relation to the preparation of the 1996 BSS, however, its role was rather marginal

35. OECD, "Report from the OECD Nuclear Energy Agency for the IAEA RASSC on the work of the NEA's Committee on Radiation Protection and Public Health (CRPPH)", available at: www-ns.iaea.org /committees/files/RASSC/984/NEA-CRPPHforNovember2010RASSC.pdf.
36. See OECD (2011), *Nuclear Law Bulletin*, No. 88, Vol. 2011/2, OECD, Paris, p. 105.
37. The BSS Secretariat can be seen as a simple working group of the IAEA Secretariat, but also as an informal inter-organisational forum/entity that operates on the basis of full co-operation and equality.
38. See BSS Secretariat Terms of Reference, objectives.
39. "Information Note from the Secretariat to Coordinate the Revision of the BSS – Joint views of the cosponsoring organisations for the attention of the CSS", 20 November 2006, in Commission on Safety Standards, Twentieth meeting, 21-22 November 2006, IAEA Headquarters, Vienna, Report of the meeting, annex IV, www-ns.iaea.org/committees/files /css/204/CSSrpt20final_1.pdf, accessed 4 April 2012.
40. BSS Secretariat Terms of Reference, Paragraph 11.

during the current revision.[41] The IACRS – in relation to the BSS revision – only functioned as a forum of the concerned institutions to discuss and comment on the drafts of the revised BSS.

Independent expert bodies

Several independent expert bodies played important roles in the BSS revision process. One of them was the so-called UNSCEAR established in 1955 by Resolution 913 (X) of the General Assembly in response to widespread concerns about the effects of radiation on human health and the environment. Its mandate in the United Nations system is to assess and report levels and effects of exposure to ionising radiation. Governments and organisations throughout the world rely on the Committee's estimates as the scientific basis for evaluating radiation risk and for establishing protective measures.[42] Over the decades, UNSCEAR has evolved to become the world authority on global levels and effects of ionising radiation.[43] In 1974, the UNSCEAR Secretariat moved from New York to Vienna and now it is functionally linked with the UNEP.[44] On several occasions, the IAEA General Conference called for taking into account the scientific information and estimates provided by UNSCEAR for the development of safety standards.[45]

Another expert institution involved in the BSS revision was the International Commission on Radiological Protection.[46] The ICRP is a non-governmental scientific organisation founded in 1928 to establish basic principles and recommendations for radiation protection. The Commission is registered as an independent charity in the United Kingdom and is financed mainly by voluntary contributions from international and national bodies with an interest in radiological protection.[47] As noted earlier, the ICRP was an observer of the BSS Secretariat. The Board of Governors of the IAEA provided in March 1960 that "The Agency's basic safety standards ... will be based, to the extent possible, on the recommendations of the

41. The IACRS was constituted in 1990 as a forum for consultation on and collaboration in radiation safety matters between international organisations. Its objective is to promote consistency and co-ordination of policies with respect to the following areas of common interest: applying principles, criteria and standards of radiation protection and safety and translating them into regulatory terms; co-ordinating research and development; advancing education and training; promoting widespread information exchange; facilitating the transfer of technology and know-how; and providing services in radiation protection and safety. See 1996 BSS, pp. 11-12.
42. UNSCEAR, About Us, www.unscear.org/unscear/en/about_us.html, accessed 4 April 2012.
43. UNSCEAR, Mandate of the Committee, www.unscear.org/unscear/en/about_us/mandate.html, accessed 4 April 2012. The original committee was composed of senior scientists from 15 designated UN member states, namely Argentina, Australia, Belgium, Brazil, Canada, Czechoslovakia, Egypt, France, India, Japan, Mexico, Sweden, the UK, the USA and the USSR. In 1973, the UN General Assembly invited a further five UN member states to participate in the Committee, namely Germany, Indonesia, Peru, Poland and Sudan; China was invited in 1986. In 2011, the UN General Assembly invited Belarus, Finland, Pakistan, the Republic of Korea, Spain and Ukraine to become members of the Scientific Committee, increasing the membership from 21 to 27 States.
44. UNSCEAR, Historical milestones, www.unscear.org/unscear/en/about_us/history.html, accessed 4 April 2012.
45. e.g. IAEA (2008), IAEA Document GC(52)/RES/9, Paragraph 19; IAEA (2009), IAEA Document GC(53)/RES/10, Paragraph 21; IAEA (2010), IAEA Document GC(54)/RES/7, Paragraph 22, i.
46. Constitution of the International Commission on Radiological Protection (1987), www.icrp.org/admin/00-572-09_ICRP_Constitution_2002.pdf, accessed 4 April 2012.
47. International Commission on Radiological Protection: History, Policies, Procedures, www.icrp.org/docs/Histpol.pdf, accessed 4 April 2012.

International Commission on Radiological Protection (ICRP)".[48] According to the revised BSS and in line with the request of the IAEA General Assembly,[49] the standards found in the revised BSS "also take account of the findings of the … UNSCEAR and the Recommendations of the … ICRP".[50]

The so-called IRPA can also be mentioned as another actor of the BSS revision process. IRPA is a non-profit organisation that enlists individuals as members who are also members of an affiliated national or regional IRPA Associate Society.[51] Similarly to the ICRP, IRPA was an observer of the BSS Secretariat.[52]

States

States have participated in the revision process in various capacities. As member states of the cosponsors, they provided feedback on the implementation of the 1996 BSS. They collected such feedback from and via consultation with their respective regulatory bodies, ministries of health, and other users. There had been an increased involvement of the facility operators in the drafting of the safety standards.[53] Member states also participated in the BSS revision through the experts they nominated as members of the relevant committees (e.g. safety standards committees and CSS) or as corresponding members to receive all the reports presented at the safety standards committees meetings and to have the opportunity to review and comment on these reports.[54] All member states of the IAEA had the right to comment on draft 3.0 of the revised BSS which in January 2010 was submitted by the IAEA for the so-called "120-day review".[55] Due to their membership in the various organs of the cosponsors, states also had the chance to express their views and vote on decisions related to the BSS revision. Just to give a concrete example, the final draft of the revised BSS has been approved – on behalf of the IAEA – by the Board of Governors composed of 35 member states.

Legal framework

In order to understand the complexity of the processes and the dynamics of the revision of the BSS, it is necessary to examine the legal framework within which it took place.

48. 1996 BSS, p. 11.
49. e.g. IAEA (2010), IAEA Document GC(54)/RES/7, Paragraph 22, i.
50. See Interim Edition of the revised BSS, Paragraph 1.5.
51. IRPA's primary purpose is to provide a medium whereby those engaged in radiation protection activities in all countries may communicate more readily with each other and through this process advance radiation protection in many parts of the world. See IRPA Constitution, www.irpa.net/index.php?option=com_content&view=article&id=38: irpa-constitution&catid=99:rules-and-procedures&Itemid=64, accessed 4 April 2012.
52. For the involvement of IRPA in the BSS review and revision, see Czarwinski, R. (2007), "IRPA Involvement in the BSS Review and Revision Process", slideshow presented at the IRPA Regional Congress for Central and eastern Europe, Brasov, Romania, 24-28 September 2007, available at: www.irpa.net/index.php?option=com_docman&task=doc_download& Itemid=173&gid=3496.
53. IAEA (2006), "Measures to Strengthen International Cooperation in Nuclear, Radiation and Transport Safety and Waste Management", IAEA Document GOV/2006/40-GC(50)/3 (1 August 2006), Paragraph 31.
54. *Ibid*.
55. Radiation Safety Standards Committee, Chairman's Report, Twenty-seventh meeting, 16-19 November 2009, IAEA Headquarters, Vienna, available at: www-ns.iaea.org/committees/files/rassc/191/ChairmansReport-RASSC27.pdf.

Constitutive documents of the cosponsors

First of all, the constitutive documents of the cosponsors have to be mentioned as an important element of the legal framework. Each such document contains provisions that are relevant for and regulate specific aspects of inter-institutional co-operation and joint activities such as the BSS revision. The relevant provisions of the constitutive documents can be grouped as follows:

- Provisions providing the mandate for taking part in the elaboration of safety standards for protection against ionising radiation

In this regard, the most essential provision is Article III.A.6 of the IAEA Statute, which – in a quite unusual and unique way – explicitly deals with standard-making in co-operation with other institutions.[56] It is more problematic to find similar mandates conferred upon other cosponsors. Some of them, such as the ILO, have similar normative powers, however, not specifically in the nuclear field. It is somewhat questionable whether certain institutions such as UNEP are authorised to exercise normative powers at all, especially in relation to ionising radiation.

- Provisions regulating the procedural powers of specific organs

These provisions are relevant for the procedural aspects of the revision of the BSS. For instance, the IAEA Statute – in Article V.D. – provides that "the General Conference may discuss any questions or any matters within the scope of this Statute or relating to the powers and functions of any organs provided for in this Statute". Article VI.F. deals with the authority of the Board of Governors; Article VI.I. with its power to establish committees. Within Article XI that deals with Agency projects, Paragraph E specifies the role of the Board in approving projects and Paragraph F obliges the Agency to enter into agreements/arrangements with the member/group of members submitting such projects. The constitutive documents of the other cosponsors also contain procedural provisions relevant for the BSS revision, however, the limited length of this article does not allow us to explore these in detail.

- Provisions allowing the institution to conduct external relations

These provisions provide the substantive mandate for co-operating with other institutions and other actors. It is Article XVI of the IAEA Statute that deals with the relationship with other organisations. According to Paragraph A, "The Board of Governors, with the approval of the General Conference, is authorised to enter into an agreement or agreements establishing an appropriate relationship between the Agency and the United Nations and any other organizations the work of which is related to that of the Agency." This provision was the legal basis for concluding co-operation agreements between the IAEA and other cosponsors.

- Provisions dealing with the power to enter into agreements

While the previous category of provisions focuses on the mandate needed for conducting external relations, these provisions are related to the procedural legal aspects of such activities. The provisions on legal personality and the power to enter

56. According to González, A. "the IAEA is the only international organisation with responsibility for developing standards for ionizing radiation". See Radiation Safety Standards Committee, Tenth meeting, 4-6 April 2001, IAEA Headquarters, Vienna, Room C07VI, Chairman's Report of the meeting, draft, available at: www-ns.iaea.org /committees/files/rassc/191/rasscreport1-18.zip.

into agreements are necessary for conducting external relations with other institutions and for specifying the rules of co-operation in legal instruments concluded for that purpose.

- Provisions on the power to set up committees

These provisions allow an institution to set up suborgans, such as the BSS Secretariat. It is, however, a widely accepted principle of international institutional law that international institutions enjoy this power, even when their constitutive document is silent about it (i.e. it is an implied power[57]).

Specific consensual "rules of co-operation"

There are also rules that had been agreed upon by the co-operating actors specifically for the revision of the BSS (e.g. the Terms of Reference of the BSS Secretariat[58]) or for other related specific purposes (e.g. the Terms of Reference of the IACRS[59]). They can be called "the rules of the game" – jointly determined by the concerned actors – that regulate the methods, mechanisms, decision-making procedures of the co-operation. By effect of these consensual rules, the actors sometimes also constitute joint organs for facilitating their co-operation. Although these joint organs can be highly institutionalised in some areas (like the Global Environment Facility[60] in the field of environment), they are rather informal in the nuclear field (e.g. the IACRS or the BSS Secretariat).

General consensual "rules of co-operation"

Several agreements entered into between the cosponsors or between a cosponsor and other institutions had relevance for the BSS revision, as well. These agreements regulate the relationship of the parties and the mechanisms of co-operation between them. In this regard, the Agreement Governing the Relationship between the UN and the IAEA,[61] the Agreement between the IAEA and the WHO,[62] the Agreement between the IAEA and the ILO,[63] and the Agreement

57. Schermers, H.G. and Blokker, N.M. (2003), *International Institutional Law: Unity within Diversity*, 4th rev. ed, Nijhoff, § 232-236.
58. See e.g. the BSS Secretariat Terms of Reference.
59. See e.g. the Terms of Reference for the Inter-Agency Committee on Radiation Safety, on file with the author.
60. GEF Structure and Stakeholders, www.thegef.org/gef/gef_structure
61. IAEA (1959), "The Texts of the Agency's Agreements with the United Nations", IAEA Document INFCIRC/11 (30 October 1959), Part I.A, available at: www.iaea.org/Publications/Documents/Infcircs/Others/infcirc11.pdf.
62. IAEA (1960), "The Texts of the Agency's Relationship Agreements with the Specialized Agencies", IAEA Document INFCIRC/20, Part III, available at: www.iaea.org/Publications/Documents/Infcircs/Others/inf20.shtml#note_c. "Article I – Co-operation and Consultation. 1. The International Atomic Energy Agency and the World Health Organization agree that with a view to facilitating the effective attainment of the objectives set forth in their respective constitutional instruments, within the general framework established by the Charter of the United Nations, they will act in close co-operation with each other and will consult each other regularly in regard to matters of common interest. 2. In particular, and in accordance with the Constitution of the World Health Organization and the Statute of the International Atomic Energy Agency and its agreement with the United Nations together with the exchange of letters related thereto, and taking into account the respective co-ordinating responsibilities of both organizations, it is recognized by the World Health Organization that the International Atomic Energy Agency has the primary responsibility for encouraging, assisting and co-ordinating research and development and practical application of atomic energy for peaceful uses throughout the world without

between the IAEA and the FAO[64] can be mentioned as examples. These agreements establish the general principles of co-operation among the respective institutions (e.g. recognition of each other's mandates) and as such are also applicable to the co-operation in relation to the BSS revision, unless otherwise agreed by the parties.

Individual/unilateral decisions by international institutions

The cosponsors are in the process of adopting decisions in relation to the BSS revision. Part of these decisions dealt with preparatory questions (e.g. GC(49)/RES/9 in which the IAEA General Conference encouraged the IAEA Secretariat to undertake a review of the 1996 BSS[65]), others provided for the mandate for the revision and gave guidance to the drafters (e.g. GC(50)/RES/10 in which the General Conference noted that the revision had to be co-ordinated by the BSS Secretariat[66]), while at the final stage of the revision process, each cosponsor has to individually adopt a decision on the approval of the revised BSS.[67]

There were also decisions made by other institutions that had an impact on the BSS revision. The Effects of Atomic Radiation – UNSCEAR 2006 Report to the General Assembly,[68] as well as the 2007 recommendations of the ICRP, functioned as the scientific and regulatory foundation for elaborating the revised BSS.

prejudice to the right of the World Health Organization to concern itself with promoting, developing, assisting and co-ordinating international health work, including research, in all its aspects. 3. Whenever either organization proposes to initiate a programme or activity on a subject in which the other organization has or may have a substantial interest, the first party shall consult the other with a view to adjusting the matter by mutual agreement. Article V – Co-operation between Secretariats. The Secretariat of the International Atomic Energy Agency and the Secretariat of the World Health Organization shall maintain a close working relationship in accordance with such arrangements as may have been agreed upon from time to time between the Directors General of both organizations. In particular Joint committees may be convened when appropriate to consider questions of substantive interest to both parties."

63. *Ibid*. at Part II, in particular Article I – Co-operation and Consultation; Article V – Co-operation between Secretariats, available at: www.iaea.org/Publications/Documents/Infcircs/Others/inf20.shtml#note_b.
64. *Ibid*. at Part VI, in particular Article I – Co-operation and Consultation; Article V – Co-operation between Secretariats, available at: www.iaea.org/Publications/Documents/Infcircs/Others/inf20.shtml#note_f.
65. IAEA (2005), IAEA Document GC(49)/RES/9, Paragraph 10: "Notes that the International Basic Safety Standards for Protection against Ionizing Radiation and the Safety of Radiation Sources were approved by the Board of Governors more than ten years ago, and encourages the Secretariat to undertake a review of them, taking account of developments in radiation protection, knowledge and guidance, including, to the extent possible, the advice and information provided by the International Commission on Radiological Protection (ICRP) and the reports of the United Nations Scientific Committee on the Effects of Atomic Radiation."
66. IAEA (2006), IAEA Document GC(50)/RES/10, Paragraph 16: "Takes note of the Secretariat's review of the International Basic Safety Standards for Protection against Ionizing Radiation and the Safety of Radiation Sources (BSS) carried out in response to paragraph 10 of resolution GC(49)/RES/9, notes that the revision of the BSS is to be coordinated by a secretariat established by the Agency with the participation of the co-sponsors, and urges that secretariat to carefully consider and justify potential changes, taking into account their implications for national regulations."
67. Just as they had done it in relation to the 1996 BSS, see fn. 32.
68. United Nations Scientific Committee on the Effects of Atomic Radiation (2006), "Effects of Ionizing Radiation, UNSCEAR 2006 Report to the General Assembly, with Scientific Annexes", UN General Assembly Document A/61/46 and Corr. 1.

Certain internal procedural rules take the form of individual decisions and contain general rules and regulations for the operation of the given organisation, such as the rules of procedures of specific organs, the terms of references of the CSS and the safety standards committees, and the SPESS that was approved by the CSS in March 2010 and specifies the roles of the various IAEA organs and the procedural steps that have to be taken in order to establish safety standards within the IAEA.

The Basic Safety Standards revision process

The revision of the BSS required enormous efforts by the institutions involved. The procedural steps that had to be completed constitute an extremely complex and long process that involved international institutions, state authorities, scientists, and operators. The IAEA procedural requirements applicable to the development of safety standards in general, and those of the other actors involved (cosponsors, other institutions, states, etc.) had to be complied with during the revision process.

The internal rules of the co-operating institutions determined the specific procedures for the BSS revision process. The most important document in this regard was the SPESS[69] that had to be followed in case of the BSS revision process. Due to the fact that the IAEA was the co-ordinating organisation of the revision, the SPESS – despite of its internal IAEA nature – had to be *de facto* adhered to by other sponsoring organisations as well.[70] For the development of safety requirements, such as the revised BSS, 14 procedural steps had to be taken.[71] The preparation and review of safety standards involve the IAEA Secretariat, four safety standards committees, and the CSS, which oversees the entire safety standards programme.[72]

69. The SPESS "describes strategies, processes and associated responsibilities for the planning, development, establishment, review, revision and approval of the Agency's safety standards. The intent is to document and strengthen the processes that started with the establishment of the CSS and the Safety Standards Committees in 1996, and to achieve the following goals by the end of 2015: 1. An integration of all areas in the Safety Standards Series, using a top-down approach based on Safety Fundamentals; 2. A rationalisation of the Series with a reasonable and manageable number of Safety Guides; 3. A significant improvement in user-friendliness; and 4. A rigorous and efficient process for the establishment of additional standards and revision of existing ones." See IAEA (2010), IAEA Document GOV/2010/41-GC(54)/8, Paragraph 13.
70. In September 2010, the IAEA General Conference also underlined the importance of prioritising and streamlining the establishment of safety standards in accordance with the SPESS and a roadmap for the long-term structure for the safety standards approved by the CSS. See IAEA (2010), IAEA Document GC(54)/RES/7, Paragraph 20.
71. The steps are as follows: 1. Preparing a document preparation profile (DPP); 2. Internal review of the DPP; 3. Review of the DPP by the SSCs; 4. Review of the DPP by the CSS; 5. Preparing the draft safety standard; 6. First internal review of the draft safety standard; 7. First review of the draft safety standard by the SSC(s); 8. Soliciting comments by member states; 9. Addressing comments by member states; 10. Second internal review of the draft safety standard; 11. Second review of the draft safety standard by the SSC(s); 12. Review of the draft safety standard by the CSS; 13. Establishing as an IAEA safety standard (by the Publications Committee and/or Board of Governors [for Safety Fundamentals and Safety Requirements only]); 14. Publication of the safety standard. See IAEA (2012), *Long Term Structure of the IAEA Safety Standards and Current Status, March 2012*, p. 4, available at: www-ns.iaea.org/ committees/files/CSS/205/status.pdf.
72. The memberships of the SSCs and the CSS include senior government officials having responsibility for establishing national standards. All IAEA member states can nominate experts to the standards committees and provide comments on draft standards. Through this process the standards come to represent a consensus view of the IAEA member states. See IAEA (2003), IAEA Document GOV/INF/2003/15-GC(47)/INF/4 (6 August 2003), Paras. 8 and 10.

The constitutive documents and internal procedural rules of the other cosponsors were also relevant, however, they only bound the respective cosponsors in relation to their own internal procedures (e.g. the final approval of the text). The BSS Secretariat Terms of Reference adopted in October 2006 by all cosponsors (at least tacitly, since they accepted the "rules of the game" set by the IAEA) also contained procedural rules, however, only for the operation of the BSS Secretariat.

Principles for the BSS revision – guidance to the drafters

The drafters of the revised BSS had to work according to the guidance provided by the IAEA General Conference, Board of Governors, the CSS, the safety standards committees, as well as various organs of other cosponsors. If we study the decisions adopted in relation to the BSS revision, several principles can be identified.

The first principle related to the relevance and quality of the new standards. The drafters were requested to retain the role of the BSS as the international benchmark for radiation safety standards across all fields[73] as well as to assure that the movement into the new format of safety standards did not result in losing quality.[74]

Scientific accuracy was the second principle. The drafters had to take into account and ensure consistency with the advice, information and recommendations of the ICRP and the reports of the UNSCEAR during both the review,[75] as well as the revision[76] of the BSS.

Whether proposed changes to the 1996 BSS were necessary had to be carefully considered and justified[77] by the drafters.[78] According to this principle of necessity, the implications of potential changes for national regulations also had to be taken into account.[79] During the revision, the importance of maintaining stability in international standards had to be kept in mind, which in fact meant that the drafters were – indirectly – asked to be conservative.[80]

As the fourth principle, the drafters had to ensure flexibility, whenever possible, during the drafting of the revised BSS in order to allow for differences in national priorities and approaches.[81]

Co-operation proved to be perhaps the most important procedural principle. The full involvement of the cosponsoring organisations in the development of the revised BSS was required.[82] All cosponsoring organisations had to be invited to participate in

73. Czarwinski, R. (2009), "International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources – BSS 115 – Revision Process", slideshow presented at the Satellite EGIR meeting of NEA/CRPPH, Tokyo/Japan, 25-26 May 2009, (hereinafter referred to as Czarwinski slideshow [2009]), slide 9. (on file with the author).
74. *Ibid.* slide 13.
75. IAEA (2005), IAEA Document GC(49)/RES/9, Paragraph 10.
76. IAEA (2007), IAEA Document GC(51)/RES/11, Paragraph 17; IAEA (2008), IAEA Document GC(52)/RES/9, Paragraphs 18 and 19; IAEA (2009), IAEA Document GC(53)/RES/10, Paragraphs 20 and 21.
77. The committees and the CSS actually approved a process for "criteria for change" to be used for justifying changes to the text of the BSS. See IAEA (2007), IAEA Document GOV/2007/25-GC(51)/3, Paragraph 19.
78. IAEA (2006), IAEA Document GC(50)/RES/10, Paragraph 16; IAEA (2007), IAEA Document GC(51)/RES/11, Paragraph 17; IAEA (2009), IAEA Document GC(53)/RES/10, Paragraph 20.
79. *Ibid.*
80. *Ibid.* Czarwinski slideshow (2009), slide 9.
81. IAEA (2010), IAEA Document GOV/2010/41-GC(54)/8, Paragraph 10.
82. IAEA (2009) Document GC(53)/RES/10, Paragraph 20.

all drafting meetings,[83] and it had to be ensured that their interests, views and responsibilities were fully taken into account.[84] The development of the draft text had to be appropriately divided among cosponsors as per their relevant competencies and areas of expertise.[85] Discussion among cosponsors aimed at facilitating the resolution of differences with regard to draft texts addressing cross-cutting issues. In general, resolution of such issues had to defer to the judgement of the most relevant organisation, for example, WHO/PAHO for medical issues or ILO for occupational exposure issues.[86] This provision in the BSS Secretariat Terms of Reference shows that the original mandates of the cosponsors were supposed to have relevance in deciding matters on which consensus could not be reached.

Adequate representation of cosponsoring organisations and stakeholder involvement proved to be essential aspects of the BSS revision process. According to this principle of representativeness, the drafters had to seek and take note of the feedback from IAEA member states with respect to implementing the 1996 BSS.[87] In addition, developing countries were assisted to participate in the revision process, e.g. through regional workshops.[88]

The timeline of the BSS revision

The 1996 BSS (Safety Series No. 115) was published in 1996, once the respective approval procedures by all cosponsors have been completed in 1994 and 1995. After postponing several times the review and revision of the 1996 BSS (in 1999,[89] 2000[90] and 2003[91]), the CSS in 2004 requested the IAEA Secretariat to prepare a so-called document preparation profile for the review and revision of the document. In September 2005, the General Conference also requested the IAEA Secretariat to undertake a review of the 1996 BSS.[92]

Instead of reactivating the IACRS Joint Secretariat, the IAEA – in early 2006 – established the BSS Secretariat and invited potential cosponsors to participate in its

83. BSS Secretariat Terms of Reference, Paragraph 10.
84. *Ibid*. at Paragraph 1.
85. *Ibid*. at Paragraph 7.
86. *Ibid*. at Paragraph 11.
87. Czarwinski slideshow (2009), slide 9.
88. *Ibid*. slide 9.
89. The Radiation Safety Standards Advisory Committee – RASSAC (the predecessor of RASSC) discussed the question of the revision of the BSS in 1999, however, arrived to the conclusion that "major revision of the BSS could be deferred for the time being, but the Committee felt it was appropriate to proceed to develop procedures and plans for any necessary partial revisions to the existing document, with a timescale of about 2-3 years". See Radiation Safety Standards Advisory Committee, Seventh meeting, 12-15 October 1999, IAEA Headquarters, Vienna, C07V, Chairman's Report of the meeting, available at: www-ns.iaea.org/committees/files/rassc/191/rasscreport1-18.zip.
90. In 2000, the RASSC found the schedule for BSS revision proposed by a consultants meeting and a technical committee meeting "too ambitious" and expressed the opinion that the "need for a supplement was not clear and that all proposed changes should wait until the next major revision was carried out". Radiation Safety Standards Committee, Ninth meeting, 9-11 October 2000, IAEA Headquarters, Vienna, C07V, Chairman's Report of the meeting, draft, available at: www-ns.iaea.org/committees/files/rassc/191/rasscreport1-18.zip.
91. In 2003, the RASSC discussed once again the principles for the basis of the review of the BSS, and was of the opinion that the process should not begin until 2005. Radiation Safety Standards Committee, Chairman's Report, Fifteenth meeting, 29 September-2 October 2003, IAEA Headquarters, Vienna, Board Room, available at: www-ns.iaea.org/committees/files/rassc/191/rasscreport1-18.zip.
92. IAEA (2005), IAEA Document GC(49)/RES/9.

work. However, the terms of reference of the BSS Secretariat were adopted only in October 2006.

On 22 September 2006, the IAEA General Conference called for the revision of the BSS.[93] In September and October 2006, the BSS review report together with the document preparation profile for the revision of the BSS were reviewed and approved by the four safety standards committees, and then in November 2006, the CSS also approved the document preparation profile for the revision of the BSS (working ID: DS379).[94]

Meanwhile, in October 2006, the cosponsoring organisations issued a joint statement in which they called for "active and continuous participation of all BSS co-sponsors in the document's development as equal partners in the BSS Secretariat".[95]

The revision of the BSS commenced in early 2007 with a series of drafting meetings hosted by the IAEA, ILO, WHO, OECD/NEA and PAHO. The draft text prepared during these meetings provided the basis for discussions at a technical meeting held in July 2007. Additional drafting and review meetings with the sponsoring organisations were held from November 2007 to 2009.[96] The members of the safety standards committees and expert groups from sponsoring organisations provided feedback on the various drafts submitted to them for comment in 2008[97] and 2009.[98] A further technical meeting with the participation of the cosponsors was held in December 2009 to discuss the implications of an ICRP recommendation on radon issued in November 2009 for the revised BSS.[99]

On 28 January 2010, draft 3.0 of the revised BSS was submitted to member states and the cosponsors for the so-called "120-day review". The closing date for receipt of comments was 31 May 2010.[100] By end of May 2010, more than 1 500 comments on draft 3.0 had been received from 41 member states and 10 international

93. IAEA (2006), IAEA Document GC(50)/RES/10.
94. DPP for DS379, available at: www-ns.iaea.org/committees/bss/default.asp?fd=292.
95. Radiation Safety Standards Committee, Draft Chairman's Report, Twenty-first meeting, 9-11 October 2006, IAEA Headquarters, Vienna, Board Room, Annex II, available at: www-ns.iaea.org/committees/files/rassc/191/Reports19-21RASSC.zip.
96. IAEA (2011), IAEA Document GOV/2011/42, pp. i-ii.
97. By early October 2008, more than 1200 comments on draft 1.0 of the revised BSS had been received from the members of the SCCs and the cosponsors. See Radiation Safety Standards Committee, Chairman's Report, Twenty-fourth meeting, 31 March-2 April 2008, IAEA Headquarters, Vienna, Board Room, available at: www-ns.iaea.org/committees /files/rassc/191/Rassc24ChairmansReport.pdf.
98. The submission of draft 2.0 of the revised BSS to the SSCs for comment resulted in 500 comments. See IAEA (2009), IAEA Document GOV/2009/48-GC(53)/2. On draft 2.5, a total of 1 003 comments were received. See Radiation Safety Standards Committee, Chairman's report, Twenty-seventh meeting, 16-19 November 2009, IAEA Headquarters, Vienna, available at: www-ns.iaea.org/committees/files/rassc/191/ChairmansReport-RASSC27.pdf.
99. Czarwinski, R. and Boal, T. (2010), "Agenda Item RW10 – International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources (DS379)", slideshow presented at the 29th RASSC/30th WASSC Joint Session, 7-9 December 2010, Vienna, available at: www-ns.iaea.org/committees/files/RASSC/984/RW10.1-Czarwinski-RASSC-WASSCDecember2010.pdf.
100. Commission on Safety Standards, Twenty-seventh Meeting, 17-19 March 2010, IAEA Headquarters, Vienna, Draft report of the meeting, available at: www-ns.iaea.org/committees/files/css/204/CSSrpt27draft301092010clean.pdf.

organisations.[101] On 15 September 2010, draft 4.0 was sent to the safety standards committees for their approval to be submitted to CSS.[102] In November 2010, NUSSC approved draft 4.0 for submission to the CSS, subject to the changes requested being adequately addressed and provided the editorial review would not introduce any substantive changes to the requirements.[103] In December 2010, TRANSSC, as well as the RASSC and WASSC at their joint meeting, decided that draft 4.0, with the agreed changes, could be submitted to the CSS for endorsement, on the understanding that no substantive changes would be introduced during the technical editing.[104] The CSS – in May 2011 – endorsed the text.

On 21 April 2011, however, the ICRP issued a Statement on Tissue Reactions[105] which recommended a reduction in the dose limit for the lens of the eye. The CSS was of the opinion in May 2011 that the revised dose limit should be incorporated into Schedule III of the revised BSS. The IAEA member states were invited to provide comments on the revised Schedule III by 7 July 2011. Following the recommendation from the outgoing and incoming Chairmen of the RASSC, the Chairman of the CSS approved the revised Schedule III on 12 July 2011.

The final draft of the revised BSS was submitted to the IAEA Board of Governors on 15 August 2011 as agenda item GOV/2011/42 for its meeting starting on 12 September 2011. As recommended by the IAEA Secretariat, the Board by adopting the text has "establish[ed] as an Agency safety standard – in accordance with Article III.A.6 of the Statute – the draft Safety Requirements publication contained in this document" and "authorize[d] the Director General to promulgate these Safety Requirements and to issue them as a Safety Requirements publication in the IAEA Safety Standards Series".[106]

In line with the decision of the Board, the revised BSS were published on 3 November 2011 as General Safety Requirements Part 3 (Interim) in the IAEA Safety Standards Series in an Interim Edition,[107] and was then submitted to the other potential sponsoring organisations for their respective approval. The first organisation that complied with this request was the FAO. Its Director General confirmed FAO's endorsement and cosponsorship of the revised BSS in a letter[108] sent to the IAEA Director General on 29 October 2011.

The OECD/NEA Steering Committee – during its 123rd meeting held on 27-28 October 2011 – approved the revised BSS and "recommended to all OECD/NEA member countries that the domestic implementation measures referred to in the relevant 1962 OECD Council Decision be based on these revised standards".[109] The Executive Director of UNEP confirmed his organisation's support and cosponsorship

101. IAEA (2010), IAEA Document GOV/2010/41-GC(54)/8. As a result of this review process, a total of 1 578 comments were received from the IAEA members states and from BSS cosponsors, of which 798 (51%) were accepted. See Report from the OECD Nuclear Energy Agency for the IAEA RASSC on the work of the OECD/NEA's CRPPH.
102. By November 2010, additional appr. 230 comments on draft 4.0 were received from representatives of 11 member states, two cosponsors and three non-governmental organisations participating in the SSCs. See Summary of Discussion and Decisions on the BSS, RASSC/WASSC meeting, 7-9 December 2010, available at: www-ns.iaea.org/committees/files/RASSC/1016/SUMMARYOFDISCUSSIONANDDECISIONSONTHEBSS.pdf.
103. *Ibid*.
104. *Ibid*.
105. ICRP Statement on Tissue Reactions, www.icrp.org/page.asp?id=123, accessed 11 April 2012.
106. See IAEA (2011), IAEA Document GOV/2011/42.
107. Interim Edition of the revised BSS.
108. Letter on file with the author.
109. OECD (2011), *Nuclear Law Bulletin*, No. 88, Vol. 2011/2, OECD, Paris, p. 105.

of the revised BSS in a letter dated 12 March 2012.[110] The revised BSS were approved by the ILO Governing Body at its meeting held between 15-30 March 2012.

Within WHO, the document is expected to be presented to and approved by the 65th World Health Assembly to be held in May 2012. In PAHO, the cosponsorship of the revised BSS is to be debated at the June 2012 meeting of the PAHO Executive Committee. Provided this body supports the cosponsorship, the Pan American Sanitary Conference, to be held in Washington DC in September 2012, will approve the revised BSS by adopting a resolution on the topic. And, lastly, it is expected that the EC/EURATOM will endorse the revised BSS by the end of 2012. Following the decision by all aforementioned organisations, the revised BSS will be issued as a jointly sponsored standard.

The legal nature and effects of the revised BSS

The legal nature of safety standards in general

As noted earlier, the legal basis of the power to establish safety standards can be found in Article III.A.6 of the IAEA Statute. The second part of this provision identifies the main features of the legal nature of these standards, when it states that the Agency is authorised

> to provide for the application of these standards to its own operation as well as to the operations making use of materials, services, equipment, facilities, and information made available by the Agency or at its request or under its control or supervision; and to provide for the application of these standards, at the request of the parties, to operations under any bilateral or multilateral arrangements, or, at the request of a State, to any of that State's activities in the field of atomic energy.

On the basis of this mandate, the IAEA has established – individually or in collaboration with other institutions – different types of standards, namely safety fundamentals,[111] safety requirements,[112] and safety guides.[113] This structure of safety standards has been introduced by the Action Plan for the Development and Application of the IAEA Safety Standards.[114] Safety standards are issued under the

110. Letter on file with the author.
111. The safety fundamentals (SF-1) presents the fundamental safety objective and principles of protection and safety and provides the basis for the safety requirements. See IAEA (2012), *Long Term Structure of the IAEA Safety Standards and Current Status, March 2012*, p. 3, available at: www-ns.iaea.org/committees/files/CSS/205/status.pdf.
112. Safety requirements establish the requirements that must be met to ensure the protection of people and the environment. The requirements are governed by the objective and principles of the safety fundamentals. If the requirements are not met, measures must be taken to reach or restore the required level of safety. Requirements use regulatory language ("shall" statements), which enables them to be incorporated into national laws and regulations. Many requirements are not addressed to a specific party, the implication being that the appropriate parties are responsible for fulfilling them. *Ibid*. at p. 3.
113. Safety guides provide recommendations and guidance on how to comply with the safety requirements, indicating an international consensus that it is necessary to take the measures recommended (or equivalent alternative measures). The safety guides present international good practices, and increasingly they reflect best practices, to help users striving to achieve high levels of safety. The recommendations provided in safety guides are expressed as "should" statements. *Ibid*. at p. 3.
114. This Action Plan was approved by the IAEA Board of Governors in IAEA Document GOV/2004/6.

authority of the Board of Governors, the authority to issue safety guides, however, has been delegated to the Director General.[115]

According to the view of IAEA Office of Legal Affairs, safety standards are legally binding on the Agency because, pursuant to Article III.A.6 of the Statute, it has adopted radiation safety regulations which require the Secretariat to apply these standards to its own operations.[116]

Safety standards are not, as such, legally binding (in the traditional sense of the word) on IAEA member states. They may, however, adopt these standards at their own discretion, for use in national regulations in respect to their own activities.[117] Despite of their non-binding nature, the IAEA General Conference "encourages" all of its member states to "use" safety standards "in their national regulatory programmes".[118]

In addition to this "encouragement", Article III.A.6 of the IAEA Statute provides that the Agency is authorised "to provide for the application of these standards … to the operations making use of materials, services, equipment, facilities, and information made available by the Agency or at its request or under its control or supervision".

Article XI of the IAEA Statute on Agency projects[119] (including technical co-operation projects) also deserves attention. According to Paragraph E, point 3, "before approving a project under this article, the Board of Governors shall give due consideration to … the adequacy of proposed health and safety standards for handling and storing materials and for operating facilities". This provision means in practice that the member state requesting assistance must comply with the safety standards or the project will not be approved. According to Paragraph F of Article XI of the IAEA Statute,

> upon approving a project, the Agency shall enter into an agreement with the member or group of members submitting the project, which agreement shall: … 2. Provide for transfer of special fissionable materials from their then place of custody, whether the materials be in the custody of the Agency or of the member making them available for use in Agency projects, to the member or group of members submitting the project, under conditions which ensure the safety of any shipment required and meet applicable health and safety standards.

This provision makes it clear that the Agency assists states only if they enter into an agreement with it in which they accept the conditions prescribed by the IAEA

115. Mrabit, K. (2010), "Agenda item 5.07 – Legal Nature of the IAEA Safety Standards", slideshow presented at Commission on Safety Standards, 28th meeting, 30 September and 1 October 2010 (hereinafter referred to as Mrabit slideshow).
116. *Ibid*. Delattre, D. (2010), "Agenda item RW 5.1 – Report on the 28th CSS meeting", slideshow presented at the RASSC WASSC meeting 6-10 December 2010 (hereinafter referred to as Delattre slideshow), available at: www-ns.iaea.org/committees/files/RASSC/984/RW5.1-Delattre28thCSSmeetingtoRASSCWASSC.pdf.
117. *Ibid*.
118. IAEA (2010), IAEA Document GC(54)/RES/7, Paragraph 19.
119. "A. Any member or group of members of the Agency desiring to set up any project for research on, or development or practical application of, atomic energy for peaceful purposes may request the assistance of the Agency in securing special fissionable and other materials, services, equipment, and facilities necessary for this purpose. Any such request shall be accompanied by an explanation of the purpose and extent of the project and shall be considered by the Board of Governors. […] C. The Agency may arrange for the supplying of any materials, services, equipment, and facilities necessary for the project by one or more members or may itself undertake to provide any or all of these directly, taking into consideration the wishes of the member or members making the request."

regarding safety. Therefore, states requesting assistance actually have no other choice but to accept and fulfill the safety requirements. In addition, Article XII.A.2 of the IAEA Statute provides that "with respect to any Agency project, or other arrangement where the Agency is requested by the parties concerned to apply safeguards, the Agency shall have the ... rights and responsibilities to the extent relevant to the project or arrangement ... 2. to require the observance of any health and safety measures prescribed by the Agency".

According to the Revised Guiding Principles and General Operating Rules to Govern the Provision of Technical Assistance (PTA – INFCIRC/267), "the Agency's Safety Standards and Measures shall be applied, where relevant, to operations making use of technical assistance provided".[120] The model "Revised Supplementary Agreement (RSA) Concerning the Provision of Technical Assistance" to be concluded between the IAEA and the given member state also provides in its Article II that the "[g]overnment shall apply to the operations making use of the technical assistance provided to it pursuant to this Agreement the Agency's Safety Standards and Measures defined in document INFCIRC/18/Rev.1 and the applicable safety standards as they are established in accordance with that document and as they may be revised from time to time".[121] Project and Supply Agreements (PSA) entered into between the IAEA and the concerned member states also include that "the safety standards and measures specified in Annex A to this Agreement shall apply to the Project".[122]

According to the views of the IAEA, the "IAEA being bound by the provisions of INFCIRC/267 and being party to the RSA and PSA, should, from a legal perspective, make acceptance and implementation of the aforementioned safety standards a condition for the provision of technical assistance. In view of the inherent discretionary nature of the safety guides, however, they are not mandatory for

120. IAEA (1979), "Revised Guiding Principles and General Operating Rules to Govern the Provision of Technical Assistance", IAEA (1979), IAEA Document INFCIRC/267, Guiding Principles, A, 1. (h), available at: www.iaea.org/Publications/Documents/Infcircs/Others/infcirc267.pdf.

121. IAEA, *Revised Supplementary Agreement concerning the Provision of Technical Assistance by the International Atomic Energy Agency to the Government of .....*, available at: http://ola.iaea.org/OLA/documents/RSA/RSAmaster&SBAA.pdf.

122. See e.g. IAEA (1996), "Agreement among the International Atomic Energy Agency and the Governments of the Republic of Nigeria and the People's Republic of China concerning the Transfer of a Miniature Neutron Research Reactor and Enriched Uranium", IAEA (1996), IAEA Document INFCIRC/526, available at: www.iaea.org/Publications/Documents/Infcircs/1996/inf526.shtml. "Article VII - Safety Standards and Measures. The safety standards and measures specified in Annex A to this Agreement shall apply to the Project. Annex I - Safety Standards and Measures. 1. The safety standards and measures applicable to the Project shall be those defined in Agency document INFCIRC/18/Rev.1 (hereinafter called the "Safety Document") or in any further revision thereof and as specified below. 2. Nigeria shall, inter alia, apply the International Basic Safety Standards for Protection Against Ionizing Radiation and for the Safety of Radiation Sources (IAEA Safety Series No. 115-I, Edition 1994), jointly sponsored by IAEA, FAO, WHO, ILO, OECD/NEA and PAHO and the relevant provisions of the Agency's Regulations for the Safe Transport of Radioactive Materials (IAEA Safety Series No. 6, 1985 Edition, as amended 1990) as they may be revised from time to time, and as far as possible Nigeria shall apply them also to any shipment of the supplied materials and radioisotopes produced with the supplied reactor outside the jurisdiction of Nigeria. Nigeria shall, inter alia, ensure safety conditions as recommended in the Code on the Safety of Nuclear Research Reactors: Design (IAEA Safety Series No. 35-S1, 1992 Edition) and the Code on the Safety of Nuclear Research Reactors: Operation (IAEA Safety Series No. 35-S2, 1992 Edition) and other relevant IAEA Safety Standards."

Agency projects and shall therefore only be used as providing guidance for the implementation of the Safety Fundamentals and Safety Requirements."[123]

The closing part of Article III.A.6 of the IAEA Statute ("at the request of the parties, to operations under any bilateral or multilateral arrangement; or, at the request of a State, to any of that State's activities in the field of atomic energy") has been used as the statutory basis for the Agency's advisory safety missions, such as the Operational Safety Review Team (OSART)[124] and Integrated Regulatory Review Service (IRRS)[125] missions. Such missions are carried out at the request of states and, in effect, involve the application of the relevant safety standards to state activities.[126]

The normative effects of safety standards can also be strengthened by way of incorporating them into bilateral or multilateral treaties (by using the method of reference or using them as a basis for assessing compliance with the given treaty provision). As an example for the former, it often happens that the contracting parties explicitly refer to specific safety standards in the treaty they conclude[127] and by effect of that they "harden" the standards originally having non-binding nature. The ILO Convention concerning the Protection of Workers against Ionising Radiations (ILO Convention 115[128]) is an example for the latter, since the ILO used the 1996 BSS as the basis for assessing compliance[129] with Article 3, Paragraph 1 of the Convention that provides that "[i]n the light of knowledge available at the time, all appropriate steps shall be taken to ensure effective protection of workers, as regards their health and safety, against ionising radiations".

The legal nature and effects of the revised BSS

Since the revised BSS fall into the category of safety requirements, they neither fit into the definition of treaty as defined in the Vienna Convention on the Law of Treaties (1969)[130] nor contain obligations binding in the traditional sense. The revised BSS are a jointly-elaborated normative instrument that will, however, have significant normative implications for various types of actors. A short analysis of the legal nature and effects of the revised BSS is offered below.

The objective of the revised BSS is to "establish requirements for the protection of people and the environment from harmful effects of ionizing radiation and for the safety of radiation sources"[131] that "are intended primarily for use by governments and regulatory bodies", but "also apply to principal parties and … health authorities, professional bodies and service providers such as technical support

123. Mrabit slideshow; Delattre slideshow.
124. OSART, Operational Safety Review Teams, www-ns.iaea.org/downloads/ni/s-reviews/osart/OSART_Brochure.pdf, accessed 4 April 2012.
125. Integrated Regulatory Review Service, www-ns.iaea.org/reviews/rs-reviews.asp, accessed 4 April 2012.
126. Mrabit slideshow.
127. See e.g. the Agreement between the Russian Federation and the Republic of Hungary for the Transportation of Spent Nuclear Fuel to the Russian Federation (2008) (on file with the author).
128. C115 Convention concerning the Protection of Workers against Ionising Radiations (1960), available at: www.ilo.org/ilolex/cgi-lex/convde.pl?C115.
129. IAEA (2005), IAEA Document GOV/INF/2005/9-GC(49)/INF/5, p. 5.
130. Vienna Convention on the Law of Treaties (1969), article 2, Paragraph 1 (a): "'treaty' means an international agreement concluded between States in written form and governed by international law, whether embodied in a single instrument or in two or more related instruments and whatever its particular designation".
131. Interim edition of the revised BSS, Paragraph 1.38.

organizations".[132] According to the revised BSS, "These requirements include the assignment of responsibilities to the government, the regulatory body, and principal parties and other parties with respect to the implementation of a protection and safety programme and a management system, the promotion of a safety culture and the consideration of human factors."[133]

As regards the scope of the revised BSS,[134] it is stated that the standards "apply for protection against ionizing radiation only"[135] and that they "establish requirements to be fulfilled in all facilities and activities giving rise to radiation risks".[136]

In line with Article III.A.6 of the IAEA Statute, the revised BSS also list the types of human activities involving radiation exposure to which they apply, i.e. all activities that are:

1. carried out in a State which chooses to adopt these Standards or which requests any of the Sponsoring Organisations to provide for the application of these Standards;

2. undertaken by States with the assistance of the FAO, the IAEA, the ILO, the PAHO, the UNEP or the WHO,[137] in the light of relevant national rules and regulations;

132. *Ibid*. Paragraph 1.40. The 1996 BSS specified its objective differently: "The purpose of the Standards is to establish basic requirements for protection against the risks associated with exposure to ionizing radiation (hereinafter termed radiation) and for the safety of radiation sources that may deliver such exposure." See 1996 BSS, p. 13.
133. Interim edition of the revised BSS, Paragraph 1.49.
134. The 1996 BSS define scope in a very different way. Under this heading, they rather deal with the legal basis, the legal nature, as well as the limits of the standards: "The Standards comprise basic requirements to be fulfilled in all activities involving radiation exposure. The requirements have the force that is derived from the statutory provisions of the Sponsoring Organizations. They do not entail any obligation for States to bring their legislation into conformity with them, nor are they intended to replace the provisions of national laws or regulations, or the standards in force. They are aimed rather to serve as a practical guide for public authorities and services, employers and workers, specialized radiation protection bodies, enterprises and safety and health committees. The Standards lay down basic principles and indicate the different aspects that should be covered by an effective radiation protection programme. They are not intended to be applied as they stand in all countries and regions, but should be interpreted to take account of local situations, technical resources, the scale of installations and other factors which will determine the potential for application. The Standards cover a broad range of practices and sources that give rise to or could give rise to exposure to radiation, and many of the requirements have therefore been drafted in general terms. It follows that any given requirement may have to be fulfilled differently for different types of practice and source, according to the nature of the operations and the potential for exposures. Not all the requirements will apply to every practice or to every source, and it is up to the appropriate Regulatory Authority to specify which of the requirements are applicable in each case. The scope of the Standards is limited to the protection of human beings only; it is considered that standards of protection that are adequate for this purpose will also ensure that no other species is threatened as a population, even if individuals of the species may be harmed. Moreover, the Standards apply only to ionizing radiation, namely gamma and Xrays and alpha, beta and other particles that can induce ionization. They do not apply to non-ionizing radiation such as microwave, ultraviolet, visible light and infrared radiation. They do not apply either to the control of non-radiological aspects of health and safety. The Standards recognize that radiation is only one of many sources of risk in life, and that the risks associated with radiation should not only be weighed against its benefits but also viewed in perspective with other risks." See 1996 BSS, pp. 13-14.
135. Interim edition of the revised BSS, Paragraph 1.39.
136. *Ibid*. Paragraph 1.43.

3. carried out by the IAEA or involving the use of materials, services, equipment, facilities and non-published information made available by the IAEA or at its request or under its control or supervision;

4. carried out under any bilateral or multilateral arrangement whereby the parties request the IAEA to provide for the application of these Standards.[138]

Because the revised BSS are a jointly sponsored document, they will bind not only the IAEA in relation to its own operations, but also the organs and staff of the other cosponsors upon their entry into force. This binding legal effect on the cosponsors can be implied from the principle of international institutional law according to which an institution has to comply with its own internal law, including its own decisions (as long as it does not change them). When the cosponsors approve the revised BSS, it becomes part of their respective internal laws and thus gains binding effect upon the given institution.[139]

The revised BSS also contain a highly informative clause about interpretation. According to Paragraph 2.2 of the revised BSS, "[e]xcept as specifically authorized by the statutory governing body of a relevant sponsoring organization, no interpretation of these Standards by any officer or employee of the sponsoring organization other than a written interpretation by the Director General of the sponsoring organization will be binding on the sponsoring organization." In other words and in line what has just been stated in the previous paragraph, the revised BSS will be binding on the staff of all sponsoring organisations and may only be interpreted in written form by the head of each organisation, unless the governing body (i.e. the one that approves the revised BSS) decides otherwise.

The revised BSS also specify their relationship to conventions and national law, when they state that the requirements "are in addition to and not in place of other applicable requirements, such as those of relevant binding conventions and national regulations",[140] and that "in cases of conflict between the requirements of these Standards and other applicable requirements, the government or the regulatory body, as appropriate, shall determine which requirements are to be enforced".[141] The revised BSS add that "nothing in these Standards shall be construed as restricting any actions that may otherwise be necessary for protection and safety".[142] Therefore, the revised BSS contain only the minimum requirements and do not prohibit the adoption of rules aiming at a higher level of protection. A more specific requirement of the revised BSS contains a similar provision: "Nothing in these Standards shall be construed as relieving employers from complying with applicable national and local laws and regulations governing hazards in the workplace."[143]

The revised BSS also contain a provision on their entry into force: "These Standards shall enter into force one year after the date of their adoption or

137. It is interesting that the OECD/NEA and the EC/EURATOM are missing from this list.
138. Interim edition of the revised BSS, Paragraph 1.45.
139. The above reasoning was strengthened by the CSS when it stated that "the Safety Standards are *de facto* also used by co-sponsoring organizations". See Commission on Safety Standards, Twenty-third meeting, 21-23 May 2008, IAEA Headquarters, Vienna Report of the meeting, Annex A to the Roadmap from the CSS on the Long-Term Structure for Safety Standards (23 May 2008), available at: www-ns.iaea.org/committees/files/css/204/CSSrpt23final.pdf.
140. Interim edition of the revised BSS, Paragraph 2.3.
141. *Ibid*. Paragraph 2.4.
142. *Ibid*. Paragraph 2.5.
143. *Ibid*. Paragraph 3.81.

acknowledgement, as appropriate, by the relevant Sponsoring Organization."[144] It needs to be pointed out that according to this provision, the revised BSS – with respect to the different cosponsors – will enter into force on different dates, since the one-year period shall be counted from the respective date of the adoption or acknowledgement by the given cosponsor.

According to Paragraph 2.7 of the revised BSS, states also have the right to "adopt" the revised BSS, in case of which it "shall come into force at the time indicated in the formal adoption by that State". The form of the "formal adoption" is not specified, i.e. in the understanding of the author it may take the form of unilateral decision by the state (e.g. adoption of legislation), or may also be incorporated into consensual agreements/arrangements entered into with a cosponsor or other actor.

The addressees of the requirements

The revised BSS contain requirements that do not explicitly specify their addressees, but that clearly determine which actors shall act in accordance with the given requirement.[145]

Requirement 1 of the revised BSS ("Parties with responsibilities for protection and safety shall ensure that the principles of radiation protection are applied for all exposure situations.") is an example for the former category. In contrast, requirement 2 is more specific in that it explicitly mentions governments (i.e. states) as the addressees when it provides that "the government shall establish and maintain a legal and regulatory framework for protection and safety and shall establish an effectively independent regulatory body with specified responsibilities and functions".[146] The revised BSS even list some necessary elements for such national legislation, i.e. it shall (a) provide "the statutory basis for requirements for protection and safety for all exposure situations"; (b) specify "that the prime responsibility for protection and safety rests with the person or organization responsible for facilities and activities that give rise to radiation risks"; (c) specify "the scope of its applicability"; (d) establish and provide "for maintaining an independent regulatory body with clearly specified functions and responsibilities for the regulation of protection and safety"; (e) provide "for coordination between authorities with responsibilities relevant to protection and safety for all exposure situations".[147] The government shall also "ensure that the regulatory body is effectively independent",[148] and that it "has the legal authority, competence and resources necessary to fulfil its statutory functions and responsibilities".[149]

Other explicitly mentioned addressees of the revised BSS requirements are the regulatory bodies (requirement 3[150]); the persons and organisations responsible for

144. *Ibid*. Paragraph 2.6.
145. The revised BSS requirements are aimed at: governments; regulatory bodies; principal parties; health authorities; professional bodies; providers of specialised services. See Czarwinski, R. (2010), "Revision of International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources – Status, Structure, Key Issues", slideshow presented at the Workshop Nairobi/Kenya 26-28 October 2010.
146. Interim Edition of the revised BSS, p. 13.
147. *Ibid*. Paragraph 2.15.
148. *Ibid*. Paragraph 2.16.
149. *Ibid*. Paragraph 2.17.
150. "The regulatory body shall establish or adopt regulations and guides for protection and safety and shall establish a system to ensure their implementation", *ibid*. at p. 15.

facilities and activities that give rise to radiation risks (e.g. requirement 4[151]), i.e. the principal parties responsible for protection and safety[152] and other parties with specified responsibilities in relation to protection and safety.[153] Naturally, the legal and factual implications of the revised BSS requirements predominantly affect their direct addressees. However, some of the requirements have significant effects on other actors, as well. These actors are the "subjects" of the requirements, in other words the affected third parties. In this regard, requirement 28 contains special arrangements for pregnant and breast-feeding female workers, their embryos, fetuses, and breast-fed infants, as well as employees under the age of 16 or 18 years.[154]

Conclusions

On the basis of the evaluation of the findings of the above presented analysis, it can be claimed that the BSS revision was a joint exercise of public powers by multiple and highly diverse actors aiming at normative development, the outcome of which is a special type of "global public law" in the nuclear field.

As it was presented, a high number of actors participated in the revision process. The cosponsors and their various organs (e.g. their governing organs, secretariats, advisory committees) played significant roles, but in addition to them, joint bodies (BSS Secretariat), scientific bodies (UNSCEAR, ICRP, IRPA), as well as the member states of the cosponsors (including their national regulatory bodies, ministries of health, operators, etc.) took part in the process.

151. "The person or organization responsible for facilities and activities that give rise to radiation risks shall have the prime responsibility for protection and safety. Other parties shall have specified responsibilities for protection and safety", *ibid.* at p. 16.
152. Registrants or licensees; employers, in relation to occupational exposure; radiological medical practitioners; persons or organisations designated to deal with emergency exposure situations or existing exposure situations. See *ibid.* at Paragraph 2.40.
153. These other parties include: suppliers of sources, providers of equipment and software, and providers of consumer products; radiation protection officers; referring medical practitioners; medical physicists; medical radiation technologists; qualified experts or any other party to whom a principal party has assigned specific responsibilities; other workers; ethics committees. See *ibid.* at Paragraph 2.41.
154. "Requirement 28: Special arrangements. Employers, registrants and licensees shall make special arrangements for female workers, as necessary, for protection of the embryo or fetus and of breast-fed infants. Employers, registrants and licensees shall make special arrangements for protection and safety for persons under 18 years of age who are undergoing training. 3.113. Employers, in co-operation with registrants and licensees, shall provide female workers who are liable to enter controlled areas or supervised areas or who may undertake emergency duties with appropriate information on: (a) The risk to the embryo or fetus due to exposure of a pregnant woman; (b) The importance for a female worker of notifying her employer as soon as possible if she suspects that she is pregnant or if she is breast-feeding; (c) The risk of health effects for a breast-fed infant due to ingestion of radioactive substances. 3.114. The notification of the employer by a female worker if she suspects that she is pregnant or if she is breast-feeding shall not be considered a reason to exclude a female worker from work. The employer of a female worker, who has been notified of her suspected pregnancy or that she is breast-feeding, shall adapt the working conditions in respect of occupational exposure so as to ensure that the embryo or fetus or the infant is afforded the same broad level of protection as is required for members of the public. 3.115. Employers, registrants and licensees shall ensure that no person under the age of 16 years is or could be subject to occupational exposure. 3.116. Employers, registrants and licensees shall ensure that persons under the age of 18 years are allowed access to a controlled area only under supervision and only for the purpose of training for employment in which they are or could be subject to occupational exposure or for the purpose of studies in which sources are used."

The analysis of this process demonstrates that the BSS revision required enormous efforts by the actors involved and the completion of countless procedural steps in the context of which the public powers conferred upon such actors (e.g. the power to prepare drafts, to establish the scientific and regulatory basis of the revised BSS, to approve the final drafts and thus establish safety standards, to set up committees and define their terms of reference) had been exercised.

Given the complexity of the procedures and the high number of actors involved, it is difficult, if not impossible, to single out all the cases in which public powers were exercised. It is noted, however, that most procedural steps required the joint exercise of several of those public powers by several actors. The analysis also made it clear that a single actor alone by exercising its own powers could not revise the BSS and establish such a normative product. The revision of the BSS required co-ordination and close co-operation among the actors within the BSS Secretariat, in the CSS and the safety standards committees, as well as the joint exercise of public powers by them for the successful completion of the numerous procedural steps.

The examination of the legal nature of the revised BSS proves that it is a document that will have significant normative implications on various actors upon its entry into force. The revised BSS will bind the cosponsoring organisations as well as those states that request assistance from the cosponsoring organisations. The normative effect of the document can be strengthened by different ways, for example, by voluntary incorporation into national law by the given state, by "hardening" its legal effect through a reference in a treaty concluded between states or with other actors, or by using it as a basis for assessing compliance with certain convention obligations. While according to the traditional doctrines of international law also incorporated in the Vienna Convention on the Law of Treaties (1969), without its consent no actor can become bound by an international obligation, safety standards in general, and the revised BSS in particular, do not necessarily require the consent of the actor to be affected by them. Even in case a state expresses its consent explicitly in the agreement it concludes with the Agency (e.g. the states that request assistance from the IAEA), it has in practice no other option but to accept such obligation, otherwise its request for assistance would be rejected. It also needs to be noted that the direct addressees of the revised BSS are different from those of traditional treaties, i.e. they are not only states, but also regulatory bodies, operators, employers, and even specific categories of individuals. Taking into account all of these features, it may be concluded that the revised BSS are a special manifestation of "global public law"[155] in the nuclear field.

When public powers are exercised, demands arise for the legitimacy of the public powers, the accountability of the actors, transparency, inclusive and representative decision-making processes. In the traditional system of international

155. The term of "global public law" is used by the author with the intention to cover similar developments of international law as those covered by Benedict Kingsbury who used the term "global administrative law" [see e.g. Kingsbury, B. *et al.* (2004), "The Emergence of Global Administrative Law", *Institute for International Law and Justice Working Paper* 2004/1, Global Administrative Law Series] and by Ellen Hey who used the term "international public law" [see e.g. Hey, E. (2004), "International Public Law", *International Law FORUM du droit international*, Vol. 6, No. 3-4, Kluwer Law International, the Netherlands, pp. 149-162).

law, legitimacy is secured through formal state consent.[156] However, formal state consent is typically lacking in the case of the revised BSS, and only elements of it may be found in the act of ratifying the IAEA Statute that provides a legal basis for adopting safety standards in general, in the adoption of the relevant decisions by cosponsor organs composed of a limited number of member states (e.g. the IAEA Board of Governors, etc.), in the participation of member states in the work of the advisory committees, and in the voluntary incorporation of the safety requirements of the revised BSS into national law.

In the view of the author, legitimacy problems may arise from the fact that in the case of some cosponsors such as UNEP, it is questionable whether they had been granted the public powers necessary for the elaboration of such normative instruments in the nuclear field.

As highlighted in the analysis, the BSS revision process was highly inclusive and offered the possibility for states and concerned institutions to comment on earlier drafts of the revised BSS. The European dominance and the extremely low representation of developing states in the CSS and the safety standards committees (mainly due to financial constraints) could be, however, criticised and might even weaken the acceptability and thus the legitimacy of the revised BSS in particular because the document will most strongly affect developing states that are typically the ones that request assistance and will as a consequence be required to enter into such agreements with the IAEA that oblige them to meet the BSS requirements.

Taking into consideration the above evaluation, it can also be concluded that the usual requirements that derive from and are attached to the rule of law principle and which from a public law approach would be necessary for ensuring the legitimacy of the exercise of public powers (including the outcome of this exercise, i.e. the revised BSS) had only partly been fulfilled during the revision process.

156. On the changing role of state consent, see Hey, E., "Teaching International Public Law – State Consent as Consent to a Process of Normative Development and Ensuing Problems", slideshow presented for the United Nations Audiovisual Library of International Law, available at: http://untreaty.un.org/cod/avl/pdf/ls/Hey_slideshow.pdf; Toope, S.J. (2007), "Formality and Informality", in Bodansky, D. *et al.* (Eds.), *Oxford Handbook on International Environmental Law*, Oxford University Press, United Kingdom, pp. 119-124.

Italian decommissioning in the post-referendum era

by Vincenzo Ferrazzano and Serena Scarabotti[*]

The accident at the TEPCO Fukushima Daiichi nuclear power plant materially reverberated, with its emotional impact, on the preparation of a new nuclear policy in Italy. Italians, wishing to decide directly on the electric power source for their country, applied for a referendum procedure aimed at abrogating the newly enacted legal framework[1] which would have paved the way for an Italian nuclear renaissance. The referendum on the repeal of nuclear power passed on 12-13 June 2011.[2]

In addition to the recent termination of the nuclear programme in Italy, effective by law for five years as a result of this referendum, this aborted renaissance of nuclear energy in Italy requires leaders to make many important decisions including how to set up decommissioning programmes and activities and how to establish a national repository for nuclear waste as envisaged by general European policy on the management of such waste. Leaders must also reach consensus regarding the future of the Italian nuclear safety authority.

The purpose of this paper is to explore how the Italian Parliament has reacted to this recent referendum on the future of nuclear energy in Italy by strengthening its focus on the safe management of nuclear waste as part of the decommissioning process. More significantly, this paper will analyse the newly enacted Law No. 27 of 24 March 2012[3] concerning urgent measures for infrastructure development to

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1. "Disciplina della localizzazione, della realizzazione e dell'esercizio nel territorio nazionale di impianti di produzione di energia elettrica nucleare, di impianti di fabbricazione del combustibile nucleare, dei sistemi di stoccaggio del combustibile irraggiato e dei rifiuti radioattivi, nonché misure compensative e campagne informative al pubblico, a norma dell'articolo 25 della legge 23 luglio 2009, n. 99" (Legislative Decree No. 31/2010 for the localisation and operation of facilities for the production of nuclear electric power, the fabrication of nuclear fuel and storage systems of irradiated fuel and radioactive waste as well as compensation measures and information campaigns), published in the *Official Journal* on 8 March 2010; Ord. Suppl. No. 55 – as subsequently amended.
2. The Italian system requires a quorum of at least 50% + 1 of all eligible voters in order for the referendum to pass.
3. Law No. 27/2012 "Conversione in legge, con modificazioni, del decreto-legge 24 gennaio 2012, n. 1, recante disposizioni urgenti per la concorrenza, lo sviluppo delle infrastrutture e la competitività" (Conversion into law with modifications Law Decree No. 1/2012 entitled urgent provisions for competitition, infrastructure development and competitiveness) published in the *Official Journal* on 24 March 2012, General Series No. 71.

enhance the competitiveness of the country.[4] This law derives from a political measure taken by Prime Minister Mario Monti in the context of an economic stimulus programme aimed at improving market competition. Article 24 of this so-called "Liberalisation Decree" focuses on the need for accelerating the deactivation and decommissioning process of Italian nuclear power plants and research reactors.[5] In light of the newly enacted legal provisions, this paper sets forth a general comment on the legal provisions included in Article 24 of Law No. 27/2012 by indicating their rationale and their impact on existing legal rules. Moreover, the benefits arising from the new enabling provisions in terms of planning and accelerating decommissioning activities for the dismantlement of the Italian nuclear programme will be identified.

Article 24 represents a fundamental step with respect to the evolution of legal provisions governing the nuclear arena in Italy. While looking at the decommissioning field in Italy, a significant institutional role is played by SO.G.I.N. S.p.A. (Sogin), an Italian joint stock company whose shares are owned entirely by the Italian Ministry of Economy and Finance. Sogin's primary corporate mission is the decommissioning of nuclear power plants and research reactors that have been shut down in Italy.[6] From a historical standpoint, after the Chernobyl accident in 1986, there was a general public debate in Italy on the implications of using nuclear power, and, following a referendum in 1987, the new national energy plan called for the abandonment of nuclear power in Italy.

New legislative measures for decommissioning

As described briefly above, the decommissioning programme and the safe management of radioactive waste are the primary issues related to managing the legacy of the Italian nuclear programme. These issues directly involve the state and other stakeholders in the nuclear field.

Taking into account the need for speeding up decommissioning activities, especially following the decision to turn against the renaissance of nuclear power in Italy, Article 24 of the newly enacted Law No. 27/2012 serves as the legislative instrument aimed at accelerating the decommissioning authorisation proceedings.

4. As part of the current political effort to improve the Italian economic situation, the technocratic government headed by Italian Prime Minister and former EU Commissioner Mario Monti has proposed sweeping changes to the Italian market. Law Decree No. 1 of 24 January 2012 – then converted into Law No. 27/2012 (see Footnote 3), followed a EUR 30 billion austerity law passed in December which increased taxes, reformed the pension system and re-introduced property taxes, as well as cut public expenses. This law decree, as further converted into law, is divided into three sections: Title I – Competition; Title II – Infrastructure and Title III – Europe. This decree (the so-called Liberalisation Decree) aims at restoring Italian international reputation and economic appeal by ending protectionist practices commonly applied to certain Italian industries and by creating a stimulus for an economic growth.
5. See unofficial translation of Article 24, attached hereto as "Attachment I".
6. Sogin was incorporated by Enel in the framework of the re-organisation of the national electricity sector, set forth by the Legislative Decree No 79/1999, "Implementation of the EC/96/92 Directive establishing community rules for the internal market in the electricity sector". In the framework of this re-organisation, as of 1 November 1999, Enel transferred to Sogin the nuclear concern including all assets, and personnel connected to activities for decommissioning of nuclear power plants, for the fuel cycle closure, and to all other related and resulting activities, previously assigned to its department named SGN (Nuclear Plant Management). Sogin's share capital was then fully transferred to the Italian Ministry of Economy and Finance.

The explanatory report relating to this law issued by the Italian Parliament[7] specifically points out that Article 24 aims at accelerating the evaluation and possible authorisation of decommissioning projects that have been presented within the preceding 12-month period. Reference is made to five pending projects, three of which already have an environmental impact assessment (i.e. Trino, Garigliano and Latina). The same report specifically points out that decommissioning activity in Italy involves a significant amount of public sector investment and bidding procedures involving many qualified players in the market. Sogin estimates that the total value of the dismantlement activities for the years 2011-21 is roughly equal to EUR 1.5 billion (with an average cost of approximately EUR 120 million per year) excluding the costs for building the national repository for nuclear waste.[8]

In addition to the liberalisation of the energy sector, Sogin is responsible for decommissioning and managing the resulting radioactive nuclear waste with respect to (i) the four nuclear power plants located in Trino, Caorso, Latina and Garigliano di Sessa Aurunca; (ii) the nuclear facilities located in Saluggia, Casaccia, and Trisaia di Rotondella; and (iii) the fuel fabrication facility located in Bosco Marengo.

Paragraphs 1-3: "old regime" decommissioning authorisations

The first three paragraphs of Article 24, with reference to the decommissioning authorisations which have been submitted, reflect the attempt of the Italian Parliament to establish an expedited timeline for decommissioning and establishing measures ensuring that adequate radioprotection measures are in place at nuclear sites.

In this respect, Paragraph 1 of Article 24 provides for a 120-day deadline for the issuance of opinions regarding the decommissioning projects of the nuclear installations for which a request for authorisation had been submitted within the preceding 12-month period. In practice, this provision means that the competent administrative authorities in Italy shall issue the requested authorisations within 120 days of the entry into force of the law, with the possibility of an extension of additional 60 days only with the prior written and reasoned request from the authority itself. Should this deadline not be complied with (i.e. the evaluation not released within the 120-day period), the Italian Ministry of Economic Development will call for a conference of services[9] (*conferenza di servizi*) aimed at completing the administrative evaluation proceeding within the following 90-day period.

In practice, what the Parliament wants to highlight is the need for a certain timeline for administrative proceedings which facilitates the authorisation of the decommissioning activity. The timing of these proceedings plays a key role in making the decommissioning process quicker and more efficient.

Within 60 days of the entry into force of the Law No. 27/2012, Sogin is required by Paragraph 3 of Article 24 to notify the Ministry of Economic Development and the competent administrations about the operations and interventions for which the issue of authorisation is a priority, pending the decommissioning authorisation

7. The electronic version of the materials elaborated by the Chamber of the Italian Parliament are available at: www.camera.it.
8. Please see the press release on the corporate business plan for 2011-2015 period at: www.sogin.it.
9. Conferences of Services (*conferenze di servizi*) are administrative instruments provided for in Article 14 of Law No. 241 of 7 August 1990, for cases in which interests that will be affected by an administrative procedure need to be jointly examined.

(*autorizzazione alla disattivazione*).[10] The Ministry of Economic Development then has a 30-day term, (i) to consult with the Italian Institute for Environmental Protection and Research (ISPRA)[11] on nuclear safety and radioprotection measures, (ii) to evaluate the proposed priorities, and (iii) to call for a conference of services to complete the evaluation proceeding within the following 90 days.

Paragraph 4: "new regime" decommissioning authorisations

The first part of Paragraph 4 of Article 24 governs future authorisation proceedings (i.e. the authorisations issued as of the entry into force of Law No. 27/2012) and, except for the case of the national repository and the technology park (mentioned in Paragraph 3), addresses explicitly the effectiveness of the same authorisations which shall be qualified as:

- declaration of public utility and urgency and a statement that the relevant works cannot be postponed;
- variation of the urban plan;
- replacing any other administrative deed, authorisation, license, permission, regardless of the name, provided in the applicable legislation and constituting title for the execution of works.

The second part of Paragraph 4 clarifies the procedure for issuing the authorisation for the realisation or the decommissioning of works that modify installation structures. This proceeding provides for the mandatory and reasoned opinion by the municipality and the region of the territory within which the works shall be executed. The competent administrations (i.e. municipality and region) shall issue this opinion within 60 days of the request by the Ministry of Economic Development. Failure to meet this timeline will result in a call for conference of services proceeding, as provided in Paragraph 2.

The competent regional authorities may promote agreements between the Sogin and the local authorities to identify compensatory and environmentally balanced measures without additional fees or a higher cost.

With regard to the projects discussed in Paragraph 4, the fifth part of this paragraph clarifies that (i) a variation of the urban plan is not necessary to the extent that the projects are in compliance with urban requirements in effect as of the entry into force of Law No. 27/2012, whereas (ii) in all the other cases where such

10. Law No. 27/2012 makes reference to the activities provided in Article 6 of Law No.1860/1962 (i.e. operation of nuclear plants for the production and utilisation of nuclear energy) and Article 148 (Paragraph 1-bis) of Legislative Decree No. 230/1995 (i.e. for nuclear plants for which a request for the decommissioning authorisation has already been submitted, pursuant to article 6 of Law No. 1860/1962, certain operations and specific interventions, although relating to decommissioning, may be authorised in order to more efficiently ensure radioprotection for the employees and the population in general).
11. The Institute for Environmental Protection and Research, ISPRA (*Istituto Superiore per la Protezione e la Ricerca Ambientale*), has been established by Decree No. 112 of 25 June 2008, converted into Law No. 133 (with amendments) on 21 August 2008. ISPRA performs, with the inherent financial resources, equipment and personnel, the duties of: ex-APAT, Italian Environment Protection and Technical Services Agency (article 38 of Legislative Decree No. 300, 30 July 1999, and subsequently amended); ex-INFS, National Institute for Wildlife (Law No. 157 of 11 February 1992, and subsequently amended); ex-ICRAM, Central Institute for Scientific and Technological Research applied to the Sea (Decree No. 496, article 1-bis, 4 December 1993, converted into Law No. 61, Article 1, 21 January 1994, with amendments).

variation is necessary, the Municipal Council will be in charge of resolving such issues upon the authorisation which has been issued.

Paragraph 5: financing the national repository and the technology park

In Paragraph 5 of Article 24, the Parliament takes the chance to clarify and rationalise the content and the purpose of the special levy on the electricity tariffs specifically designed to fund nuclear decommissioning.[12]

It is worth noting that Italy has not established a decommissioning fund. The resources dedicated to the decommissioning of the nuclear power plants accumulated by the national utility Enel until 1987 were depleted during subsequent years. As a consequence of the closure of nuclear plants following a referendum and a subsequent political decision in 1987[13] and due to the practical impossibility of accruing any additional financial resources in the decommissioning fund of Enel, the adopted policy was to shift the financial responsibility over to consumers of electrical power by creating a levy on the electric bill (i.e. the A2 component). Every year the Authority for the Electric Energy and Gas (AEEG) approves the preliminary decommissioning activities plan for the following year and the relevant preliminary budget prepared by Sogin. On a three-year basis, the AEEG approves the updated overall decommissioning budget (up to a greenfield status of the sites) including an estimate of the costs of final disposal of all materials to the national repository.

In particular, the legislation states that A2 resources must directly finance the realisation and the management by Sogin of the technology park to the extent that the re-funded activities are functionally linked to the decommissioning of nuclear plants and installations and the nuclear fuel cycle. For any other activity the same funds are to be simply used by Sogin as advance payments which will be recovered through income arising out of the utilisation of the technology park. The Ministry of Economic Development shall determine the terms and conditions for the use of the technology park based upon a proposal from AEEG in order to decrease the electricity rates charged to consumers.[14]

The mechanism according to which the income arising out of the utilisation of the technology park will allow the decrease of electricity rates charged to consumers

12. Also note that Article 25, National Repository and Technology Park, Paragraph 3, of the Legislative Decree No. 31/2010 as subsequently amended, provides that Sogin shall create the technology park and, in particular, the national repository together with the supporting structures with the resources funding its activities (i.e. A2 component). However, additional and different sources of funding may be established by the government and public authorities involved to create the study and experimentation center.
13. See the first section of this paper.
14. Article 3(11) of Legislative Decree No. 79/99 provides that the general revenue charges relating to the electricity system, including research expenditure and expenditure incurred in the dismantling of decommissioned nuclear power stations, the closure of the nuclear fuel cycle and related activities, are to be determined by a decree by the Minister for Industry, Commerce and Craft Industries, in consultation with the Minister for the Treasury, the Budget and Economic Planning, and upon proposal by AEEG. It also provides that AEEG is to make provision for the adjustment of the amount of the consideration payable under Article 3(10). Article 2(1) of the inter-ministerial decree adopted by the Minister for Industry, Commerce and Craft Industries, in consultation with the Minister for the Treasury, the Budget and Economic Planning, and on a proposal by AEEG dated 26 January 2000 determining the general revenue charges relating to the electricity system essentially determines that "the general revenue charges incurred by the electricity system are defined as: the costs relating to the dismantling of decommissioned nuclear power stations, the closure of the nuclear fuel cycle and related activities".

was inserted during the Senate consultation as part of the law making process. In this respect, the AEEG underlines that Paragraph 5 of Article 24 represents a valuable instrument for the "subsequent compensation" of nuclear costs in favour of the end users who bear such costs.[15] It is also interesting to highlight that the original provision according to which the costs/tariffs for waste storage in the national repository were to be determined by AEEG has now been repealed. According to AEEG, it is necessary for the costs underlying the tariffs (for the storage in the national repository) to follow an efficient economic basis.

For the sake of completeness, Paragraph 3-bis of Article 25 of Legislative Decree No. 31/2010 states that research programmes and development measures within the technology park executed by Sogin and functionally linked to decommissioning and radioactive waste management shall be financed by the A2 component. Therefore, we expect to see a more suitable co-ordination between Legislative Decree No. 31/2010 ruling on the technology park and Article 24 of the newly enacted Law No. 27/2012.

Paragraph 6: storage in the national repository

Paragraph 6 of Article 24 updates the legal framework for the issuance of the decree indicating the time and modalities for radioactive waste storage in the national repository. It is in fact provided that the inter-ministerial decree ruling on the storage terms and conditions shall be issued with the contribution of the nuclear safety body as provided in Article 21 (Paragraph 15) of Law Decree No. 201/2011. In this respect, it is important to note that the formerly established Nuclear Safety Agency has been abolished and all its functions and financial resources have been diverted to the Ministry of Economic Development and the Ministry for Environment, Territory and Sea.

This provision implies that all radioactive waste shall be stored exclusively in the Italian National Repository, meaning that the legislature expects to channel revenues deriving from storage tariffs to reduce the rates charged for electricity to customers.

Paragraph 7: timeline for the national chart of the potentially suitable areas for the location of the technology park

With the purpose of reorganising and co-ordinating legal provisions regarding waste management, Paragraph 7 novates Legislative Decree No. 31/2010 (Article 27 Paragraph 1) in order to provide that a proposal for the national chart of the potentially suitable locations be made by Sogin within seven months of the definition of criteria by the International Atomic Energy Agency and the nuclear safety body (which, once established, will replace the National Safety Agency).

Potential benefits

On the basis of a preliminary examination of the main contents of the newly enacted Article 24, the most important question relates to the actual benefits which might arise from the legislative effort to accelerate the dismantlement proceedings and projects.

Following the strong public reaction to the proposed renaissance of the nuclear industry in Italy, the legislature has focused on speeding up decommissioning activities and providing for the safe management of radioactive waste. In this

15. AEEG comments on the conversion law bill (As3110) are available at: www.senato.it.

regard, it is particularly valuable that the legislature wanted to highlight the need for the specific timing of administrative proceedings. On the one hand, the Parliament sets certain deadlines for the so-called "old regime authorisations" (i.e. all the authorisations for which a request has been submitted at least in the preceding 12 months of the entry into force of the law) in order for them to be issued timely and efficiently (see above discussion in this paper). On the other hand, the newly enacted Law No. 27/2012 creates a deregulated mechanism for the "new regime authorisations" (i.e. all the authorisations to be issued following the entry into force of the law) which benefit from a simplified administrative proceeding including clear steps and quicker interactions with the competent local authorities.

What the legislature tried to accomplish is to introduce a type of "deregulation" for decommissioning activities so that the administrative path is made easier and possibly quicker. In this respect, Sogin's first priority is to address the challenging activities of decommissioning and waste management takes priority. Paragraph 4 recognises, in fact, a significant and extensive value to the authorisations that will be issued as of the entry into force of the newly enacted Law No. 27/2012. These authorisations will serve as declarations of public utility and urgency, replacing concession, license and any other administrative deed, regardless of the name used. The issue of this authorisation will be in any case subject to approval by the competent local authorities (i.e. municipalities and regions) but the overall administrative path resulting from the newly enacted law should prove to be certainly easier and quicker. This change means that, while creating a multi-faceted administrative tool, the Parliament did not forget the paramount role to be played by local authorities in supervising decommissioning projects.

The legislature has thus balanced, on the one hand, the public interest to monitor and analyse nuclear activities concerning decommissioning and the management of radioactive waste and, on the other hand, the need for accomplishing an institutional task in the fastest and most economically efficient way.

Existing and future challenges

Article 24 of Law No. 27/2012 expresses the renewed legislative interest in decommissioning activities and the importance of focusing funds and resources on the realisation of the safe management of radioactive waste as the legacy of the Italian nuclear industry. Nonetheless, the newly devised legal tools are not exempted from issues and criticalities.

These newly enacted measures are too recent to have been tested already in legal practice. Due to the close connections among several administrative steps involved in the authorisation proceedings, the legislative effort to create a tight timeline with specific deadlines may nonetheless be jeopardised by the delays which may occur in practice and which may not be forecasted *ex ante*. In other words, the legislation will prove to have been successfully drafted only after its actual application.

In addition, the creation by law of a simplified authorisation path for Sogin's activities in the decommissioning field will not be without critics, considering the potential "NIMBY" (not-in-my-back-yard) claims regarding the location of the national repository in Italy. Addressing such concerns will be a new important challenge to be faced by the authorities focusing on communication and information strategies with respect to all the local communities which might be impacted by the location of such a facility.

Attachment I (unofficial translation)

Article 24 of Law No. 27/2012 (acceleration of decommissioning and dismantling activities of nuclear sites[16]) converts into law with modifications Law Decree No. 1/2012 entitled urgent provisions for competitition, infrastructure development and competitiveness – published in the *Official Journal* on 24 March 2012; General Series No. 71.

1. Within 120 days of the entry into force of the present decree, the competent authorities shall issue the opinions regarding the decommissioning projects of nuclear sites for which a request for authorisation provided in Article 55 of the Legislative Decree No. 230/1995 has been submitted at least in the preceding 12-month period. With this respect, any observation to be formulated by the authorities pursuant to the applicable laws, will be made by ISPRA within 60 days of the entry into force of the present decree. Upon reasoned request from the relevant authority, the above mentioned term may be postponed for an additional 60-day period.

2. In the event that the competent authorities do not issue their opinions within the term indicated in Paragraph 1, the Ministry of Economic Development will call for a conference of services which will take place in accordance with the terms and conditions provided in Law No.241/1990 in order to complete the administrative evaluation proceeding within the following 90-day period.

3. In order to reduce timing and costs for the realisation of the dismantlement operations of the nuclear plants and, in the most efficient way, ensure radioprotection at the relevant nuclear sites, given the specific proceedings for the realisation of the national repository and the technology park (as provided in the Legislative Decree No. 31/2010), within 60 days of the entry into force of the present decree, with reference to the activities required by Article 6 of Law No. 1860/1962 and Article 148 – Paragraph 1-bis of the Legislative Decree No. 230/1995, Sogin S.p.A. is in charge of notifying the Ministry of Economic Development and the competent authorities about any operation and intervention for which the obtainment of the relevant authorisation has the priority, while waiting for the issue of a decommissioning authorisation. Within a 30-day term, with the prior opinion by ISPRA for the needs of safety and radioprotection needs, the Ministry of Economic Development shall evaluate the proposed priorities and call for a conference of services in accordance with Law No. 241/1990 in order to complete the administrative evaluation proceeding within the following 90 days.

4. With the exception of the specific proceedings provided for the realisation of the national repository and the technology park mentioned in Paragraph 3, the decommissioning authorisation to be issued pursuant to Article 55 of the Legislative Decree No. 230/1995 and the authorisations provided in Articles 6 of Law No. 1860/1962 and 148, Paragraph 1-bis, of the Legislative Decree No. 230/1995, to be issued as of the entry into force of the present decree, shall also be qualified as (i) declaration of public utility and urgency and a statement that the relevant works cannot be postponed; (ii) variation of the urban plan; (iii) replacing any other administrative deed, authorisation, license, permission, regardless of the name, provided in the applicable legislation and constituting title for the execution of works.

The procedure for issuing the authorisation for the realisation or the decommissioning of works that modify the installation structures provides for the

16. "Conversione in legge, con modificazioni, del decreto-legge 24 gennaio 2012, n. 1, recante disposizioni urgenti per la concorrenza, lo sviluppo delle infrastrutture e la competitività."

mandatory and reasoned opinion by the municipality and the region within which the same works (provided in this paragraph) shall be executed. Such competent administrations shall issue this opinion within 60-days of the request by the Ministry of Economic Development (excluding the issue of the environmental impact assessment, if applicable), failing which the call for conference of services proceeding (provided in Paragraph 2) shall apply. The competent region may promote agreements between the proposing entity and the relevant local authorities in order to identify measures for environmental restoration without increasing the burden on public finances. A variation of the urban plan is not necessary to the extent that the projects regarding a nuclear site already hosting a facility are compliant with the urban requirements – effective as of the entry into force of the law converting the present decree. In all the other cases, where such variation is necessary, the municipal council will be in charge of resolving such issues during the first meeting after the issue of the same authorisation, with prior information of the Ministry of Economic Development.

5. The tariff component included in Article 25, Paragraph 3, of the Legislative Decree No.31/2010, is provided in Article 1, Paragraph 1, letter a), of the Law Decree No. 25/2003 which was converted into Law No. 83/2003. Financial resources connected with this tariff component are designed to fund the realisation and management of the technology park including the national repository and the supporting technologic structures, to the extent that the re-funded activities are functionally linked to the decommissioning of nuclear plants and installations and the nuclear fuel cycle. For any other activity, the same funds are to be used as advance payments which will be recovered through the incomes arising out the utilisation of the technology park and the national repository, in compliance with the terms and conditions to be determined by the Ministry of Economic Development based upon a proposal from the Authority for Energy and Gas in order to decrease the electricity rates charged to consumers.

6. Article 1, Paragraph 104 of Law No. 239/2004 is replaced by the following: "104. Producers and owners assign their radioactive waste to the national repository pursuant to the national and European laws, also in compliance with the technical developments and the guidelines from the European Union for safety and storage, in line with article 2, Paragraph 1, letter e) of the Legislative Decree No. 31/2010. The Ministry of Economic Development, in agreement with the Ministry for Environment, Territory and Sea, and with the contribution of the nuclear safety body provided in Article 21, Paragraph 12, of the Law Decree No. 201/2011, converted with modification into Law No. 214/2011, shall rule on the storage terms and technical conditions."

7. In Article 27, Paragraph 1, of the Legislative Decree No. 31/2010, as further amended, the following sentence "within seven months of the definition of the same criteria" is added to the words "technology park".

Through the looking glass: placing India's new civil liability regime for nuclear damage in context

by Robert J. Gruendel and Els Reynaers Kini[*]

Until India adopted the Civil Liability for Nuclear Damage Act, 2010 (Liability Act) and the Civil Liability for Nuclear Damage Rules, 2011 (Liability Rules or Rules),[1] no specific legislation was in place to govern nuclear liability or to compensate victims for damages due to a nuclear incident in India.

Before delving into a more legal-technical analysis of the Liability Act and Rules (Part B), it is worth first briefly touching upon India's general energy situation, which necessarily influences India's policies, laws and negotiating strategies while also driving the significant business opportunities in the nuclear energy sector (Part A). Taking a look at India's energy sector today also underscores the sheer size of India's plans to build new nuclear power plants, which stands in dramatic contrast to the goals of many other countries.[2]

In this article, we will address the relationship of the Liability Act with the Convention on Supplementary Compensation for Nuclear Damage (CSC) (Part C), while also touching upon the current status of an Indian nuclear insurance pool (Part D) and discussing some recent domestic developments, including the filing of public interest litigations and amendments to the Liability Rules (Part E), before presenting some concluding thoughts (Part F).

A. General energy background

India is not well endowed with natural energy resources. While coal is abundant, its reserves of oil, gas and uranium are very limited. It is accepted that coal shall remain India's most important energy source until 2030, but it is estimated that its coal reserves will be exhausted in about 45 years.[3]

Taking into account the dramatic shortage of electricity in India as well as the need to diversify its energy mix, India's vision is clearly to pursue all available fuel options and forms of energy, both conventional and non-conventional. Nevertheless, the IEP Report estimates that despite the ambitious promotion of nuclear energy, its

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1. Both the Liability Act and the Liability Rules entered into force on 11 November 2011. Copies of the act and rules can be found at: www.nlain.org/links.
2. See generally: *The Economist*, 10 March 2012, "Special Report – Nuclear Energy".
3. Government of India, Planning Commission (2006), "Integrated Energy Policy – Report of the Expert Committee" (IEP Report), at p. xxii and pp. 33-34 available at: http://planningcommission.gov.in/reports/genrep/rep_intengy.pdf.

contribution to India's energy mix by 2031-32 is, at best, expected to be 4-6.4%,[4] and that of renewable energy about 5 to 6%.[5]

India's aspiration is to have 20 000 MWe nuclear capacity by 2020, 63 000 MWe by 2032, and ultimately to derive 25% of its electricity needs (300 GWe) from nuclear power by 2050.[6] India's future nuclear power ambitions are also driven by the fact that it controls 25% of all known thorium reserves and is actively pursuing research in thorium fuel cycle in its sustained quest for an indigenous alternative to uranium.

India currently has 20 nuclear power plants (NPPs) with an installed capacity of 4 780 MWe. The reactor fleet comprises 2 boiling water reactors (BWRs) and 18 pressurised heavy water reactors (PHWRs). It has 6 reactors under various stages of construction totalling 3 400 MWe of additional capacity.[7] India has further plans to launch 8 new PHWRs of 700 MWe,[8] as well as 8 new light water reactors (LWRs) of 1 000 MWe and higher,[9] 2 new fast breeder reactors (FBRs),[10] and ultimately a new advanced heavy water reactor (AHWR) of 300 MWe, for which a site is being finalised.[11]

Until recently, most nuclear power plants could not run at full capacity given India's exclusion from international nuclear trade[12] and the domestic shortage of uranium.[13] This situation changed after the Nuclear Suppliers Group (NSG) members agreed on 6 September 2008 to grant India a waiver from its guidelines restricting the transfer of nuclear technology to non-NPT states. This waiver provided India with the opportunity to sign bilateral agreements on civilian nuclear energy technology co-operation with several countries, such as Canada, France, the

4. IEP Report, p. xxii.
5. IEP Report, p. xxiii and p. 69.
6. World Nuclear Association (2012), "Nuclear Power in India", pp. 1-2, available at: www.world-nuclear.org/info/inf53.html .
7. For details about all plants under operation, see: http://npcil.nic.in/main/AllProject OperationDisplay.aspx; and for projects under construction, see: http://npcil.nic.in/main /ProjectConstructionStatus.aspx. It includes: Kudankulam (KK) 1 and 2 (2 x 1 000 MWe) in Tamil Nadu; RAPP 7 and 8 (2 x 700 MWe) in Rajasthan; KAPP 3 and 4 (2 x 700 MWe) in Gujarat. One should also add a 500 MWe fast breeder reactor to this count to arrive at 3 400 MWe.
8. Gorakhpur Units 1 and 2 in Haryana; Chutka Units 1 and 2 in Madhya Pradesh; Mahi Banswara Units 1 and 2 in Rajasthan; and Kaiga 5 and 6 in Karnataka.
9. KK 3 and 4 (2 x 1 000 MWe) in Tamil Nadu; JNPP 1 and 2 (2 x 1 650 MWe) in Jaitapur, Maharashtra; Kovvada Units 1 and 2 (2 x 1 500 MWe) in Andhra Pradesh; and Mithi Virdi Units 1 and 2 (2 x 1 100 MWe) in Gujarat.
10. FBR Units 1 and 2 (2 x 500 MWe) at Kalpakkam, Tamil Nadu.
11. See International Energy Agency (2011), "Technology Development Prospects for the Indian Power Sector", Information Paper, p. 50, available at: www.iea.org/papers/2011 /technology_development_india.pdf; and BARC (n.d.) "Atomic Energy in India: Strategy for Nuclear Energy", available at: www.barc.ernet.in/about/anu1.html; and for tabular overviews and regular updates: World Nuclear Association, "Nuclear Power in India", available at: www.world-nuclear.org/info/inf53.html, accessed 28 March 2012.
12. India never signed the Nuclear Non-Proliferation Treaty, 1970 (NPT), which currently has 189 parties. Moreover, largely in response to India's nuclear test in 1974, the Nuclear Suppliers Group (NSG) was created that same year. One of its core rules is to forbid nuclear trade with a country which has not signed the NPT.
13. It is, for instance, estimated that in 2008 nuclear power plants were running at about half capacity due to chronic shortage of fuel. See: "Nuclear Power in India", *supra* Note 6, p. 6.

Republic of Korea, the United Kingdom and the United States[14] as well as uranium supply agreements with Argentina, Kazakhstan, Mongolia, Namibia and the Russian Federation.[15] This change translated directly into increased electricity generation from its NPPs.[16] The India Safeguards Agreement was signed with the IAEA on 2 February 2009, thus providing coverage for a range of facilities under one agreement.[17] India has offered to place 14 thermal power reactors under the IAEA Safeguards between 2006 and 2014 in a phased manner.[18]

B. Liability Act and Rules

The Liability Act and Rules in their current forms create several uncertainties and leave many questions unanswered. Therefore, when relevant, we will also touch upon the legislative history of the Liability Act including the amendments made to the original bill and the Report of the Parliamentary Standing Committee. The committee undertook a broad-based consultation before sending its recommendations to both houses for final adoption of the act. These elements shed additional light on the rationale behind some of the key provisions of the Liability Act.[19]

14. The US-India Civil Nuclear Cooperation Agreement (10 October 2008) could only be adopted after various preconditional steps, including: the Indian Nuclear Separation Plan (March 2006), the Hyde Act (December 2006), the 123 Agreement (August 2007), and the IAEA Board approval for the India-IAEA Safeguards Agreement (August 2008). See, *inter alia*, Sultan, M. and Adil, M.B. (2008) *SASSI Policy Brief 11*, "The Henry J. Hyde Act and the 123 Agreement: an Assessment", available at: www.sassu.org.uk/pdfs/The%20123%20Agreement%20and%20Hyde%20Act.pdf.
15. See, *inter alia*: "Nuclear Power in India", *supra* Note 6, p. 18 (also stating that the DAE confirmed that as of August 2010, 7 reactors (1 400 MWe) were using imported fuel and working at full power, whereas 9 reactors (2 630 MWe) were using domestic uranium).
16. Grover, Dr. R.B. (2012), "National Framework for Governance of Nuclear Power", slideshow presented at the first Nuclear Law Conference, Nuclear Law Association, New Delhi, 18 February 2012 (copy on file with author).
17. IAEA (2008), "Nuclear Verification – The Conclusion of Safeguards Agreements and Additional Protocols – An Agreement with the Government of India for the Application of Safeguards to Civilian Nuclear Facilities", IAEA Document, GOV/2008/30, available at: www.isis-online.org/publications/southasia/India_IAEA_safeguards.pdf. For a discussion of the 2009 India-IAEA safeguards agreement, see DeFrancia, C. (2012), "The Continuing Role of Item-specific Agreements in the IAEA Safeguards System", *Nuclear Law Bulletin* No. 88, Volume 2011/2, OECD, Paris, pp. 37-60.
18. IAEA (2008), "Communication dated 25 July 2008 received from the Permanent Mission of India concerning a document entitled 'Implementation of the India-United States Joint Statement of July 18, 2005: India's Separation Plan'", IAEA Document INFCIRC/731, Paragraph 14, available at: www.iaea.org/Publications/Documents/Infcircs/2008/infcirc731.pdf. Moreover, India has already signed the Additional Protocol to the Safeguards Agreement on 15 May 2009, but it still needs to enter into force. See: IAEA (2012), "Status List – Conclusion of Safeguards Agreements, Additional Protocols and Small Quantities Protocols", available at: www.iaea.org/OurWork/SV/Safeguards/documents/sir_table.pdf, accessed 28 March 2012.
19. The original Bill dated 7 May 2010; the Parliamentary Standing Committee Report dated 18 August 2010; the Notice of Amendments dated 20 August 2010; the Bill as passed in the Lower House (*Lok Sabha*) dated 25 August 2010; as well as a comparative table and track change versions, can all be consulted at the PRS Legislative Research website: www.prsindia.org /billtrack/the-civil-liability-for-nuclear-damage-bill-2010-1042/, accessed 22 March 2012.

No private operators

The Atomic Energy Act of 1962 as amended by the Atomic Energy Act of 1987 permits only the government, an authority or corporation established by the government or a "government company" to operate a nuclear power plant in India. As a result, the Liability Act reflects that private entities do not have the authority to operate nuclear installations. In fact, an amendment to the original bill was inserted to clarify this point. Hence, Section 1(4) of the Liability Act states that the act "applies only to the nuclear installation owned or controlled by the central government either by itself or through any authority or corporation established by it or a Government company". The Atomic Energy Act, 1962, defines a government company as "a company in which not less than fifty one percent of the paid up share capital is held by the Central Government",[20] thereby clearly allowing joint ventures between private and government companies, albeit that the private entity would need to be a minority shareholder.[21] This issue is relevant to bear in mind when, touching upon the issue of insurance, for example, which will be further discussed below.[22] The current operator of India's NPPs is the government-owned Nuclear Power Corporation of India Limited (NPCIL).[23] After the opening up of nuclear trade for India, NPCIL is now looking at setting up projects either based on designs developed by NPCIL for PHWRs, or in technical co-operation with foreign vendors for LWRs. In light of its vast domestic expertise and capabilities, India is not seeking builders or developers to construct fully completed and equipped facilities that would require merely that the purchaser open the door, enter the facility and begin operations (also known as contracting on a turnkey basis).[24]

Legal channelling to, and right of recourse of, the operator

Expanding the right of recourse

Recently, academics have been questioning the rationale underlying the principle of legal channelling to the operator for third-party liability, particularly because the nuclear sector in the 21st century can no longer claim to be in its nascent

20. The Atomic Energy Act, 1962, Section 2(1)(bb) available at: www.dae.gov.in/rules/aeact.pdf.
21. PRS Legislative Research (2010), "Amendments to the Civil Liability for Nuclear Damage Bill, 2010", available at: www.prsindia.org/uploads/media/Nuclear/Comparison%20of%20the%20Bill,%20Standing%20Committee%20Report%20and%20Amendments%20introduced.pdf. See also: Ram Mohan, M.P. (2009), "Legal and Regulatory Challenges for Promotion of Civil Nuclear Energy in India", *Energy Security Insights*, Vol. 4, No. 1, pp. 6-10; and Ramana, M.V. (2009), "The Indian Nuclear Industry: Status and Prospects", *Nuclear Energy Futures Papers*, No. 9, p. 21, available at: www.cigionline.org (questioning whether the Government interprets it in this manner).
22. See below at Part D.
23. NPCIL is a public sector enterprise under the administrative control of the Department of Atomic Energy (DAE), Government of India. The company was registered as a public limited company under the Companies Act, 1956 in September 1987 with the objective of operating atomic power stations and implementing the atomic power projects for generation of electricity under the Atomic Energy Act, 1962. NPCIL has also equity participation in BHAVINI, an organisation formed for implementation for fast breeder reactors programme in the country. Read more at: http://npcil.nic.in/.
24. Grover, Dr. R.B. *supra* Note 16. For general guidance on when countries could opt for a turnkey contract basis with the supplier, see: IAEA (2007), "Managing the First Nuclear Power Plant Project", available at: www-pub.iaea.org/MTCD/publications/PDF/te_1555_web.pdf.

stages and requiring principles distinct from general tort law.[25] As if on cue, the Liability Act and Liability Rules tweak some of these standard notions by expanding the right of recourse of the operator, otherwise inherently associated with the Paris and Vienna regimes.[26]

Section 4(1) of the Liability Act does squarely state that the operator[27] of the nuclear installation shall be liable for nuclear damage caused by a nuclear incident. Section 4(2) recognises the principle of joint and several liability where there is more than one operator; Section 4(4) contains the principle of strict and no-fault liability of the operator. These principles are in line with the Paris and Vienna regimes, as well as the CSC. Moreover, "nuclear damage" has been broadly defined in the Liability Act, so as to include: (i) loss of life or personal injury; (ii) damage to property; (iii) any economic loss; (iv) costs of measures of reinstatement of impaired environment; (v) loss of income; (vi) the costs of preventive measures; etc.[28] which is in consonance with the *revised* Vienna and Paris regimes and the CSC.

Section 17 of the Liability Act – inserting a third ground for right of recourse for the operator

Section 17 of the Liability Act provides that the operator of the nuclear installation, after paying the compensation for nuclear damage shall have a right of recourse where:

(a) such right is expressly provided for in a contract in writing;

(b) the nuclear incident has resulted as a consequence of an act of supplier or his employee, which includes supply of equipment or material with patent or latent defects or sub-standard services;

(c) the nuclear incident has resulted from an act of commission or omission of an individual done with the intent to cause nuclear damage.

Sections 17(a) and (c) of the Liability Act are standard provisions, and can be compared directly with Article X of the Vienna Convention, Article 6(f) of the Paris Convention, and even Article 10 of the Annex to the CSC. Moreover, each of these international conventions restricts the right of recourse to the two instances outlined in Sections 17(a) and 17(b) only. Therefore, Section 17(b) has caused much international consternation.

The original Civil Liability for Nuclear Damage Bill, 2010, contained a differently worded Section 17(b), targeting the situation in which "the nuclear incident has resulted from the willful act or gross negligence on the part of the supplier of the material,

25. For a comprehensive analysis, see Ameye, E. (2010), "Channeling of Nuclear Third Party Liability Towards the Operator: Is it Sustainable in a Developing Nuclear World or is there a Need for Liability of Nuclear Architects and Engineers?", *European Energy and Environmental Law Review*, Vol. 19, pp. 33-58.
26. Referring respectively to the Paris Convention on Third Party Liability in the Field of Nuclear Energy, 1960 (Paris Convention), in particular Article 6.b, as supplemented by the Brussels Supplementary Convention, 1963 (BSC), and revised by the Additional Protocol, 1964 and Protocol of 1982, under the auspices of the OECD (note that the 2004 Protocols to amend the Paris Convention and the BSC are not yet in force); and the Vienna Convention on Civil Liability for Nuclear Damage, 1963 (Vienna Convention), in particular Article II.5, and the 1997 Protocol to amend the Vienna Convention (which entered into force in 2003) under the auspices of the IAEA.
27. Section 2(m) of the Liability Act defines "operator" as: "in relation to a nuclear installation, means the Central Government or any authority or corporation established by it or a Government company who has been granted a licence pursuant to the Atomic Energy Act, 1962, for the operation of that installation".
28. See in detail: Section 2(g) of the Liability Act.

equipment or services, or of his employee". During deliberations before the Parliamentary Standing Committee, various experts expressed the view that this provision needed to be redrafted in line with provisions from product liability laws that hold the supplier liable for product liability, faulty design, faulty manufacture, etc.[29]

The Parliamentary Standing Committee was of the opinion that it would be impossible to establish the "willful act or gross negligence" on the part of the supplier.[30] Moreover, the representative of the Ministry of Law and Justice confirmed that such *mens rea* language is typically only used in criminal and taxation laws and would be "grossly inadequate and misplaced" in the context of compensation cases.[31] Therefore, the Standing Committee was of the view that "there should be a clear cut liability on the supplier of nuclear equipments/material in case they are found to be defective".[32]

As a consequence, the Parliamentary Committee made various suggestions which reflect these concerns, and which may also to an extent explain some of the confusion that arose subsequently when reading Section 17 of the Liability Act and Rule 24 of the Liability Rules together. First, the Committee suggested that Clauses 17(a) and 17(b) be connected with the word "and". This proposal was not upheld by Parliament in the final version of the Liability Act, but it is indicative of how the Committee envisaged that the situation of Section 17(b) would need to be subsumed by Section 17(a) which requires that the operator-supplier agreement first contains an explicit provision covering the right of recourse of the operator. Indeed, the Committee further recommended that "the operator must secure his interest through appropriate provisions in the contract with the supplier".[33] Moreover, the Committee was of the view that although the supplier is liable to the operator as per the 3 separate sub-clauses of Section 17, it would be advisable to allow that the operator "may, after compensating the victims, exercise his right of recourse against the supplier in accordance with the provisions of the contract".[34] Hence, the Committee seems to have assumed that such an explicit right of recourse provision would be a standard clause in operator-supplier agreements. However, some authors have noted that suppliers often do not agree to contractual right of recourse clauses, largely because bilateral agreements tend to exclude the applicability of such contractual provisions, thereby making such clauses much less common than

29. Department-related Parliamentary Standing Committee on Science & Technology, Environment & Forests (2010), "212th Report on The Civil Liability for Nuclear Damage Bill, 2010" (Report Parliamentary Standing Committee), p. 5, available at: www.prsindia.org /billtrack/the-civil-liability-for-nuclear-damage-bill-2010-1042/ accessed 22 March 2012.
30. It is interesting to note that South Korea expanded its right of recourse provision to precisely the situation of "willful act or gross negligence". See more at: PLBS, (2010), "Addendum to a Briefing Document on the Civil Liability for Nuclear Damage Bill, 2010", p. 11, (PLBS Addendum), available at: http://plbs.in/Docs/PLBS_Addendum%20on%20Civil %20Nuclear%20Liability%20Bill.pdf, accessed 28 March 2012.
31. Report Parliamentary Standing Committee, *supra* Note 29, p. 16.
32. *Ibid*.
33. *Ibid*.
34. *Ibid*.

perhaps generally assumed.[35] Moreover, a joint reading of Section 17(a) and Rule 24(1) merely refers to the situation where such right of recourse is expressly provided for in a contract in writing; it does not mandate that each contract would need to have such a right of recourse clause.

Section 17(b) was further amended by the notice of amendments notified on 20 August 2010 and reads as follows: "the nuclear incident has resulted as a consequence of an act of supplier or his employees, done with the intent to cause nuclear damage, and such act includes supply of equipment or material with patent or latent defects or sub-standard services".[36] However, the final version of the Liability Act does not contain the requirement that the act of the supplier or his employee was "done with the intent to cause nuclear damage" [this situation to some extent being covered by Section 17(c), although the latter provision merely refers to an act of an "individual" and not a legal person].

It is quite apparent that the discussions pertaining to the operator's right of recourse did not take the existing international liability regime as a starting point. Rather, the Report of the Parliamentary Standing Committee states that it "has been the unanimous opinion of the Committee that the Bill being a domestic legislation should reflect Indian interests".[37] Although it does add that the Committee should also endeavour to take into account the CSC "so that as and when needed India can join it for availing of benefits flowing from" the CSC.[38]

Interplay with Rule 24 of the Liability Rules

Nevertheless, the subsequent Liability Rules tried to curtail the right of recourse somewhat by specifying in Rule 24(1) that with regard to the contract referred to in clause Section 17(a) of the Act – which contains an explicit right of recourse clause – such contract shall include a provision for right of recourse for not less than the extent of the operator's liability under Section 6(2) or the value of the contract itself, "whichever is less".

Importantly, Rule 24(2) further specifies that the provision for the right of recourse referred to in Rule 24(1) shall be for the duration of the initial license issued under the Atomic Energy (Radiation Protection Rules), 2004 (which is five years), or the product liability period, "whichever is longer". The "product liability period" defined in Rule 24 as "the period for which the supplier has undertaken liability for

35. See e.g. PLBS Addendum, *supra* Note 30 [referring by way of example to Article III the France-Russian Federation Agreement (2000) and Article 1 of the Germany-Russian Federation Agreement (1998)]. See also Balachandran, G. (26 October 2010), "Should India Sign the Convention on Supplementary Compensation?", *ISDA Issue Brief*, p. 5, available at: www.idsa.in/system/files/IB_IndiaCSV.pdf [referring to Article 13. of the India-Russia Intergovernmental Agreement which states that: "The Indian side and its authorized organization at any time and at all stages of the construction and operation of the Nuclear Power Plant (NPP) units to be constructed shall be the operator of the power units of the NPP and be fully responsible for any damage both within and outside the territory of the Republic of India caused to any person and property as a result of a nuclear incident during the transportation, handling or storage outside the NPPs of the nuclear fuel and contaminated materials or any part of NPP equipment both within and outside the territory of the Republic of India."]
36. Notice of Amendments, 20 August 2010, *supra* Note 19.
37. Report Parliamentary Standing Committee, *supra* Note 29, p. 13.
38. Report Parliamentary Standing Committee, *supra* Note 29, p. 14.

patent or latent defects or sub-standards services under a contract".[39] The five-year licensing period seems to be a rather artificial minimum benchmark, as there is no direct correlation with a typical supplier agreement. However, the government argues that equipment's life cannot be equated with a plant's life, and, therefore, the right of recourse against the supplier must necessarily be coupled to a much shorter time frame.[40] Although the phrasing of the Rule 24(2) and its correlation to Section 17 is far from precise, it does clearly allow suppliers to limit their exposure to a period of 5 years (by ensuring that the product liability period is not longer than the 5-year period).

The phrasing of Rule 24, with its sole reference to Section 17(a), seems to imply that for the 2 other situations covered under Section 17 of the Act, there would be no such 5-year time limit on the operator's right of recourse. Stated differently, the right of recourse of the operator against the supplier could be exercised beyond the 5-year time period in the situations covered under Section 17(b) when the nuclear incident resulted as a consequence of an act of supplier or his employee, which includes supply of equipment or material with patent of latent defects or sub-standard services, and Section 17(c) when the nuclear incident has resulted from the act or commission or omission of an individual, done with the intent to cause nuclear damage. However, given the similar language used in Section 17(b) and the explanation to Rule 24(2) pertaining to the meaning of "product liability period", it would have been desirable to clarify further the impact of such product liability clause on the right of recourse of the operator (even in the absence of a contractual right of recourse clause). Now, we are left to anticipate that the following situations could materialise:

- The operator-supplier agreement contains a right of recourse clause, which the operator can exercise within a period which cannot be less than five years, but could be longer if the product liability clause stipulates a longer time frame, based on the joint reading of Section 17(a) and Rule 24(2).
- The operator-supplier agreement does not contain a contractual right of recourse clause, but does contain a product liability clause, in which case the right of recourse could be exercised even beyond the product liability period as provided in the contract. However, issues could arise in this context if the operator on its part had been negligent in availing himself of the warranty provided by the supplier, i.e. had failed to replace equipment or material during the product liability period.
- The operator-supplier agreement contains neither a right of recourse clause, nor a product liability clause, in which case the time frame within which the right of recourse can be exercised is left open-ended, and could be interpreted as unlimited in time.[41]

39. Rule 24(2)(b) further contains an "explanation" of the term "supplier" which "shall include a person who – (i) Manufactures and supplies, either directly or through an agent, a system, equipment or component or builds a structure on the basis of functional specification; or (ii) Provides build to print or detailed design specifications to a vendor for manufacturing a system, equipment or component or building a structure and is responsible to the operator for design and quality assurance; or (iii) Provides quality assurance or design services."
40. Grover, Dr. R.B. *supra* Note 16.
41. See also Abraham, M. (2011), "Right of Recourse: Interpretation under Civil Liability for Damage Liability Rules, 2011", available at: www.nlain.org, accessed 28 March 2012.

Interestingly enough, these possible scenarios indicate that it would be in the supplier's interest to insert a right to recourse clause to limit his exposure, whereas in countries bound by the more standard right to recourse approach (with only two grounds of recourse, i.e. where contractually provided for or where an individual had the intent to cause nuclear damage), it would be in his interest to try to avoid the inclusion of a contractual right of recourse.

Based on the discussions before the Parliamentary Standing Committee, it appears that the general understanding was that such operator-supplier agreements would tend to contain both a right of recourse clause as well as a product liability clause, which is clear from the committee's proposal to link both sub-sections a) and b) of Section 17 so that a dual requirement would need to be met cumulatively. As written, Section 17(b) is a stand-alone provision which does not require that the operator-supplier agreement contain a right of recourse clause. Even in the absence of such right of recourse provision, the operator would be able to exercise a right of recourse if a supply of equipment or material with patent or latent defects or sub-standard services had been provided, thereby considerably broadening the scope of the right of recourse of the operator.

Considering the separate presence of Sections 17(b) and (c), it is implicit that there is no obligation on the part of the operator to insert a recourse clause into a contract with a supplier. Furthermore, the operator could waive its right to exercise its right of recourse under Sections 17(b) and (c). However, as pointed out by several experts, such a waiver could be subject to public interest litigation[42] based on the ground that such a waiver by the government-owned NCPIL is against the public interest by refusing to recover "taxpayer money from a negligent supplier".[43]

Section 46 of the Liability Act – on concurrent liability under other laws

Importantly, the Rules do not alter the scope of Section 46 of the Liability Act, which states that (1) the provisions of the Act must be read in addition to and not in derogation of any other law in force, and (2) nothing in the Act "shall exempt the operator from any proceeding which might, apart from this Act, be instituted against such operator". Hence, it could be argued that under the broadly phrased Section 46, a victim of a nuclear incident could bring a liability claim against the operator in court under tort law, and possibly even include the supplier as a codefendant. This possibility seems to directly undermine the long-standing principle of legal channelling and is at odds with the Preamble of the Liability Act which states that it is an Act to provide for "civil liability for nuclear damage and prompt compensation to the victims of a nuclear incident through a no-fault liability regime challenging liability to the operator".

Some authors posit that in the event of conflict between the Liability Act and the general rules of tort law, the specific provisions of the Liability Act would prevail based on the principle that a later specific statute overrides the provisions of a prior general statute (*lex specialis derogate leg generali*), and that, therefore, "recourse actions under tort law are excluded by the present Bill".[44] However, this interpretation would deny the effect of Section 46 which is precisely intended to avoid a more narrow application of the liability principles as contained in the Liability Act only.

42. See more detailed discussion below at Part E on the notion of public interest litigation in India.
43. See, *inter alia*, interview with Mohit Abraham by Sam Tranum (2011), "India – Questions Over Local Supplier Liability Exemption", *Nuclear Intelligence Weekly*, Vol. V, No. 33, pp. 6-7.
44. PLBS Addendum, *supra* Note 30, p. 20.

What Section 46 does seem to indicate is that the Liability Act would in no manner alter the right to, for instance, prosecute the operator under criminal law or other penal provisions under various environmental laws.[45] As a result, the Liability Act seems to offer a novel interpretation of what legal channelling may mean in India. On the one hand, the Liability Act seeks to provide for a civil liability for nuclear damage regime based on a no-fault principle while channelling the liability to the operator under the Act, while simultaneously accepting that the operator may also be held liable under other laws. This is clearly not how legal channelling has been interpreted under either the international nuclear liability regimes or most domestic laws.[46] Again, part of this may be explained by the fact India has not been party to any international nuclear liability regime so far, and as such much of the parliamentary discussions were primarily influenced by domestic concerns and notions of what would be just from a victim's point of view (or the operator's in the instance of Section 17), rather unperturbed by the fact that in doing so the Liability Act would upset well-engrained assumptions about how nuclear liability regimes have generally been structured.

Section 35 of the Liability Act – no ouster of writ jurisdiction of the highest courts

It is also important to note that the original version of the Liability Act was amended to clarify that "save as otherwise provided in Section 46, no Civil Court (except the Supreme Court and High Court exercising jurisdiction under articles 226 and 227 of the Constitution)" shall have jurisdiction to entertain any suit or proceedings in respect of any matter which the Claims Commissioner or the Commission is empowered to adjudicate under the Liability Act (Section 35 of the Liability Act). Although the representative of the Ministry of Law and Justice deposed before the Parliamentary Standing Committee stated that no such explicit provision is legally mandatory, as no law can ever debar the writ petition of the High Courts and the Supreme Court under articles 226 and 32 of the Constitution, many experts felt it would be relevant to insert such a reference to avoid any doubt.[47] Several experts were of the opinion that it would be important to reiterate that every citizen would have the right to approach the highest courts if they feel justice has been denied to them under the procedures contained in the Liability Act, and that such "litigation could include cases against the operator, his suppliers of equipment, civil constructors, designers and manufacturers of systems and equipment, etc., for compensation, over and above what has already been granted under the provisions of this Bill, for damages caused by these allied entities".[48]

Amount of liability

Section 6(1) of the Liability Act specifies that the maximum amount of liability in respect of each nuclear incident shall be SDR 300 million (about USD 450 million), or such higher amount as may be notified by the government. The Parliamentary Standing Committee had recommended that the government notify a higher amount as well, which was upheld in the final version of the Liability Act.[49]

45. See e.g. Section 304 A Indian Penal Code (Causing Death by Negligence: "Whoever causes the death of any person by doing any rash or negligent act not amounting to culpable homicide shall be punished with imprisonment of either description for a term which may extend to two years, or with fine, or with both.").
46. See e.g. Stoiber, C. *et al*. (2003), *Handbook on Nuclear Law*, p. 112, available at: www-pub.iaea.org /mtcd/publications/pdf/pub1160_web.pdf.
47. Parliamentary Standing Committee, *supra* Note 29, pp. 6-7 and pp. 10-11.
48. *Ibid*. pp. 6-7.
49. *Ibid*. p. 15.

Similarly, Article III.1 (a)(i) of the CSC requires that the installation state ensures the availability of SDR 300 million per nuclear incident or a greater amount, which is also reflected in Article 4 of the Annex to the CSC.

Domestically, the decision to cap the maximum amount of liability in respect of each nuclear incident to SDR 300 million (USD 450 million or 2 100 Crores) has touched a raw public nerve, particularly in light of the Bhopal gas tragedy settlement, which amounted to about USD 470 million in 1989 and was criticised as inadequate even then.

Section 6(2) of the Liability Act further outlines the liability of an operator for each nuclear incident as follows:

(a) In respect of nuclear reactors having thermal power equal to or above 10 MWt, INR 1 500 crores (about USD 292.4 million).

(b) In respect of spent fuel reprocessing plants, INR 300 crores (about USD 58.5 million).

(c) In respect of the research reactors having thermal power below 10 MWt, fuel cycle facilities other than spent fuel reprocessing plants and transportation of nuclear materials, INR 100 crores (about USD 19.5 million).

Under the original version of the Liability Act, Section 6(2) capped the liability of the operator for each nuclear incident at INR 500 crores (about USD 97.5 million), with the further proviso that the central government "may either increase or decrease the amount of liability of the operator" and "provided further that whether the amount of liability is decreased, it shall not be less than rupees one hundred crores" (about USD 19.5 million). The Parliamentary Standing Committee took strong objection to the initial suggested amount of compensation, and found the possibility that this amount might be further decreased unacceptable.[50]

When the liability for nuclear damage caused by the nuclear incident exceeds the amount of the operator's liability specified under Section 6(2), the government shall be liable for the cost of the nuclear damage, provided further that the government may assume full liability for a nuclear installation not operated by it if it is necessary in the public interest [Section 7(1) Liability Act]. To meet part of its liability, the government may establish a nuclear liability fund by collecting a levy from the operators [Section 7(2)]. Indeed, during the deliberations before the Parliamentary Standing Committee, there was general consensus that such nuclear liability fund should be created by charging a nominal fee per unit energy cost in such a way that in course of time the financial burden of the government would be reduced.[51] Such provisions in the Liability Act do indicate that Parliament envisaged that at some point private operators would be allowed in India. It must be added that having provisions such as Section 1(4) clarifying that the Liability Act will only apply to government companies on the one hand, while also having provisions such as Section 7(1) which hint at the presence of several operators on the other hand, unnecessarily add confusion about the current policy of the government.

The *revised* Vienna Convention increases the minimum liability of the operator from USD 5 million to SDR 300 million (USD 450 million).[52] The referenced amount under the Paris Convention is a maximum of SDR 15 million, and under the *revised*

50. *Ibid*. pp. 15-16.
51. *Ibid*. p. 16.
52. Art. V, Vienna Convention.

Paris Convention (not yet entered into force) this amount would be increased to EUR 700 million as a minimum.[53]

Other provisions of the Liability Act are much more in tune with the Vienna and Paris regimes. For instance, Section 18 of the Liability Act provides that the right to claim compensation shall extinguish after 10 years in case of damage to property and after 20 years in case of personal injury, which is compatible with Article 9 of the Annex to the CSC, Article VI of the Vienna Convention (the *new* Vienna Convention increasing this time frame to 30 years in the event of personal injury), and Article 8 of the Paris Convention. Even the *force majeure* events exhaustively enumerated under Section 5 of the Liability Act are in harmony with international conventions.

C. Relationship with the Convention on Supplementary Compensation

Signature and strategy

India signed the CSC on 27 October 2010,[54] though it has not yet ratified this convention.[55] A CSC ratification instrument can be accepted from a state which is a party to either the Vienna Convention or the Paris Convention (which India is not), "or a State which declares that its national law complies with the provisions of the Annex to the Convention" (a so-called Annex State) and is also a contracting state to the 1994 Convention on Nuclear Safety (which India is).[56] The question is, hence, how the apparent conflict will be solved between Section 17 of the Liability Act which expands the right of recourse of the operator by adding a third ground when the nuclear incident has resulted as a consequence of "supply of equipment or material with patent or latent defects or sub-standard services" discussed above,[57] and Article 10 of the Annex to the CSC which, just like the Vienna and Paris regimes, recognises only two limited recourse grounds, namely when such right of recourse is expressly provided in a contract in writing, or against the individual who caused the nuclear incident with the intent to cause damage.[58]

The government and both houses of Parliament were aware of the dissonance between Section 17(b) of the Liability Act and the international nuclear liability conventions, including the CSC, given the explicit mention of it in the Parliamentary Standing Committee Report (which itself was based on various expert

53. Art. 7(b), Paris Convention.
54. IAEA (2010), "India Signs Convention of Supplementary Compensation for Nuclear Damage", available at: www.iaea.org/newscenter/news/2010/indiaconvention.html, accessed 28 March 2012.
55. The CSC has been ratified by four countries so far (Argentina, Morocco, Romania, the United States), but requires the ratification by five countries "with a minimum of 400 000 units of installed nuclear capacity" to enter into force (Article XX). Eleven other countries have signed the CSC so far: Australia, the Czech Republic, India, Indonesia, Italy, Lebanon, Lithuania, Peru, the Philippines, Senegal and Ukraine. See more at: IAEA (2011), Convention on Supplementary Compensation for Nuclear Damage – Status, available at: www.iaea.org/Publications /Documents/Conventions/supcomp_status.pdf.
56. Article XVIII.1 and XIX.1 of the CSC. India ratified the Convention on Nuclear Safety, 1994, on 31 March 2005.
57. See part B on the insertion of a third ground for right of recourse for the operator.
58. Moreover, the CSC does not contain any provisions regarding reservations by parties. Article XVI on Dispute Settlement does contain an opt-out provision.

submissions),[59] and as such the insertion of the provision cannot be qualified as an oversight. For argument's sake, this situation may have been slightly different had the suggestion by the Parliamentary Standing Committee been upheld and Sections 17(a) and (b) been read as cumulative requirements connected by the word "and", which would have coupled the right of recourse in the event of sub-standard delivery or equipment/services to the preliminary requirement that there would need to be a contractually agreed right of recourse provision as a first precondition. That not being the case, and Section 17(b) being a stand-alone ground, it may be relevant to assess whether all provisions of the CSC, including Article 10 of the Annex, are deemed to be equally critical as part of the treaty's international harmonisation effort. Put differently, is a State/Annex State obliged to adhere to the letter of all the articles of the CSC or its Annex, or is the adherence to some provisions more critical than others. And, if so, which are these absolutely pre-conditional provisions from which a party cannot derogate?

Based upon the Explanatory Texts on the CSC prepared by the IAEA, it is quite clear that there are some basic requirements for joining the CSC that are not contained in the Annex, but in the main body of the CSC, with which all states wishing to ratify the CSC would need to comply, including the minimum limits of compensation of nuclear damage at national level (Article III), the uniform rules on jurisdiction (Article XIII), as well as the definition of nuclear damage (Article I(f)).[60] Article III.1(a) of the CSC requires the installation state to ensure the availability of SDR 300 million or a greater amount. As discussed above, Section 6(1) of the Liability Act specifies that the maximum amount of liability in respect of each nuclear incident shall be the Indian rupee equivalent of SDR 300 million or such higher amount as may be notified. Similarly, Section 2(g) of the Liability Act conforms to the definition of nuclear damage set out in the CSC. The creation of the institutions of the Claims Commissioner (Sections 9-12) and the Nuclear Damage Claims Commission (Sections 19-38) as well as the explicit recognition that the writ petition before the High Courts and the Supreme Court remain intact (Section 35) are all in line with the exclusive jurisdiction principle set out in Article XIII of the CSC. Hence, India's domestic legislation is in compliance with the "overarching provisions" of the CSC.[61] As Ben McRae, a nuclear liability expert from the United States Department of Energy, has poignantly observed, it would be relevant to distill "generic minimum legislation" from the patchwork of options in which each particular party may find itself (an installation state or not, party to any other international treaty or not), and to identify the possible differences, if any, which may arise because of these various legal positions. This exercise in itself may not culminate in an *ipso facto* approval of provisions such as Section 17(b) which clearly expands the grounds of the right of

59. Report Parliamentary Standing Committee, *supra* Note 29, p. 6. See e.g. also expert opinions submitted to the Parliamentary Standing Committee by Pre-Legislative Briefing Service (PLBS) (5 July 2010), "A Briefing Document on the Civil Liability for Nuclear Damage Bill, 2010: Questions of Constitutionality and Legislative Options Open to Parliament", available at: http://plbs.in/Docs/PLBS_A%20Briefing%20Document%20on%20the%20Civil%20Liability%20for%20Nuclear%20Damage%20Bill%202010%20Questions%20of%20Constitutionality%20and%20Legislative%20Options%20Open%20to%20Parliament.pdf and Addendum to the PLBS Briefing Document, *supra* Note 30.
60. IAEA (2007), "The 1997 Vienna Convention on Civil Liability for Nuclear Damage and the 1997 Convention on Supplementary Compensation for Nuclear Damage – Explanatory Texts", IAEA International Law Series No. 3, pp. 160, at p. 69, available at: www-pub.iaea.org/MTCD/publications/PDF/Pub1279_web.pdf.
61. McRae, B. (2007), "The Convention on Supplementary Compensation for Nuclear Damage: Catalyst for a Global Nuclear Liability Regime", *Nuclear Law Bulletin*, No. 79, Vol. 2007/1, OECD, Paris, pp. 17-35, at p. 31 and p. 33, available at: www.oecd-nea.org/law/nlb/nlb-79/017-035%20-%20Article% 20Ben%20McRae.pdf.

recourse of the operator, but could generate a larger debate on how to address domestic provisions which are at odds with the main tenets of the CSC. This exercise could lead to a graded analysis of the Liability Act whereby some provisions of the CSC may allow at least some domestic leeway. For instance, it could be argued that Section 17(b) still operates within the intended framework of limiting the grounds of the operator's right of recourse, whereas Section 46 with its sweeping implications that the Liability Act is merely "in addition to and not in derogation of any other law for the time being in force" – thereby implying that the general gates of tort law could be opened – is much more problematic as it calls into question the legal channelling principle at a much more fundamental level.

As mentioned above, these provisions were adopted by Parliament with full knowledge that certain aspects thereof may not be entirely in harmony with the CSC, which India may consider ratifying at some point. The debates before the Parliamentary Standing Committee clearly had domestic concerns as their starting point; the CSC had not been signed by this time. The secondary treatment of the specifics of international nuclear liability conventions is understandable to an extent, given that India has never been a party to any of the international nuclear liability conventions.

It is also quite possible that the Indian government simply took a calculated risk by placing the ball in the court of the CSC regime in terms of how to solve the conflict between certain provisions of the Liability Act and the CSC, in particular the expanded right of recourse of the operator. After all, it could be argued that the CSC which contains a provision tailored to the domestic legal nuclear liability framework of the United States could offer some flexibility to other parties as well. Moreover, India must not necessarily be seen as an active "*demandeur*" to join the CSC, as its ratification of the CSC is largely seen as a *quid pro quo* with the United States which offered critical support in negotiating the NSG waiver from its guidelines restricting the transfer of nuclear technology to non-NPT states.[62]

Implementation of international treaties

Even if India were to ratify the CSC, it will not be deemed to be a self-executing treaty and would still require Parliament to adopt domestic implementing legislation. Article 253 of the Constitution provides that Parliament has the power to make any law for purposes of implementing any treaty, agreement or convention with any other country or any decision made at any international conference, association or other body.[63] That said, it has been observed that Article 253 does not give a clear indication of whether an enactment by Parliament is necessary to implement all treaties and agreements agreed upon by the Executive. In India, the question of whether such implementing legislation is required depends on the subject matter of the treaty or agreement.[64] For instance, treaties involving the cession of national territory would require a legislative act to be incorporated into domestic law. However, the Supreme Court has held that an international agreement merely ascertaining a territorial boundary, without any transfer of Indian territory, would not require any legislative act. The more general principle is that a legislative act is required when an international treaty or agreement "operates to

62. See *supra* at Part A and *inter alia*: *The Financial Express* (1 July 2011), "US Supports NSG Waiver to India: Roemer", available at: www.financialexpress.com/news/US-supports-NSG-waiver-to-India--Roemer/811218/ accessed 11 April 2012.
63. Constitution of India, available at: http://lawmin.nic.in/olwing/coi/coi-english/coi-indexenglish.htm, accessed 11 April 2012.
64. See extensively: Singh, G. (2011), *International Law*, second edition, New Delhi, pp. 49-76.

restrict the rights of citizens or others or modifies the laws of the State".[65] Hence, treaties which affect the private rights of individuals or modify the substantive laws of the State are non-self-executing treaties.[66] The CSC, which, *inter alia*, regulates claims of compensation for nuclear damage will affect the private rights of individuals and modify, or at least complement, the substantive laws of India, and be interpreted as a non-self-executing treaty. Therefore, in the Indian context, the analysis of whether some of the provisions of the CSC are self-executing is not as relevant, since implementing legislation to bring the CSC into force in India will be required either way.[67]

Moreover, it is also important to note that in India – a common law country – it is well established that in case of conflict between international treaties and domestic law, the Indian courts will give precedence to the provisions of statutory law. Only if a statutory law is ambiguous will the courts adopt the doctrine of "harmonious construction" so as to avoid conflict between international treaties and statutes, i.e. ambiguous statutory law will be interpreted in light of international treaties.[68]

D. No Indian nuclear insurance pool yet

Section 8(1) of the Liability Act makes it mandatory for the operator to take out an insurance policy or other financial security,[69] or combination of both, to cover his liability determined under Section 6(2), which is in line with the internationally well-established congruence principle which seeks to ensure that the liability amount of the operator is always covered by an equal amount of money.[70] However, Section 8(3) adds that the operator's obligation to take out an insurance policy or such other financial security shall not apply to a nuclear installation owned by the central government. As mentioned in the outset of this paper, Section 1(4) of the Liability Act was inserted with the aim to clarify that the Liability Act only applies to nuclear installations owned or controlled by the central government.

During deliberations before the Parliamentary Standing Committee, an expert drew attention to the fact that the nuclear facilities owned directly by the central government or government companies would be exempt from the Liability Act. Put differently, almost all nuclear facilities currently operating, whether under IAEA safeguards or not, would remain outside the parameters of the Liability Act. This expert added that this situation is not desirable "because an accident is more likely to happen in an aging facility built long ago and will defeat the very purpose of the Bill".[71] It was, therefore, requested that the insurance provision be made applicable to all

65. *Ibid.* p. 61.
66. *Ibid.* p. 76.
67. See also: IAEA (2007), "Explanatory Texts", *supra* Note 60, Footnote 228, p. 70.
68. Singh, G. (2011), *supra* Note 66, p. 63. See also: *Jolly George Varghese v. The Bank of Cochin*, AIR, (1980) 2 SSC 360.
69. The Explanation appended to Section 8 further clarifies that a "financial security" means a contract of indemnity or guarantee, or shares, or bonds or such instrument as may be prescribed or any combination thereof.
70. See e.g. Stoiber, C. *et al.* (2003), *Handbook on Nuclear Law*, *supra* Note 46, p. 112; and Pelzer, N. (1999), "Focus on the Future of Nuclear Liability Law", in OECD, *Reform of Civil Nuclear Liability, International Symposium, Budapest, Hungary, 31 May-3 June 1999*, OECD, Paris, pp. 432-436 (also arguing that in the future the concept of congruence between the liability amount and the financial coverage should be reassessed).
71. Report Parliamentary Standing Committee, *supra* Note 29, p. 5. Note that Section 8 of the Liability Bill only underwent a minor change in the Liability Act which now also contains an "explanation" of the term "financial security".

nuclear operators, whether private or government-owned. However, this suggestion was not incorporated in the final version of the Liability Act. As a result, the insurance obligation contained in Section 8(1) is a dormant provision at this time.

It is worth noting that the General Insurance Company of India (GIC) – the only re-insurer in the country – is in charge of creating a nuclear insurance pool in India. It, nevertheless, faces various hurdles. First of all, the current operator of India's NPPs, the government-owned NPCIL, has, so far, no immediate obligation to co-operate actively with efforts to establish an Indian insurance pool because the Atomic Energy Act, 1962 and the Liability Act do not require that government-owned nuclear installations take out an insurance policy. Currently in India insurance is provided only for the "cold zone" of an NPP (areas in which there is no nuclear reaction taking place) but not the "hot zone" of an NPP.[72] Nevertheless, after the TEPCO Fukushima Daiichi accident a shift of mindset has been observed within NPCIL as the accident served as a stark reminder that even government-owned companies may want to be part of a larger insurance pool rather than just opting for self-insurance.[73]

Second, the major stumbling block identified by GIC is the refusal by NPCIL to allow nuclear insurance inspectors to visit any of the existing NPPs,[74] which is a precondition to be part of international nuclear insurance pools.[75] Representatives of GIC, deposed before the Parliamentary Standing Committee, highlighted the benefits of allowing inspectors from international nuclear insurance pools as their detailed reports contain effective suggestions aimed at increasing the safety standard of an NPP.[76] The submissions made by the Secretary of the Department of Atomic Energy before the Standing Committee during deliberations regarding the Liability Act indicate the current strategy of the Indian government in this regard. He clarified that with respect to proposed NPPs for which equipment would be purchased from foreign countries, at that juncture "foreign surveyors can be allowed".[77] Hence, there seems to be larger foreign policy and security concerns at play in this context.

At present the Indian insurance pool capacity is only about USD 78 million (based on commitments from 8 domestic insurers), whereas a further USD 320 million would be required to form an Indian nuclear insurance pool, for

72. Report Parliamentary Standing Committee, *supra* Note 29, p. 8.
73. Based on private discussions with representatives from GIC-Re. See also: My Insurance Club News Desk (2011), "Crisis in Japan Awakens Need for Nuclear Insurance in India", available at: www.myinsuranceclub.com/insurance-news/crisis-in-japan-awakens-need-for-nuclear-insurance-in-india, accessed 31 March 2011 and *Insuring India News* (2011), "Nuclear Power Corporation of India May Opt for Self Insurance", available at: www.insuringindia.com/News/Nuclear-Power-Corporation-of-India-may-opt-for-self-insurance.aspx, accessed 31 March 2011.
74. Debate between GIC-Re and NPCIL representatives at the Nuclear Law Association's first Annual Conference on "Nuclear Energy Development in India: Role of Law and Legal Institutions", New Delhi, 18 February 2012.
75. Copy of presentation made by the GIC representative 18 February 2012, on file with author. See also: Report Parliamentary Standing Committee, *supra* Note 29, submissions made by Secretary, Financial Services, Ministry of Finance, pp. 8-9.
76. Report Parliamentary Standing Committee, *supra* Note 29, p. 9.
77. *Ibid.*

which international insurance pools would need to be tapped.[78] As discussed above, the government has accepted the responsibility of acting as the insurer of last resort for up to USD 300 million (as the maximum amount of liability in respect of each nuclear incident has been capped at SDR 300 million).[79] At an international level, when India becomes a party to the CSC, any balance amount towards compensation for nuclear damage or supplementary compensation (beyond the required minimum amount of SDR 300 million made available domestically), would be passed on to the CSC Fund, consisting of contributions made by the parties and would be based on a formula which takes into account a party's installed nuclear capacity and the United Nations rate of assessment.[80] Until then, however, domestic nuclear suppliers have submitted to the government that under the present scenario foreign firms have access to vast sums in insurance coverage, which are not available to them, thereby placing them in a more disadvantageous position.[81]

E. Recent developments

Public interest litigation

A public interest litigation is initiated with the object of protecting the interest of the community at large and not redressing an individual or private claim. In India, any member of the public having sufficient interest can maintain an action for judicial redress for public injury arising from a breach of public duty or from the violation of the Constitution, or any other law in force, and can seek the enforcement of such public duty and observance of such constitutional or legal provision.[82]

In 2011, a public interest litigation challenging various aspects of the Liability Act and related issues was filed with the Supreme Court of India by former senior government officials and eminent scientists (and not by local NGOs or neighbourhood residents, as may have been assumed).[83] This public interest litigation is placed explicitly against the background of the TEPCO Fukushima Daiichi accident and submits that the "petition is not against the use of nuclear energy *per se*". This public interest litigation requests the Supreme Court to, *inter alia*: (1) set up an independent expert body which would conduct a thorough cost-benefit analysis of all proposed nuclear facilities,

78. See also: "India May Have to Look Abroad for N-Cover", *Times of India*, 14 December 2011, available at: http://articles.timesofindia.indiatimes.com/2011-12-14/india-business /30515527_1 _nuclear-insurance-pool-nuclear-plant-operators-underwriting-capacity accessed 21 February 2012; and "Nuclear Insurance Pool Creation Fast-tracked", *Business Standard*, 23 March 2011, Mumbai, available at: www.business-standard.com/india/news/nuclear-insurance-pool-creation-fast-tracked/429414/ accessed 21 February 2012.
79. Section 6(1) and Section 7(1) of the Liability Act.
80. Article III and Article IV CSC. See in further detail: IAEA Explanatory Texts, *supra* Note 60, at 3.6, pp. 77-80. See also: "GIC Re Mobilises USD 78m for Nuclear Pool", *Financial Express*, 14 December 2011, available at: www.financialexpress.com/news/gic-re-mobilises-78m-for-nuclear-pool/887558/ accessed 21 February, 2012.
81. Presentation made by Larsen & Toubro, first Annual Conference, Nuclear Law Association, New Delhi, 18 February 2012. See also: "No Liability of Endless Nuclear Supplies, Reassures NPCIL", *Times of India*, 17 November 2011, available at: http://articles.timesofindia.indiatimes.com/2011-11-17/india/30409598_1_civil-nuclear-liability-liability-law-indian-and-foreign-suppliers, accessed 31 March 2012.
82. See, *inter alia*, Singh, G. (2005), *Environmental Law in India*, MacMillan, New Delhi, pp. 86-90; and Desai, A.H. and Muralidhar, S. (2000), "Public Interest Litigation: Potential and Problems" in *Supreme but not Infallible – Essays in Honour of the Supreme Court of India*, Oxford University Press, p. 159, available at: www.ielrc.org/content/a0003.pdf, accessed 11 April 2012.
83. *Common Cause & Ors. v. Union of India*, Writ Petition (Civil) No. 464 of 2011.

as well as a comparative cost-benefit analysis *vis-à-vis* other sources of energy, especially renewable energy; (2) declare all agreements signed between the government and private companies for supply of nuclear reactors and equipment as void *ab initio* given that these were signed without any competitive bidding process and without proper technical and safety evaluation (the contention further being that most of the nuclear reactor and equipment imports for which orders are being made "are of extremely dubious quality and safety standard"); (3) declare that in the case of a nuclear accident, all nuclear operators and nuclear suppliers would be jointly and severally and absolutely liable for civil damages, and their financial liability would be unlimited.[84]

Most critically, the petitioners in this matter request that the Supreme Court declare the Liability Act unconstitutional and void *ab initio* considering that it caps the amount of liability of the operator, excludes the liability of the operator in certain instances, and contains the principle of legal channelling to the operator, which deprives victims the right to sue suppliers. It is argued that these provisions violate the "polluter pays" principle[85] and the absolute liability principle,[86] which the Supreme Court has recognised as part of the law of the land under Article 21 of the Constitution (the fundamental "right to life" of citizens). Additionally, the anticipated reply from the government that certain provisions of the Liability Act had to be adopted to be in conformity with the CSC, is rebutted in this matter by the argument that the CSC should not be ratified as it is contrary to constitutional principles.

Other prayers in the writ petition include that an independent expert body be set up to conduct thorough safety reassessments of all NPPs. It must be noted in this context that NPCIL has undertaken such safety assessments after the accident at the Fukushima Daiichi nuclear power plant, the report of which is also publically available (which was not always the case with previous safety assessments).[87] Importantly, the matter demands that an independent expert nuclear regulator be set up in lieu of the existing Atomic Energy Regulatory Board (AERB) which directly falls under the supervision of the government's Atomic Energy Commission, a governance mechanism which has been criticised widely for lack of independence. It is noteworthy that after the TEPCO Fukushima Daiichi accident, the government decided to introduce the Nuclear Safety Regulatory Authority (NSRA) Bill, 2011, in

84. *Ibid*.
85. *Vellore Citizens Welfare Forum v. Union of India*, AIR 1996 SC 2715 (in this case, the Supreme Court not only held that the precautionary principle and the polluter pays principle govern the law of the country, but also that these key environmental principles are "part of customary international law", something which even international adjudicating bodies have been much more hesitant to ascertain). See also: Singh, G. (2005), *supra* Note 82, pp. 86-90.
86. *MC Mehta v. Union of India*, AIR 1987 SC 965, AIR 1987 SC 982, and AIR 1987 SC 1086 (also referred to as *Shriram Gas Leakage* case) in which the Supreme Court established that an entity which engages in hazardous or inherently dangerous activities which pose a potential threat to the health and safety of the persons working in the entity and residing in the surrounding areas, owes an "*absolute and non-delegable duty to the community to ensure that no harm results to anyone*" on account of the activity it has undertaken. The Supreme Court then went on to clarify that such absolute liability would not be subject to the exceptions provided under the tortuous principle of strict liability of *Rylands v. Fletcher*. It also went on to develop the quite unique "deep pocket theory" according to which the larger and more prosperous the enterprise, the greater must be the amount of compensation payable by it for the harm caused on account of an accident in the carrying on of the hazardous or inherently dangerous activity by the entity. In practice one has not seen too many applications of this "deep pocket theory". See further: Singh, G. (2005), *Environmental Law in India*, *supra* Note 82, at pp. 96-97 and pp. 177-178.
87. See http://npcil.nic.in/WriteReadData/Post_Fukushia1.html. The AERB also has undertaken safety assessments of the existing NPPs, but the actual report is not available online (www.aerb.gov.in/t/prsrel/p280311.pdf).

Parliament with the primary objective of the setting-up of an independent regulator. In the meantime, the Standing Committee has issued its report on the NSRA Bill, paving way for both Houses of Parliament to vote on the Bill.[88]

During the preliminary hearing of the litigation matter in question, the Supreme Court orally observed that it may not have the expertise to rule on highly technical matters, but that the issue of an adequate regulatory mechanism could be addressed. Such oral observations have in itself no legal significance, but may be indicative of the course of examination which the Supreme Court may follow.[89]

Moreover, seasoned Supreme Court lawyers are of the view that the Supreme Court is most likely to take a rather "hands-off" approach on matters pertaining to nuclear energy, as it has done in the past. Although this litigation matter has created uncertainty over the fate of the Liability Act, the general consensus among experts is that the Supreme Court will most likely not alter the Liability Act in any fundamental way.[90]

Another less well-known public interest litigation matter that was filed by two lawyers challenging the constitutionality of the Liability Act was filed around the same time before the Kerala High Court.[91] It is expected that the Kerala High Court, which did issue notice to the government, may defer its judgement until the Supreme Court has rendered its final judgement in the litigation matter discussed immediately above.[92]

Proposed amendments

To compound this legal uncertainty, an amendment was moved by one of the opposition parties at the end of December 2011, that would alter Rule 24 to such effect that the period of the right to recourse would be extended to 30 years and to decouple the amount of liability to be paid from the contract amount agreed upon with the supplier.[93]

In terms of procedure, Section 48(3) of the Liability Act specifies that every Rule made by the government under the Liability Act must be laid before both Houses of Parliament while it is in session for a total period of 30 days (whether in one or

88. A copy of the NSRA Bill (7 September 2011) as well as the Report of the Parliamentary Standing Committee (6 March 2012) are available at: www.prsindia.org/billtrack/the-nuclear-safety-regulatory-authority-bill-2011-1980/. On some of the expert opinions which influenced the Standing Committee, see: "Panel Plans Tweaks in Nuclear Safety Regulatory Authority Bill", Mail Online, 18 February 2012, available at: www.dailymail.co.uk/indiahome/indianews/article-2103159/Panel-plans-tweaks-Nuclear-Safety-Regulatory-Authority-Bill.html, accessed 28 March 2012.
89. Abraham, M. (2011) "Challenge to the Constitutional Validity of the Civil Liability for Nuclear Damage Act" (covering the preliminary Supreme Court hearing 14 November 2011), available at: www.nlain.org/blog/challengetotheconstitutionalvalidityofthecivilliabilityfornucleardamageact.
90. Divan, S. (2012) presentation made during the first Annual Conference of the Nuclear Law Association, held on 18 February 2012, at New Delhi (copy on file with the author).
91. *Yash Thomas Mannully & Anr. v. Union of India*, W.P (C) n° 27960 (2011), 20 October 2011, available at: www.dianuke.org/writ-petition-against-nuclear-liability-act-admitted-by-th-high-court-of-kerala/. This public interest litigation matter specifically challenges the constitutionality of Sections 3(1), 4(2), 4(4), 5, 6, 9(2), 15(2), 16(5), 18(b), 19, 20, 32(10), 35 and 38(1) of the Liability Act.
92. Unlike other common law countries such as the United States, India has State-wise High Courts, but only one Supreme Court, whose decisions are binding on all courts (Article 141 of the Constitution of India).
93. See "Trouble for Govt on Nuclear Liability Rules", *Hindustan Times* (28 December 2011), available at: www.hindustantimes.com/StoryPage/Print/788044.aspx, accessed 21 February 2012.

successive sessions), and that whether both Houses of Parliament agree to modify the Rule or not in the parliamentary session immediately following the aforementioned session, such decision by both Houses of Parliament will not have any retrospective impact.

In the meantime, the proposed amendment has been sent to the Committee on Subordinate Legislation, which will need to present its opinion to Parliament on this matter.[94]

F. Conclusion

The recently adopted Liability Act and Rules have ruffled many feathers and faced public outcry as well as deep concern from foreign suppliers. To an extent, the Rules have created more confusion rather than clarification with respect to some of the key provisions of the Liability Act. That said, it is not uncommon that in the process of drafting and redrafting a bill, a treaty, or a contract for that matter, certain conflicts may be created among various provisions, and those conflicts start leading a life of their own. Yet, at some point, such conundrums may have to be addressed more categorically.

It is worth recalling that such uncertainty was felt in the 1980s when Switzerland and Germany moved towards an unlimited operator liability regime. Ultimately, the revised Paris Convention did take into account parties with such unlimited liability models.[95] Moreover, as explained by Norbert Pelzer, a German expert in nuclear liability law, the drafters of these laws – which in a way merely tried to harmonise the nuclear liability law with general tort law – came to the conclusion that "it would probably have no effect on suppliers, because already today there are states without legal channelling, which has not prevented suppliers from continuing supplying to nuclear installations".[96] However, variations among national liability regimes may exacerbate the phenomenon of fragmentation of international conventions pertaining to the nuclear sector, with states being party to either the 1963 or revised Vienna Convention regime; the 1960 or revised Paris Convention regime; with a mixed adherence to the 1988 Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention; and only a handful of key nuclear power states having joined the CSC regime.[97] Yet what the TEPCO Fukushima Daiichi accident did lay bare is that, in the end, the government, in the public interest, may have to bear

94. "CPI(M) Moves Amendment to Rules on Nuclear Liability Act", *The Hindu*, 23 December 2011, available at: www.thehindu.com/news/national/article2739179.ece?css=print, accessed 21 February 2012. In the meanwhile, documents submitted to the Committee on Subordinate Legislation are confidential. Hence, one has to await the final Report of the Committee to make a more detailed assessment of the fate and possible consequences to be attached to the proposed amendments of the Liability Rules.
95. Reyners, P. (2012), discussions as part of Chairman of the Panel discussion on Liability and Compensation, first Annual Conference, Nuclear Law Association, 18 February 2012, New Delhi.
96. See Pelzer, N. (1999), *supra* Note 70, p. 441 and p. 443.
97. Fragmentation of international law is not a new phenomenon and attracts scholarly attention in the field of human rights law, environmental law, the fisheries regimes, international trade law, etc. See e.g. in the context of WTO law: Pauwelyn, J. (2004), "Bridging Fragmentation and Unity: International Law as a Universe of Inter-connected Islands", 25 *Michigan Journal of International Law*, 903.

the cost of any large-scale nuclear disaster, regardless of domestic legal provisions to the contrary.[98]

The CSC regime, which will take time to enter into force, contains a grandfather clause tailored to certain legal requirements of the United States. It is quite possible that the Indian government will simply place the ball in the court of the other CSC parties and wait until a solution is proposed by the CSC regime and its parties. From a negotiation point of view, India is not an aggressive "*demandeur*" to be party to the CSC and may have devised a Janus-faced strategy: willing to sign, and apparently to ratify, but not particularly in a hurry to propose any solution to the possible tension between some aspects of its domestic law and the current language of the CSC. Its calculation may very well be that business interests will take over, drive the opinions of the other parties and lead to an eventual India-specific solution. It has also been suggested that the International Atomic Energy Agency may be asked to express its opinion on the matter (a route very much favoured by the United States).

To an extent, the Indian government is caught between a rock and a hard place. On the one hand, the international nuclear business and legal community accuses India of not playing by the rules set out by the international nuclear liability regimes. On the other hand, in the opinion of its domestic constituency which places this debate in the post-Bhopal context, the government has not gone far enough to protect the interest of its citizens with its nuclear liability regime, having given in to the international business interests by capping the amount of liability of the operator and limiting the right of recourse of the operator against the supplier. The two public interest litigation matters which have been filed before the Supreme Court of India and the Kerala High Court raise many valid legal questions in terms of the relationship of some of the provisions contained in the Liability Act and Rules *vis-à-vis* well-established constitutional principles developed by the Supreme Court (absolute liability, "polluter pays" principle, and the precautionary principle).

Not surprisingly, the uncertainty surrounding the interpretation of Section 17(b), the scope of Section 46 of the Liability Act, and the absence of a nuclear insurance pool is of great concern to Indian nuclear equipment manufacturers as well.[99] Given that the Liability Act was ultimately adopted to "help the domestic nuclear equipment manufacturing industry to develop and grow",[100] the government may want to instill additional confidence in the Indian nuclear supplier community by clarifying the various loose ends under the current nuclear liability regime.

As discussed, the debates preceding the adoption of the Liability Act were centered around domestic concerns and did not evolve by taking international nuclear treaties, including the CSC, as their starting point. This approach may not be unusual for countries which have never been parties to any international nuclear liability convention before. As pointed out by Norbert Pelzer in his paper on nuclear new build, the 21st century may very well sharpen the contrast between two regimes:

98. See also: Reyners, P., *supra* Note 95, while also referring to the keynote address by Mr. Roman Herzog, then Vice-President of the German Federal Constitutional Court and later President of the Federal Republic of Germany, at the 1984 Munich Symposium on Nuclear Third Party Liability and Insurance, extensively quoted by Norbert Pelzer in his paper (1999), *supra* Note 70, p. 446 ("If we visualize the very worst possible scenario in the operation of a nuclear power plant, then accidents comparable with the greatest disasters in the history of mankind are no doubt conceivable. (…) You will no doubt retort that none of these disasters are governed by liability provisions applicable by analogy to the problem under discussion.")
99. Head, Legal Department, Larsen & Toubro (2012), presentation at the first Annual Conference, Nuclear Law Association, New Delhi, 18 February 2012.
100. Report Parliamentary Standing Committee, *supra* Note 29, p. 1.

one which is based on the "triad Vienna Convention-Joint Protocol-Paris Convention", and the other based on the CSC.[101] This contrast must be viewed against the background that many major nuclear states are still not party to any international nuclear liability convention.[102]

The fact that the CSC has not taken off as anticipated may also play into the hand of countries such as India with a very ambitious nuclear power programme involving 20 existing NPPs, 6 NPPs under various stages of construction, and an additional 19 NPPs on the anvil.[103] Put differently, the negotiating balance may at some point tip in favour of such new nuclear build countries, which in turn may modify certain fundamental, standard nuclear liability principles. More specifically, the Liability Act did not attack the cornerstone principle of legal channelling to the operator as such, but expanded the right of recourse of the operator. As nuclear law experts have observed in the past, from a public policy perspective it may not always be easy to justify the exclusion of a group of possible tortfeasors, such as suppliers, from any liability whatsoever in certain situations.[104] The Indian Parliament decided to unravel this Gordian knot by inserting an additional ground for recourse of the operator when the nuclear incident has resulted as a consequence of "supply of equipment or material with patent or latent defects or sub-standard services", neither more nor less.[105]

101. Pelzer, N. (2009), "Nuclear New Build – New Nuclear Law?", *Nuclear Law Bulletin*, No. 84, Vol. 2009/2, OECD, Paris, p. 19, available at: www.oecd-nea.org/law/nlb/NLB-84-E.pdf#page=7.
102. *Ibid*. p. 18.
103. See *supra* notes 7, 8 and 9. The same can certainly be said about China, see e.g. *The Economist*, *supra* Note 2.
104. See Pelzer, N. (2009), *supra* Note 101, p. 17: "Legal channeling provides benefits for all stakeholders and should not be eliminated. Yet, one might consider extending the right of recourse of the operator in certain well defined and limited cases."; and Pelzer, N. (1999), *supra* Note 70, pp. 428-429: "Channeling the liability onto the operator is a major cornerstone of international harmonization and is thus part of an adequate and just legal regime. For that reason, I strongly support this principle ... Despite this clear statement, I do not feel entirely comfortable with channeling. Nobody can deny that the exemption of a certain group of possible tortfeasors from any liability is difficult to justify and may entail unjust results. This becomes evident if we take the following case: a nuclear incident occurs due to defective supply. The supplier acted with gross negligence. Victims remain uncompensated because the means of the operator solely liable are exhausted. Nevertheless, the supplier is still 'untouchable' for victims and may even keep his profit. This is obviously an unsatisfactory situation and there should be a remedy."
105. Caroll, L. (1871), *Through the Looking-Glass, and What Alice Found There*, Macmillan, UK, p. 224, Chapter 6: "I don't know what you mean by 'glory', Alice said. Humpty Dumpty smiled contemptuously. 'Of course you don't — till I tell you. I meant there's a nice knock-down argument for you!' But 'glory' doesn't mean 'a nice knock-down argument', Alice objected. When I use a word, Humpty Dumpty said, in rather a scornful tone, it means just what I choose it to mean — neither more nor less."

Legal aspects of the control and repression of illicit trafficking of nuclear and other radioactive materials
Is there a need for an international convention?

*by Scott Spence**

It is generally recognised that illicit trafficking of nuclear and other radioactive materials is a serious problem, and one that must be tackled with a comprehensive response involving national governments as well as a number of intergovernmental organisations including the International Atomic Energy Agency (IAEA). The IAEA notes that 1 773 incidents were reported to its Illicit Trafficking Database, or ITDB, between January 1993 and December 2009, and that 351 of these involved "… unauthorized possession and related criminal activities" such as "… illegal possession, movement or attempts to illegally trade in or use nuclear material or radioactive sources".[1] The IAEA adds that 222 more incidents were confirmed between July 2009 and June 2010 and concludes that:

- the availability of unsecured nuclear and other radioactive material persists;
- effective border control measures help to detect illicit trafficking, although effective control is not uniformly implemented at all international border points; and
- individuals and groups are prepared to engage in trafficking this material.[2]

A disturbing trend is trafficking in particularly sensitive regions of the world, such as in countries that were formerly a part of the former Soviet Union. In November 2010, Georgian officials seized four individuals allegedly trying to sell cesium-137, which though fairly common can be used to make a radiological dispersion device (RDD) or "dirty bomb".[3] This closely followed a court case in Georgia involving Armenian nationals who had attempted to sell weapon-grade plutonium. More recently, in June 2011, Moldovan police arrested six individuals suspected of trafficking in uranium-235.[4]

In view of the problem, this paper considers whether an international convention specifically targeting illicit trafficking is needed or not. The paper does not go conceptually beyond the legal aspects of controlling and repressing illicit trafficking; rather, it will look at whether the existing system of international and national legal frameworks is necessary and sufficient. The following topics will be examined in order to reach a conclusion in Part V about the need for a convention: the nature and scale

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1. IAEA Illicit Trafficking Database, www-ns.iaea.org/security/itdb.asp, accessed 15 November 2011.
2. *Ibid.*
3. Global Security Newswire, http://gsn.nti.org/gsn/nw_20101122_6064.php, accessed 15 November 2011.
4. Global Security Newswire, http://gsn.nti.org/gsn/nw_20110630_3393.php, accessed 15 November 2011.

of the illicit trafficking problem (Parts I and II), the existing international regime to control illicit trafficking (Part III) and the role of national legislation (Part IV).

Part I: the nature of the problem

A. Defining illicit trafficking

The first obstacle to understanding the nature of illicit trafficking of nuclear and other radioactive materials is definitional. Does the term "illicit" adequately cover activities that are in fact unlawful or illegal, or does it only suggest that activities are disapproved of or violate ethical norms? Is the term "trafficking" related only to cross-border movements of nuclear and other radioactive materials or can it involve other activities such as use? And, finally, what do we mean by the expression "nuclear and other radioactive materials"?

To quickly dispense with the first question above, whether "illicit" can refer to activities that are prohibited by law, the answer is affirmative. "Illicit" clearly refers to activities that are unlawful or prohibited.[5] Illicit trafficking is differentiated from accidents or inadvertent movements of nuclear and other radioactive materials because the trafficker has intent – whether criminal, terrorist or political – behind his actions. The definition for illicit trafficking in the "Prevention of the Inadvertent Movement and Illicit Trafficking of Radioactive Materials" notably includes the term "intent".[6]

The IAEA also gives some definitional guidance on illicit trafficking. The scope of the ITDB is described as covering "… incidents involving unauthorized acquisition, provision, possession, use, transfer or disposal of nuclear and other radioactive materials, whether intentionally or unintentionally, with or without crossing international borders".[7] In the *Handbook on Nuclear Law*, it is defined as "a situation which relates to the unauthorized receipt, provision, use, transfer or disposal of nuclear materials, whether intentional or unintentional and with or without crossing international borders".[8] The more recent *Combating Illicit Trafficking in Nuclear and other Radioactive Material Reference Manual* considers illicit trafficking to include "… criminal or unauthorized acts both within a State and between States" such as "… the import, export, possession, sale, delivery, movement, use, storage, disposal or transfer of nuclear and other radioactive material".[9] These permutations of the definition of illicit trafficking are synthesised by Carlton Stoiber as follows: "the unauthorized receipt, use, possession, transfer or disposal of nuclear or other

5. Nolo, www.nolo.com/dictionary/illicit-term.html, accessed 16 November 2011.
6. IAEA (2002), "Prevention of the Inadvertent Movement and Illicit Trafficking of Radioactive Materials", IAEA Document TECDOC-1311, p. 15.
7. IAEA, *Illicit Trafficking and Other Unauthorized Activities involving Nuclear and Radioactive Materials Fact Sheet*, available at: www.iaea.org/newscenter/features/radsources/pdf/fact_figures2005.pdf, accessed 15 November 2011.
8. Stoiber, C. *et al.* (2003), *Handbook on Nuclear Law*, IAEA, Vienna, p. 154.
9. IAEA (2007), *Combating Illicit Trafficking in Nuclear and other Radioactive Material Reference Manual*, IAEA Nuclear Security Series No. 6 (jointly sponsored by the European Police Office, International Atomic Energy Agency, International Police Organization, and World Customs Organization), p. 2.

radioactive material, whether intentional or unintentional, or whether the material has crossed an international border".[10]

Interestingly, the 2002 publication "Prevention of the Inadvertent Movement and Illicit Trafficking of Radioactive Materials" acknowledges the IAEA's broader definition of illicit trafficking, but uses a definition informed by the needs of police, customs and law enforcement officials. It defines illicit trafficking as "any intentional unauthorized movement or trade (particularly international) of radioactive materials (including nuclear materials) with criminal intent".[11]

B. Nuclear and other radioactive materials

If there were to be an international convention (or more robust national measures) to prevent illicit trafficking, it would be wise to include both nuclear and radioactive materials just as the IAEA definitions for the concept suggest. Trafficking in nuclear materials is highly dangerous because their end-use in a weapon by malevolent actors could lead to consequences too horrifying to contemplate. The *Combating Illicit Trafficking in Nuclear and other Radioactive Material Reference Manual* combines the definitions of "special fissionable material" and "source material", borrowed from Article XX of the Statute of the IAEA,[12] into a workable definition for nuclear material. Accordingly, nuclear material is "… plutonium-239; uranium-233; uranium enriched in the isotopes 235 or 233; and any material containing one or more of the foregoing …", i.e. special fissionable material; or "… uranium containing the mixture of isotopes occurring in nature; uranium depleted in the isotope 235 and thorium in the form of metal, alloy, chemical compound, or concentrate", i.e. source material.[13]

The same manual points out that most regulated radioactive materials would cause little injury or contamination if dispersed because the amounts involved, used in civilian applications (e.g. science, industry, medicine and agriculture), are small.[14] These are materials otherwise known as "radioactive sources" in the Code of Conduct on the Safety and Security of Radioactive Sources, which will be discussed in more detail in Part III.B.

The greater concern is unregulated radioactive materials that could be more easily trafficked and, if dispersed through an RDD, cause significant injury and contamination.[15] These materials are otherwise known as "orphan sources" in the Code of Conduct mentioned above, because they are outside of regulatory control. They were never under such control, or they have been abandoned, lost, misplaced, stolen or transferred without proper authorisation.[16] In the case of either regulated or unregulated radioactive materials, their inclusion in a legal framework for the prevention of illicit trafficking is indispensable.

10. Stoiber, C. (2011), "International Legal Framework for Nuclear Security: Physical Protection and Illicit Trafficking", slideshow presented at the International School of Nuclear Law, OECD/NEA and University of Montpellier 1, Montpellier, France, 22 August-2 September 2011), slide 33 (copy on file with the author).
11. IAEA (2002), "Prevention of the Inadvertent Movement and Illicit Trafficking of Radioactive Materials", IAEA Document TECDOC-1311, p. 15.
12. Statute of the IAEA (1956), available at: www.iaea.org/About/statute_text.html.
13. IAEA (2007), *Combating Illicit Trafficking in Nuclear and other Radioactive Material Reference Manual*, IAEA Nuclear Security Series No. 6 (jointly sponsored by the European Police Office, International Atomic Energy Agency, International Police Organization, and World Customs Organization), p. 7.
14. *Ibid*. at pp. 5-7.
15. *Ibid*. at p. 5.
16. IAEA (2004), "Code of Conduct on the Safety and Security of Radioactive Sources", IAEA Document INFCIRC/663, Para. 1.

Part II: the scale of the problem

A. The nuclear black market

The largest nuclear trafficking network to date involved the Pakistani metallurgist Abdul Qadeer Khan. A.Q. Khan, and others, oversaw a global network which would contribute to the development of Pakistan's nuclear weapons programme, and which would ultimately reach Iran, Libya, North Korea and other countries. These countries also developed their own proliferation networks involving private enterprises and individuals. Though these networks are not known to have involved trafficking of nuclear or other radioactive materials, they give an indication of how weak laws and regulations, including export controls, as well as poor enforcement, can enable illicit trafficking.

Pakistan did not originally intend to engage in using nuclear materials to produce weapons. The Pakistan Atomic Energy Commission (PAEC), which "… traces its origin to 1954, was founded to promote peaceful uses of atomic energy, inspired and assisted by the US 'Atoms for Peace' programme".[17] Moreover, though Pakistan has never been a party to the Treaty on the Non-Proliferation of Nuclear Weapons, it has had six facilities under IAEA safeguards and has entered into nine agreements under Safeguard Document INFCIRC/66/Rev.2 (or its earlier versions) since 1962.[18] Several other facilities are not under safeguards, however.[19]

17. IISS (2007), "Nuclear Black Markets: Pakistan, A.Q. Khan and the Rise of Proliferation Networks", *IISS Strategic Dossier*, International Institute for Strategic Studies, London, p. 15.
18. These are IAEA (1962), "The Texts of the Instruments Connected with the Agency's Assistance to Pakistan in Establishing a Research Reactor Project", IAEA Document INFCIRC/34; IAEA (1968), "The Texts of the Instruments Concerning the Agency's Assistance to Pakistan in Connection with the Establishment of a Nuclear Power Reactor Project", IAEA Document INFCIRC/116; IAEA (1969), "The Text of the Safeguards Transfer Agreement Relating to the Bilateral Agreement between Pakistan and Canada", IAEA Document INFCIRC/135; IAEA (1976), "The Text of the Safeguards Agreement of 18 March 1976 between the Agency, France and Pakistan", IAEA Document INFCIRC/239; IAEA (1977), "The Text of the Agreement of 2 March 1977 between the Agency and Pakistan for the Application of Safeguards in Connection with the Supply of Uranium Concentrate", IAEA Document INFCIRC/248; IAEA (1990), "Agreement of 10 September 1991 between the International Atomic Energy Agency and the Government of the Islamic Republic of Pakistan for the Application of Safeguards in Connection with the Supply of a Miniature Neutron Source Reactor from the People's Republic of China", IAEA Document INFCIRC/393; IAEA (1993), "Agreement of 24 February 1993 between the International Atomic Energy Agency and the Government of the Islamic Republic of Pakistan for the Application of Safeguards in Connection with the Supply of a Nuclear Power Station from the People's Republic of China", IAEA Document INFCIRC/418; IAEA (2007), "Agreement between the International Atomic Energy Agency and the Government of the Islamic Republic of Pakistan for the Application of Safeguards in Connection with the Supply of a Nuclear Power Station from the People's Republic of China", IAEA Document INFCIRC/705; and IAEA (2011), "Agreement between the International Atomic Energy Agency and the Government of the Islamic Republic of Pakistan for the Application of Safeguards in Connection with the Supply of Two Nuclear Power Stations from the People's Republic of China", IAEA Document INFCIRC/816, available at: www.iaea.org/OurWork/SV/Safeguards/documents/sir_table.pdf, accessed 21 November 2011.
19. IISS (2007), "Nuclear Black Markets: Pakistan, A.Q. Khan and the Rise of Proliferation Networks", *IISS Strategic Dossier*, International Institute for Strategic Studies, London, p. 19. See also Goldberg, J. and Ambinder, M. (2011), "The Ally from Hell", *The Atlantic*, December 2011, pp. 49-64.

In 1972, after a war with India, then President Zulfiqar Ali Bhutto asked PAEC, directed by Munir Ahmad Khan, to build a nuclear weapon in five years.[20] They were assisted by A.Q. Khan who contributed his knowledge of centrifuge technology to Pakistan's nuclear weapon project starting in the mid-1970s, which relied initially on highly enriched uranium instead of plutonium from spent reactor fuel.[21] PAEC would later overcome technical obstacles and expand into separating enough plutonium from spent fuel for weapons production.[22]

Pakistan's procurement network, in which A.Q. Khan and others played a role, relied on legitimate (state-to-state) and illegitimate (firm-to-state) means to function, but "*the weakness of export controls* and the fatalism of Western suppliers were the strongest factors abetting the import network".[23] A.Q. Khan and others relied on Pakistan's embassy network and their diplomatic pouch privileges to transfer goods and technology; used front companies and multiple buyers and intermediaries; and relied on personal contacts, particularly in Europe, for technical information.[24] They also worked around and subverted export controls, including the falsification of end-user documentation.[25]

B. Nuclear materials trafficking

There is a significant difference between a state such as Iran, North Korea or Pakistan going through the nuclear black market to obtain goods and technology to produce fissionable material for a nuclear weapon, as opposed to obtaining the nuclear material directly. The distinction can be understood as: "… illegal acquisition of weapons-usable nuclear material from existing stockpiles versus the development of a complete infrastructure to produce such material".[26] The worry, however, is that a crude nuclear device could be assembled with illicitly obtained materials, even in the absence of the expertise and technology required to enrich uranium or separate plutonium.[27]

Several databases have emerged over the past 20 years since the fall of the Soviet Union to track illicit trafficking in nuclear and other radioactive materials. These databases include the IAEA's Illicit Trafficking Database or ITDB (noted in the introduction to this paper), the World Custom Organisation's smuggling database, Interpol's nuclear incidents database, as well as databases from the Lawrence Livermore and Los Alamos national laboratories, the Monterey Center for Nonproliferation Studies and the University of Salzburg.[28] The Monterey Center's database is the only one of these that is available to the public.[29] The IAEA's ITDB may be "the best known and the most authoritative" because it relies on information which has been confirmed through

20. IISS (2007), "Nuclear Black Markets: Pakistan, A.Q. Khan and the Rise of Proliferation Networks", *IISS Strategic Dossier*, International Institute for Strategic Studies, London, p. 15.
21. *Ibid*. at pp. 16-17.
22. *Ibid*. at p. 21.
23. *Ibid*. at p. 28, emphasis added.
24. *Ibid*. at pp. 27-28.
25. *Ibid*. at p. 27.
26. *Ibid*. at p. 119.
27. *Ibid*.
28. Some of these databases were identified in IISS (2007), "Nuclear Black Markets: Pakistan, A.Q. Khan and the Rise of Proliferation Networks", *IISS Strategic Dossier*, International Institute for Strategic Studies, London and researched by the author. The University of Pittsburgh database mentioned in the Strategic Dossier is supposedly run by the Ridgeway Center for International Security Studies, but could not be found online. The Stanford University database has been taken over by the University of Salzburg.
29. Available at: NIS Nuclear Trafficking Collection, www.nti.org/db/nistraff/index.html.

official channels, rather than on open source information, as is the case with the databases run by research and educational institutions.[30]

Nevertheless, the Database on Nuclear Smuggling, Theft, and Orphan Radiation Sources (DSTO) – formerly run by Stanford University and now maintained by the University of Salzburg (Division of Physics and Biophysics) – has combined open source reports and confirmed incidents[31] by the IAEA to give a good picture of the scale of nuclear trafficking.[32] According to the DSTO, between 1991 and 2005[33] there were 1 440 incidents, including 1 053 thefts and seizures and 387 incidents involving orphan sources.[34] Apparently, however, the large majority of these incidents did not involve nuclear materials, or for that matter particularly dangerous radioactive materials, which could have been used to produce a nuclear weapon or dirty bomb.[35] Of the incidents that did involve nuclear materials, over 90% of thefts and seizures involved low-grade material.[36] On the other hand, the DSTO recorded 38 incidents involving highly enriched uranium or plutonium, even though some of them may not have been credible as they were never officially confirmed.[37]

The IAEA's ITDB is based on data from 111 participating countries. The most recent breakdown of statistics from the ITDB were released in a 2010 factsheet and give an overview of the period from 1993 to the end of 2009. The factsheet notes that 1 773 confirmed incidents had been reported and that "… 351 incidents involved unauthorized possession and related criminal activities, 500 incidents involved reported theft or loss and 870 incidents involved other unauthorized activities and events".[38] Regarding nuclear materials, the factsheet notes that, during this period, "… fifteen confirmed incidents involved unauthorized possession of high enriched uranium or plutonium. Some of these incidents involved attempts to sell or traffic these materials across international borders. A small number of these incidents involved seizures of kilogram quantities of potentially weapons-usable nuclear material, but the majority involved gram quantities."[39]

30. IISS (2007), "Nuclear Black Markets: Pakistan, A.Q. Khan and the Rise of Proliferation Networks", *IISS Strategic Dossier*, International Institute for Strategic Studies, London, p. 120.
31. Incidents, according to the IAEA, range from "… illegal possession, attempted sale and smuggling to unauthorized disposal of material and discoveries of lost radioactive sources". They can involve "… all types of nuclear material (i.e. uranium, plutonium and thorium), naturally occurring and artificially produced radioisotopes and radioactively contaminated material, such as scrap metal … or the intentional offering for sale of benign material that is purported to be nuclear or otherwise radioactive, i.e. scams". IAEA, ITDB Factsheet, p. 1, available at: www-ns.iaea.org/downloads/security/itdb-fact-sheet.pdf, accessed 18 November 2011.
32. IISS (2007), "Nuclear Black Markets: Pakistan, A.Q. Khan and the Rise of Proliferation Networks", *IISS Strategic Dossier*, International Institute for Strategic Studies, London, pp. 120-21.
33. For the purposes of this paper, 2005 is the latest date for which statistics from the DSTO are available because (i) it is a restricted database and (ii) the author relied on the excellent 2007 *IISS Strategic Dossier* for the information.
34. IISS (2007), "Nuclear Black Markets: Pakistan, A.Q. Khan and the Rise of Proliferation Networks", *IISS Strategic Dossier*, International Institute for Strategic Studies, London, p. 121.
35. *Ibid*.
36. *Ibid*. at p. 123.
37. *Ibid*. at pp. 124-125.
38. IAEA (2011), ITDB Factsheet, p. 1, available at: www-ns.iaea.org/downloads/security/itdb-fact-sheet.pdf, accessed 18 November 2011.
39. *Ibid*.

C. Radioactive materials trafficking

The ITDB also keeps track of illicit trafficking of other radioactive materials. During the period 1993-2009, most thefts or loss involved radioactive rather than nuclear materials, and most of these items had been used in industry or medicine.[40] The stolen or lost materials ranged from Category 2 (potentially lethal) to Category 5 (less hazardous). The ITDB factsheet concludes from the numbers of thefts and losses that there is a "… need to improve security measures for such sources as well as enhance the regulatory arrangements governing their use, storage, transport and disposal".[41]

The factsheet also indicates a significant rise since 2003 (probably due to the deployment of better detection equipment) in the number of "other unauthorized activities and events" that involve "… unauthorized disposal (e.g. radioactive sources entering the scrap metal industry), unauthorized movement (e.g. scrap metals contaminated with radioactive material being shipped across international borders) or the discovery of radioactive material (e.g. uncontrolled radioactive sources)".[42]

Finally, though the available data is older, the DSTO corroborates the general trend that there is far more trafficking in radioactive rather than in nuclear materials: "…of the 1,440 incidents collected in the DSTO, 341 (24%) involved nuclear materials, 1,061 (74%) involved other radioactive materials, including contaminated metal, and 38 (2%) involved both nuclear and other radiation sources".[43]

Part III: the existing international legal regime

A. Introduction

The report reviewed and analysed for Part II of this paper – "Nuclear Black Markets: Pakistan, A.Q. Khan and the Rise of Proliferation Networks" – draws the conclusion that weak export controls can enable illicit trafficking and the proliferation of dual-use goods and technology and nuclear and other radioactive materials. The report calls for improvement of national export controls and invigorated implementation of UN Security Council Resolution 1540 (discussed in more detail in Part III.C.4), along with "… diplomatic efforts, verification tools, law enforcement actions, financial measures, counter-proliferation initiatives and intelligence collection …".[44]

The existing international legal regime to prevent illicit trafficking is analysed in Part III of this paper, with a particular look to see if there are provisions for thwarting cross-border movements of nuclear and other radioactive materials, in the various of international nuclear conventions and other legal instruments. This approach is informed by the conclusions of the Nuclear Black Markets report, as well as by the various definitions for illicit trafficking discussed in Part I.A. Provisions that are reviewed in the relevant instruments include, if applicable, definitions; prohibitions; jurisdiction; measures to account for, secure and physically protect

40. *Ibid*. at p. 3.
41. *Ibid*. at p. 4.
42. *Ibid*.
43. IISS (2007), "Nuclear Black Markets: Pakistan, A.Q. Khan and the Rise of Proliferation Networks", *IISS Strategic Dossier*, International Institute for Strategic Studies, London, p. 121.
44. *Ibid*. at pp. 160-161.

nuclear and other radioactive materials; export controls; national implementation;[45] and legal assistance and co-operation.

B. International Atomic Energy Agency (IAEA) legal and other instruments

The member states of the IAEA have adopted a number of international nuclear conventions, for which the organisation's Director General is the depositary. They have also agreed to utilise several other instruments such as codes of conduct and safeguards agreements to ensure the safety and security of nuclear and radioactive materials in their territories. Many of these may have some utility in controlling and repressing illicit trafficking.

1. Treaty on the Non-Proliferation of Nuclear Weapons

The Treaty on the Non-Proliferation of Nuclear Weapons,[46] or NPT, opened for signature in 1968 and entered into force in 1970. It has 189 states parties although, notably, India, Israel, and Pakistan have yet to adhere to the convention, and North Korea withdrew in 2003.[47] The NPT is legally binding on its states parties. Though the NPT is not an IAEA convention,[48] nor is the IAEA its secretariat, the organisation is nevertheless implicated in its functioning through Articles III (safeguards) and VIII (amendments). The IAEA's role in safeguards will be discussed further in Part III.B.4 and 5.

NPT Articles I and II arguably play a role in prohibiting illicit trafficking. Article I requires nuclear weapons states (NWS) to refrain from transferring "… to any recipient whatsoever nuclear weapons or other nuclear explosive devices or control over such weapons or explosive devices directly, or indirectly …" or to "… assist, encourage, or induce any non-nuclear-weapon state [NNWS] to manufacture or otherwise acquire …" all of the above.[49] Article II requires NNWS to refrain from receiving, manufacturing, acquiring, or seeking or receiving assistance to manufacture nuclear weapons or other nuclear explosive devices, etc.

NPT Article III(2) requires all NPT states parties to refrain from providing "… (a) source or special fissionable material, or (b) equipment or material especially designed or prepared for the processing, use or production of special fissionable material, to any non-nuclear-weapon State for peaceful purposes, unless the source or special fissionable material …" is subject to the safeguards required by sub-article (1).[50] It is worth recalling that the terms "source" and "special fissionable material" in (a) are borrowed from Article XX of the Statute of the IAEA and used in combination for the definition of "nuclear material" in the *Combating Illicit Trafficking in Nuclear and other Radioactive Material Reference Manual* (see Part I.B).

If NPT Articles I to III are taken together, a state party to the NPT, which has effectively implemented its obligations into national law, will be able to prosecute

45. This concept receives additional consideration in Part IV of this paper.
46. Treaty on the Non-Proliferation of Nuclear Weapons (1968).
47. Note from the editor: NPT state parties have never taken a collective position on the legality of the DPRK's withdrawal from the NPT. A recent report by the Director General of the IAEA entitled "Application of Safeguards in the Democratic People's Republic of Korea" indicates that the legal status of the DPRK *vis-à-vis* the NPT is a matter to be clarified by the state parties to the NPT. See IAEA (2011), IAEA Document GOV/2011/53GC(55)/24 available at: www.iaea.org/About/Policy/GC/GC55/GC55Documents/English/gc55-24_en.pdf.
48. The NPT's depositaries are the Russian Federation (formerly the Soviet Union), the United Kingdom and the United States.
49. Treaty on the Non-Proliferation of Nuclear Weapons (1968), Article I.
50. *Ibid.* at Article III.

those who traffic in nuclear weapons or nuclear explosive devices, or in nuclear materials or related equipment in the absence of or in violation of safeguards.

2. Convention on the Physical Protection of Nuclear Material

The Convention on the Physical Protection of Nuclear Material,[51] or CPPNM, opened for signature in 1980 and entered into force in 1987; the depositary is the Director General of the IAEA. The CPPNM "… is the only international legally binding undertaking in the area of physical protection of nuclear material … [and] establishes measures related to the prevention, detection and punishment of offenses relating to nuclear material".[52]

The CPPNM only covers "nuclear material", which is defined in the convention to include: "… plutonium except that with isotopic concentration exceeding 80% in plutonium-238; uranium-233; uranium enriched in the isotope 235 or 233; uranium containing the mixture of isotopes as occurring in nature other than in the form of ore or ore-residue; any material containing one or more of the foregoing …".[53] Accordingly, it does not cover other radioactive materials, i.e. regulated radioactive or orphan sources.

The CPPNM covers nuclear material while it is in domestic use, storage and transport, as well as during international transport.[54] States parties are required to protect nuclear material at the levels in Annex I to the convention, when it is in international transport in the state's territory or going to or from its territory on a ship or aircraft under its jurisdiction.[55] Article 4 ensures that there are no loopholes in the levels of protection applied when nuclear material is shipped between states parties or states parties and non-states parties.

CPPNM Article 5 requires states parties to identify a point of contact responsible for protecting nuclear material, and to notify this to the IAEA. States parties are also required under this article to provide co-operation and assistance in the event of "theft, robbery or any other unlawful taking" of nuclear material.

The CPPNM also includes several articles which place a heavy emphasis on ensuring that certain acts involving nuclear materials are punished and penalised, and that those who commit these crimes cannot escape prosecution. Article 7 requires states to punish and penalise the following activities involving nuclear material: unlawful receipt, possession, use, transfer, altercation, disposal, or dispersal, which could cause death, injury or property damage [Art. 7(1)(a)]; theft or robbery [Art. 7(1)(b)]; obtaining nuclear material through embezzlement or fraud [Art. 7(1)(c)]; demanding it by threat or use of force [Art. 7(1)(d)]; and threats to use it to cause death, injury or property damage, or threats to steal or rob nuclear material in order to compel a natural or legal person, international organisation or state to do or refrain from doing any act [Art. 7(1)(e)]. Article 7 also requires states to punish and penalise attempts and participation [Art. 7(1)(f)-(g)].

51. Convention on the Physical Protection of Nuclear Material (1980).
52. IAEA Background to the Convention on the Physical Protection of Nuclear Material, www.iaea.org/Publications/Documents/Conventions/cppnm.html, accessed 20 November 2011.
53. Convention on the Physical Protection of Nuclear Material (1980), Article 1(a).
54. "International transport" is defined in Article 1(c) as "… carriage of a consignment of nuclear material by any means of transportation intended to go beyond the territory of the State where the shipment originates beginning with the departure from a facility of the shipper in that State and ending with the arrival at a facility of the receiver within the State of ultimate destination".
55. Convention on the Physical Protection of Nuclear Material (1980), Articles 2(1)-(2), 3.

CPPNM Article 8 requires states parties to exercise jurisdiction over the offences in Article 7 when they are committed in a state's territory or on board a ship or aircraft registered in the state; when the offender is a national of the state; and when the offender is present in the state's territory and the state does not extradite him. States parties are also given the option in Article 8(4) to exercise jurisdiction over Article 7 offences when they are involved in international transport of nuclear material as the importing or exporting state.

CPPNM Articles 9 to 11 ensure that perpetrators of crimes involving nuclear material will be detained and prosecuted or extradited, in line with their national legislation and agreements with other states. Article 13 requires states parties to provide one another assistance in criminal proceedings related to enforcement of the convention. Article 14 requires states parties to inform the IAEA of its laws and regulations to implement the convention.

A diplomatic conference, in July 2005, adopted an Amendment to the Convention on the Physical Protection of Nuclear Material.[56] The amendment will only enter into force when it has been ratified by two-thirds of the state parties to the CPPNM.

When it enters into force, it will add the concepts of protection of "nuclear facilities" and "sabotage" of nuclear facilities and material to the CPPNM. The amendment would replace Article 5 in the CPPNM, and add the IAEA to those notified about theft, robbery or other unlawful taking of nuclear material (presumably to formalise reporting for the ITDB discussed at length in Part II of this paper). It would also expand the scope of co-operation to include threatened or actual acts of sabotage of nuclear facilities or material.

The amendment would replace Article 7 and add a new provision which would require states to criminalise the act of "… carrying, sending, or moving of nuclear material into our out of a State without lawful authority".[57] This appears to be an acknowledgement that the CPPNM does not adequately cover the illicit trafficking of nuclear material across borders. Nothing would prevent a state, of course, from adopting this provision into their existing legislation before entry into force of the amendment.

Finally, the amendment would require states to prosecute organised criminals committing acts prohibited by the amended CPPNM and disallow Article 7 crimes to be considered political offences for the purpose of extradition.

3. Code of Conduct on the Safety and Security of Radioactive Sources

The IAEA Board of Governors adopted the Code of Conduct on the Safety and Security of Radioactive Sources[58] in September 2003. The Code of Conduct is not legally binding; however, the General Conference asked each member state to write to the Director General (and asked him to keep track of these states) with a statement "… that it fully supports and endorses the IAEA's efforts to enhance the safety and security of radioactive sources; and that it is working towards following

56. IAEA (2005), "Amendment to the Convention on the Physical Protection of Nuclear Material", IAEA Document GOV/INF/2005/10-GC(49)/INF/6.
57. *Ibid.* at Para. 9.
58. IAEA (2004), "Code of Conduct on the Safety and Security of Radioactive Sources", IAEA Document INFCIRC/663.

the guidance contained in the revised Code".[59] As at 5 September 2011, 105 states had done so.[60]

Paragraph 1 of the Code of Conduct contains definitions for, *inter alia*, orphan source[61] and radioactive source.[62] Paragraph 2 of the Code of Conduct clarifies that it does not cover nuclear material,[63] as defined in the CPPNM, rather it only applies to those radioactive sources listed in its Annex.

Paragraph 18 recommends that states enact laws and regulations to: "(a) prescribe and assign governmental responsibilities to assure the safety and security of radioactive sources; (b) provide for the effective control of radioactive sources; (c) specify the requirements for protection against exposure to ionising radiation; and (d) specify the requirements for the safety and security of radioactive sources and of the devices in which sources are incorporated".[64]

In Paragraph 19, there are more specific recommendations which may have some bearing on controlling and repressing illicit trafficking including, for example, sub-paragraphs (g) and (h): "(g) requirements for security measures to deter, detect and delay the unauthorized access to, or the theft, loss or unauthorized use or removal of radioactive sources during all stages of management; (h) requirements relating to the verification of the safety and security of radioactive sources, through safety and security assessments, monitoring and verification of compliance, and the maintenance of appropriate records …".[65]

As noted in Part I.B of this paper, the *Combating Illicit Trafficking in Nuclear and other Radioactive Material Reference Manual* concerns itself with nuclear and radioactive materials for a reason – though the thought of an attack with a nuclear weapon, perhaps produced with illicitly obtained material, is horrifying, it is a far less likely event than the detonation of an RDD which could cause considerable death and injury and fear and panic, and contaminate the vicinity. Moreover, in Part II.C, we observed that illicit trafficking in radioactive materials is a far greater problem than trafficking in nuclear materials. Therefore, there may be a need to strengthen the safety and security of radioactive sources through legally binding provisions at the international level. In the meantime, however, the Code of Conduct can provide guidance to states on how to secure and safely use their radioactive sources through, for example, local laws and regulations.

Further to Paragraphs 23 to 29 of the Code of Conduct, on imports and exports of radioactive sources, a non-legally binding Guidance on the Import and Export of

59. *Ibid*. at ii.
60. IAEA List of States that have a made a political commitment with regard to the Code of Conduct on the Safety and Security of Radioactive Sources and the Supplementary Guidance on the Import and Export of Radioactive Sources, www.iaea.org/Publications /Documents/Treaties/codeconduct_status.pdf, accessed 20 November 2011.
61. "Orphan source" is defined as "… a radioactive source which is not under regulatory control, either because it has never been under regulatory control, or because it has been abandoned, lost, misplaced, stolen or transferred without proper authorization". IAEA (2004), "Code of Conduct on the Safety and Security of Radioactive Sources", IAEA Document INFCIRC/663, Para. 1.
62. "Radioactive source" is defined as "… radioactive material that is permanently sealed in a capsule or closely bonded, in a solid form and which is not exempt from regulatory control. It also means any radioactive material released if the radioactive source is leaking or broken, but does not mean material encapsulated for disposal, or nuclear material within the nuclear fuel cycles of research and power reactors". *Ibid*. at Para. 1.
63. It does apply, however, to sources incorporating plutonium-239. *Ibid*. at Para. 3.
64. *Ibid*. at Para. 18.
65. *Ibid*. at Para. 19(g)-(h).

Radioactive Sources[66] was developed by the IAEA's member states in 2005. Some of its suggestions may have some utility in preventing illicit trafficking.

Regarding Category 1 sources,[67] Paragraph 8(a) of the Guidance suggests that in "… deciding whether to authorize an export of such a source, the exporting State should: (a) satisfy itself, insofar as practicable, that the recipient is authorized by the importing State to receive and possess the source in accordance with its laws and regulations. This review by the exporting State should be based on a confirmation from the importing State that the recipient is authorized to receive and possess the source or sources to be exported, or on a copy of the recipient authorization."[68] In Paragraph 8(c), the exporting state is also encouraged to "… (c) Consider, based upon available information: (i) whether the recipient has been engaged in clandestine or illegal procurement of radioactive sources; (ii) whether an import or export authorization for radioactive sources has been denied to the recipient or importing State, or whether the recipient or importing State has diverted for purposes inconsistent with the Code any import or export of radioactive sources previously authorized; (iii) the risk of diversion or malicious acts involving radioactive sources."[69] Similar recommendations are in place for states exporting Category 2 sources [see Paras. 11(a) and 11(c)]. Mirror requirements are also suggested for states importing Category 1 and 2 sources [see Paras. 13(a) and 13(c)].

4. The structure and content of agreements between the Agency and states required in connection with the Treaty on the Non-Proliferation of Nuclear Weapons

The IAEA's safeguards system has the objective of "… provid[ing] credible assurance to the international community that nuclear material and other specified items are not diverted from peaceful nuclear uses".[70] The IAEA carries out this objective in line with the provisions of safeguards agreements which it enters into with states, and further to the power delegated to it under Article III.A.5 of the Statute of the IAEA.[71] There are three types of safeguards agreements: comprehensive, item-specific and voluntary offer.[72] A state with any one of these three types of agreements can enter into a protocol further to its existing agreement.[73] This protocol is discussed in more detail in Part III.B.5 below.

A detailed review of all three types of safeguards agreements would be beyond the scope of this paper; only the comprehensive safeguards agreement will be

66. IAEA (2005), "Guidance on the Import and Export of Radioactive Sources", IAEA Document IAEA/CODEOC/IMP-EXP/2005.
67. These are the most dangerous radioactive sources according to Annex I in the Code of Conduct.
68. *Ibid*. at Para. 8(a).
69. *Ibid*. at Para. 8(c).
70. IAEA, *The Safeguards System of the International Atomic Energy Agency*, p. 1, available at: www.iaea.org/OurWork/SV/Safeguards/documents/safeg_system.pdf, accessed 21 November 2011.
71. *Ibid*.
72. *Ibid*.
73. *Ibid*.

analysed and discussed, in relation to illicit trafficking.[74] It is worth noting, however, that item-specific safeguards agreements, entered into by the three states which do not adhere to the NPT (and which possess or are believed to possess nuclear weapons, i.e. India, Israel and Pakistan), do not cover all nuclear facilities, materials or equipment.[75] Accordingly, the risk of illicit trafficking of unmonitored facilities and materials in these states cannot be ignored.

The structure and content of comprehensive safeguards are set out in the document "Structure and Content of Agreements between the Agency and States required in connection with the Treaty on the Non-Proliferation of Nuclear Weapons";[76] the standard text of an agreement is in Annex A.[77] Most non-nuclear-weapon states have entered into comprehensive safeguards agreements with the IAEA, as required by the NPT and several regional or other arrangements.[78]

Paragraph 2 of the Structure and Content of Agreements confirms that the IAEA's comprehensive safeguards only apply to source and special fissionable material, i.e. nuclear material. These terms are defined by reference to Article XX in the Statute of the IAEA in Paragraph 110. Accordingly, the safeguards agreements do not apply to other radioactive materials, whether radioactive sources or orphan sources.

Paragraph 7 of the Structure and Content of Agreements requires states to establish and maintain systems to account for and control nuclear materials subject to safeguards, in such a way that the IAEA can verify the state's findings on diversion of nuclear material for prohibited uses, i.e. nuclear weapons or nuclear explosive devices. The procedural requirements to carry this out are detailed in Paragraphs 31 and 32, and 51 *et seq*. (records and reports).

Paragraph 12 requires states to keep track of transfers of nuclear material out of the state. The procedural requirements for this are detailed in Paragraphs 91 to 96. There is also a mechanism in Paragraph 97 for a special report in the event there is loss or an unusual delay of a transfer of nuclear material.

In short, the comprehensive safeguards agreements are based on accounting and control, records and reporting, inspections and accounting for transfers of nuclear material. They do not require states to prohibit or penalise certain activities, nor do they cover the entire nuclear fuel cycle.

74. Item-specific safeguards agreements (INFCIRC/66/Rev.2) have been agreed between the IAEA and India, Israel and Pakistan. *Ibid*. at p. 3. Voluntary offer agreements have been agreed between the IAEA and the five recognised nuclear weapon states under the NPT: China, France, the Russian Federation, the United Kingdom and the United States. The IAEA factsheet on safeguards notes that voluntary offer agreements "… generally follow the format of agreements based on INFCIRC/153 (Corrected), but vary in the scope of materials and facilities covered, e.g. excluding those with national security significance". *Ibid*. at p. 3.
75. For example, Pakistan has nine item-specific safeguards agreements with the IAEA; however, there are several facilities/activities that are not safeguarded (see Part II.A. of this paper).
76. IAEA (1972), "Structure and Content of Agreements between the Agency and States required in connection with the Treaty on the Non-Proliferation of Nuclear Weapons", IAEA Document INFCIRC/153 (Corrected).
77. IAEA (1974), "Standard Text of an Agreement", IAEA Document GOV/INF/276.
78. IAEA, *The Safeguards System of the International Atomic Energy Agency*, p. 2, available at: www.iaea.org/OurWork/SV/Safeguards/documents/safeg_system.pdf, accessed 21 November 2011.

5. *Model Protocol Additional to the Agreement(s) between State(s) and the International Atomic Energy Agency for the Application of Safeguards*

The Model Protocol Additional to the Agreement(s) between State(s) and the International Atomic Energy Agency for the Application of Safeguards,[79] or Additional Protocol, gives the IAEA additional means to verify that states' declarations under their safeguards agreements are accurate and complete.[80] As noted in Part III.B.4, a state with a comprehensive, item-specific or voluntary offer safeguard agreement can enter into a legally binding protocol to their agreement with the IAEA. As at 31 October 2011, 112 additional protocols are in force between the IAEA and states; and one is in force with EURATOM.[81]

As with the safeguards agreements, the Additional Protocol applies to source and special fissionable material, i.e. nuclear material. These terms are defined by reference to Article XX in the Statute of the IAEA in Article 18. Accordingly, the safeguards agreements do not apply to other radioactive materials, whether radioactive sources or orphan sources.

Some of the Additional Protocol's measures may have relevance for controlling and repressing illicit trafficking, including:

- State provision of information about, and Agency inspector access to, all parts of a state's nuclear fuel cycle, from uranium mines to nuclear waste and any other location where nuclear material intended for non-nuclear uses is present.
- State provision of information on, and Agency short-notice access to, all buildings on a site.
- State provision of information about, and Agency inspector access to, a state's nuclear fuel cycle R&D activities not involving nuclear material.
- State provision of information on the manufacture and export of sensitive nuclear-related equipment and material, and Agency inspector access to manufacturing and import locations in the state.
- Agency collection of environmental samples at locations beyond those provided for under safeguards agreements.
- Wide area environmental sampling, after Board approval of such sampling and consultations with the state concerned.[82]

In short, the Additional Protocol provides for the provision of additional information encompassing the entire fuel cycle and "complementary access" by IAEA inspectors. The Additional Protocol does not require states to prohibit or penalise certain activities; however it helps the IAEA to identify possible points of

79. IAEA (1997), "Model Protocol Additional to the Agreement(s) between State(s) and the International Atomic Energy Agency for the Application of Safeguards", IAEA Document INFCIRC/540 (Corrected).
80. IAEA, *The Safeguards System of the International Atomic Energy Agency*, p. 4, available at: www.iaea.org/OurWork/SV/Safeguards/documents/safeg_system.pdf, accessed 21 November 2011.
81. IAEA Status List, www.iaea.org/OurWork/SV/Safeguards/documents/AP_status_list.pdf, accessed 22 November 2011.
82. IAEA, *The Safeguards System of the International Atomic Energy Agency*, p. 6, available at: www.iaea.org/OurWork/SV/Safeguards/documents/safeg_system.pdf, accessed 21 November 2011.

diversion of nuclear material, including during export and import [Articles 2(a)(vi)(b)-(c) and 5(a)(ii)], which in some cases could signal illicit trafficking. Illicit trafficking of equipment and non-nuclear material might also be identified through the export/import verification procedures in Articles 2(a)(ix) and 5(b) and Annex II.

6. Convention on Early Notification of a Nuclear Accident

The Convention on Early Notification of a Nuclear Accident[83] opened for signature and entered into force in 1986, the same year as the Chernobyl accident in Ukraine. The convention has 112 states parties and is a legally binding instrument, with the Director General of the IAEA as its depositary.

Under Article 1, the convention applies to "… any accident involving facilities or activities of a state party or of persons or legal entities under its jurisdiction or control … from which a release of radioactive material occurs or is likely to occur and which has resulted or may result in an international transboundary release that could be of radiological safety significance for another state".[84] Covered facilities include nuclear reactors, nuclear fuel cycle facilities, and radioactive waste management facilities. Covered activities include "… the transport and storage of nuclear fuels or radioactive wastes; … the manufacture, use, storage, disposal and transport of radioisotopes for agricultural, industrial, medical and related scientific and research purposes; and … the use of radioisotopes for power generation in space objects".[85]

Arguably, if an illicit trafficking activity led to an accident under Article 1 of the convention, the notification and information provisions of Article 2 and subsequent articles would be triggered. The convention does not require, however, states parties to introduce any criminal liability for accidents related to nuclear facilities or activities, whether related to illicit trafficking or not.

7. Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency

The Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency[86] opened for signature in 1986 and entered into force in 1987. The convention has 107 states parties and is a legally binding instrument, with the Director General of the IAEA as its depositary.

Article 2 describes in some detail the kinds of assistance and co-operation that can be provided in the event of a nuclear accident or radiological emergency. The convention does not appear to contemplate, however, any kind of co-operation or assistance regarding criminal matters, for example, an illicit trafficking activity that leads to a nuclear accident or radiological emergency. Rather, it is focussed on minimising the consequences of an accident or emergency and protecting "… life, property and the environment from the effects of radioactive releases".[87]

C. United Nations legal instruments

In the area of illicit trafficking, the United Nations (UN) has largely concerned itself with terrorists and other non-state actors gaining access to and using weapons of mass destruction, including nuclear weapons, to cause death and substantial bodily injury and damage to property and the environment.

83. Convention on Early Notification of a Nuclear Accident (1986).
84. *Ibid*. at Article 1.
85. *Ibid*.
86. Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (1986).
87. *Ibid*. at Article 1(1).

1. *International Convention for the Suppression of Acts of Nuclear Terrorism*

The International Convention for the Suppression of Acts of Nuclear Terrorism,[88] or Nuclear Terrorism Convention, was opened for signature in 2005 and entered into force in 2007. It has 77 states parties, for which it is legally binding. The depositary is the Secretary-General of the United Nations.

The Nuclear Terrorism Convention borrows its definition for "nuclear material" from the CPPNM (see Part III.B.2 above). The term "radioactive material" is defined in Article 1(1) as "… nuclear material and other radioactive substances which contain nuclides which undergo spontaneous disintegration (a process accompanied by emission of one or more types of ionising radiation, such as alpha-, beta-, neutron particles and gamma rays) and which may, owing to their radiological or fissile properties, cause death, serious bodily injury or substantial damage to property or the environment". In the *Combating Illicit Trafficking in Nuclear and other Radioactive Material Reference Manual*, a distinction is drawn between the terms in that "… radioactive material covers a much broader class of substances and includes nuclear material, but also other substances that, although emitting ionising radiation, are not suitable for producing nuclear explosions. Such material is commonly used in research and applications for science, industry, medicine and agriculture."[89] As discussed in Part I.B, radioactive materials include regulated radioactive sources and unregulated orphan sources.

The Nuclear Terrorism Convention also includes the concepts of "nuclear facility" and "device". A device is "any nuclear explosive device" or "… any radioactive material dispersal or radiation-emitting device which may, owing to its radiological properties, cause death, serious bodily injury or substantial damage to property or the environment".[90] The latter are the "dirty bombs" or RDDs to which reference is made in the introduction of this paper.

A number of offences are listed in Article 2(1)(a) of the Nuclear Terrorism Convention, including (i) possession of radioactive material or devices or (ii) making devices to (a) cause death or serious bodily injury or (b) substantial damage to property or the environment. Article 2(1)(b) criminalises (i) the use of radioactive material or devices or (ii) sabotage of nuclear facilities for the purposes of (a) and (b) above as well to "… compel a natural or legal person, an international organization or a state to do or refrain from doing an act".[91] Sub-articles 2(2)-(4) criminalise threats, demands, attempts and other forms of participation.

The IAEA definitions for illicit trafficking cover possession and use so, arguably, the provisions in Article 2 should be included in a comprehensive legal framework for the control and repression of illicit trafficking. What is less clear, however, is whether the convention covers cross-border movements that may lead to the possession, use, etc., of radioactive materials or devices. On the other hand, Article 3 disallows application of the convention if any of the prohibited activities in Article 2 occur wholly within one state, thus some type of cross-border element must be in play.

Articles 5 and 6 require states to establish crimes and penalties for the prohibited acts in Article 2, while Article 7 requires states to adapt their legislation

88. International Convention for the Suppression of Acts of Nuclear Terrorism (2005).
89. IAEA (2007), *Combating Illicit Trafficking in Nuclear and other Radioactive Material Reference Manual*, IAEA Nuclear Security Series No. 6 (jointly sponsored by the European Police Office, International Atomic Energy Agency, International Police Organization, and World Customs Organization), p. 7.
90. International Convention for the Suppression of Acts of Nuclear Terrorism (2005), Article 1(4).
91. This is the so-called "soft definition" of terrorism, in the absence of an official one.

for the prevention and response to acts prohibited under Article 2, including investigations and prosecutions and informing other states. The role of national implementation in preventing illicit trafficking will be discussed in greater detail in Part IV of this paper.

Article 8 requires states parties to adopt measures for the protection of radioactive materials and makes specific reference to the IAEA and its competence on this subject. Arguably, this article may have the "… interesting legal ramification of drawing so-called soft law instruments developed by the IAEA as voluntary guidance into the framework of hard law".[92] In other words, states parties to the Nuclear Terrorism Convention may be required to implement the IAEA's recommendations on nuclear and radioactive security into their national legal frameworks.

Article 9 establishes when jurisdiction is mandatory [sub-article (1)] and optional [sub-article (2)]. Jurisdiction is mandatory when the offence is committed in the state's territory, on board a vessel or aircraft under the state's jurisdiction, or committed by a national of the state. Articles 10 to 14 establish the principles for investigations, prosecutions and extradition, including mutual assistance on these matters. Finally, Article 15 disallows Article 2 crimes to be considered political offences for the purpose of extradition.

2. International Convention for the Suppression of Terrorist Bombings

The International Convention for the Suppression of Terrorist Bombings,[93] or Terrorist Bombings Convention, was opened for signature in 1998 and entered into force in 2001. It has 164 states parties, for which it is legally binding. The depositary is the Secretary-General of the United Nations.

An "explosive or other lethal device" is defined in Article 1 of the Terrorist Bombings Convention as: "… a. an explosive or incendiary weapon or device that is designed, or has the capability, to cause death, serious bodily injury or substantial material damage; or b. a weapon or device that is designed, or has the capability, to cause death, serious bodily injury or substantial material damage through the release, dissemination or impact of toxic chemicals, biological agents or toxins or similar substances or radiation or radioactive material".[94] "Radioactive material" is not defined.

A number of offences are listed in Article 2, including (i) delivering, placing, discharging or detonating explosive or lethal devices in (ii) public places, state or government facilities, public transportation systems or infrastructure facilities to (iii) cause death, serious bodily injury or extensive destruction of the targeted facility leading to substantial economic loss. Sub-articles 2(2)-(3) criminalise attempts and other forms of participation.

An act of terrorism involving an RDD would fall under both the Nuclear Terrorism Convention and the Terrorist Bombings Convention. It is more questionable, however, whether the Terrorist Bombings Convention adequately covers the illicit trafficking of radioactive materials, particularly their cross-border movement.

92. IAEA (2007), *Combating Illicit Trafficking in Nuclear and other Radioactive Material Reference Manual*, IAEA Nuclear Security Series No. 6 (jointly sponsored by the European Police Office, International Atomic Energy Agency, International Police Organization, and World Customs Organization), p. 27.
93. International Convention for the Suppression of Terrorist Bombings (1998).
94. *Ibid*. at Article 1(3).

3. International Convention for the Suppression of Financing of Terrorism

The International Convention for the Suppression of Financing of Terrorism,[95] or Financing of Terrorism Convention, opened for signature in 2000 and entered into force in 2002. It has 175 states parties; the depositary is the Secretary-General of the United Nations.

It is prohibited under Article 2 of the convention to (i) provide or collect funds (a) for use in acts prohibited in one of the treaties in the convention's annex or (b) to cause death or serious bodily injury to a civilian (or to other persons not taking part in hostilities in an armed conflict) in order to "… intimidate a population, or to compel a government or an international organization to do or to abstain from doing any act".[96] Sub-articles 2(4)-(5) criminalise attempts and other forms of participation.

Among the treaties included in the annex to the Financing of Terrorism Convention are the CPPNM and Terrorist Bombings Convention. Thus, for example, it would be a criminal act to somehow fund the unlawful transfer of nuclear materials, with the purpose of causing death or serious injury or substantial property damage (which is prohibited by the CPPNM and could be considered an act of illicit trafficking).

4. United Nations Security Council Resolutions 1540 (2004) and 1887 (2009)

UN Security Council Resolution 1540,[97] or Resolution 1540, was adopted on 28 April 2004 under Chapter VII of the UN Charter.[98] It is, therefore, legally binding on all UN member states.

Resolution 1540 is perhaps one of the most important tools for controlling and repressing illicit trafficking as it specifically requires all UN member states to enact a series of measures in national law to prevent the proliferation of nuclear, biological and chemical weapons. The heart of these requirements can be found in Operative Paragraphs 2 and 3 (OP2 and OP3) as follows:

- OP2: laws to prohibit non-state actors from manufacturing, acquiring, possessing, developing, transporting, transferring or using nuclear, chemical or biological weapons and their means of delivery; also covered are:
  - terrorist purposes;
  - attempts; and
  - participating as an accomplice, assistance, or financing.
- OP3: domestic controls (including over related material[99]) to prevent the proliferation of nuclear, biological and chemical weapons and their means of delivery, such as:

95. International Convention for the Suppression of Financing of Terrorism (2000).
96. *Ibid.* at Article 2.
97. UN Security Council Resolution 1540, S/RES/1540 (2004).
98. On 20 April 2011, the Security Council, *inter alia*, extended the mandate of the 1540 Committee tasked with carrying out Resolution 1540, through 25 April 2021 [UN Security Council Resolution 1977, S/RES/1977 (2011)].
99. "Related materials" are defined in Resolution 1540 as "… materials, equipment and technology covered by relevant multilateral treaties and arrangements, or included on national control lists, which could be used for the design, development, production or use of nuclear, chemical and biological weapons and their means of delivery".

- measures to account for and secure items in production, use, storage or transport;
- effective physical protection measures;
- effective border controls and law enforcement efforts to detect, deter, prevent and combat illicit trafficking and brokering of these items; and
- national export and trans-shipment controls (e.g. related laws and regulations, controls on funding and transport, end-user controls and criminal or civil penalties for violations).

In Operative Paragraph 6, the Security Council calls on UN member states to develop control lists (presumably for related materials), and in Operative Paragraph 10, states are called on "… in accordance with their national legal authorities and legislation and consistent with international law, to take co-operative action to prevent illicit trafficking in nuclear, chemical or biological weapons, their means of delivery, and related materials".[100]

Resolution 1540 requires a comprehensive framework for national legislation to prohibit the proliferation of nuclear, biological and chemical weapons through the control of related materials, including their export. And it is directed to nearly all countries in the world, even those who may not belong to the NPT, Biological and Toxins Weapons Convention or Chemical Weapons Convention. It only addresses non-state actors, however, so the state-supported insider is not covered here. And, interestingly, Resolution 1540 does not cover explicitly, or even implicitly, non-explosive radioactive materials. Though the resolution describes the general measures that should be implemented in national legal frameworks, it does not provide greater detail so states must decide which specific measures they need to implement, but of course they are encouraged to incorporate the existing requirements under the multilateral treaties such as the NPT, Biological and Toxins Weapons Convention and Chemical Weapons Convention.

UN Security Council Resolution 1887,[101] or Resolution 1887, was adopted on 24 September 2009. For the purposes of this paper, the most important operative paragraphs are 26 and 27 on controlling and repressing illicit trafficking through national measures. In Paragraph 26, the Security Council calls on "… all states to improve their national capabilities to detect, deter and disrupt illicit trafficking in nuclear materials throughout their territories …"[102] In Paragraph 27, it calls on "… all states to take all appropriate national measures in accordance with their national authorities and legislation, and consistent with international law, to prevent proliferation financing and shipments, to strengthen export controls, to secure sensitive materials, and to control access to intangible transfers of technology".[103]

Interestingly, like Resolution 1540, Resolution 1887 does not explicitly refer to other radioactive materials, so it is unclear whether they are covered by the resolution's measures.

D. International Civil Aviation Organization (ICAO) legal instruments

The ICAO instrument discussed below covers unlawful activities involving aircraft.

100. UN Security Council Resolution 1540, S/RES/1540 (2004), Para. 10.
101. UN Security Council Resolution 1887, S/RES/1887 (2009).
102. *Ibid*. at Para. 26.
103. *Ibid*. at Para. 27.

1. Convention on the Suppression of Unlawful Acts relating to International Civil Aviation

A successor convention to the Convention on the Suppression of Unlawful Acts relating to International Civil Aviation (1971), or Beijing Convention, was adopted in 2010 by the International Conference on Air Law in Beijing.[104] The Beijing Convention, which has the same name as the 1971 convention, has not yet entered into force. The depositary is ICAO.

The Beijing Convention[105] includes definitions in Article 2 for radioactive material, nuclear material, and BCN (biological, chemical and nuclear) weapon. The definition for "radioactive material" is borrowed from the Nuclear Terrorism Convention (see Part III.C.1), while the definition for "nuclear material" comes from the CPPNM (see Part III.B.2). Source and special fissionable material are defined by reference to the Statute of the IAEA. A BCN weapon is defined as, *inter alia*, "nuclear weapons and other nuclear explosive devices".[106]

Under Article 1, states parties will be required to criminalise (i) the release or discharge of BCN weapons or radioactive substances from aircraft or (ii) their use against or on board an aircraft to (a) cause death, serious bodily injury, or damage to property or the environment [Article 1(1)(g)-(h)]. Article 1(1)(i) criminalises (i) transport activities on board aircraft involving (a) radioactive material to cause death or serious injury or damage for terrorist purposes, or (b) a BCN weapon, or (c) unsafeguarded source or special fissionable material, or (d) equipment, material, software or technology, without lawful authorisation, for the design, manufacture or delivery of a BCN weapon. Under Article 1(3)-(5), threats, attempts, and other forms of participation and organisation are also criminalised.

The convention may have utility in controlling and repressing illicit trafficking because it criminalises unlawful transport of radioactive materials, nuclear weapons and unsafeguarded source and special fissionable materials on aircraft. The revised convention is not yet in force, but this does not prevent states from implementing its requirements into national law.

E. International Maritime Organization (IMO) legal instruments

The instruments discussed below cover unlawful activities involving ships and fixed platforms on the continental shelf.

1. Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation, and the 2005 Protocol thereto

The Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation, or SUA, was adopted in 1988 and entered into force in 1992.[107] It has 157 states parties. The 2005 Protocol to SUA, or SUA 2005, entered into force in

104. See Convention on the Suppression of Unlawful Acts relating to International Civil Aviation (2010), www2.icao.int/en/leb/List%20of%20Parties/Beijing_Conv_EN.pdf, accessed 24 November 2011.
105. Convention on the Suppression of Unlawful Acts relating to International Civil Aviation (2010), available at: http://legacy.icao.int/DCAS2010/restr/docs/beijing_convention_multi.pdf, accessed 24 November 2011.
106. *Ibid.* at Article 2(h).
107. Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation (1988), available at: http://treaties.un.org/doc/db/Terrorism/Conv8-english.pdf, accessed 24 November 2011.

2010; it has 21 states parties.[108] The Secretary-General of the International Maritime Organization (IMO) is the depositary for both instruments.

As amended by SUA 2005, Article 1 under SUA includes a definition for "BCN weapon" which is defined as, *inter alia*, "… nuclear weapons and other nuclear explosive devices".[109] Source and special fissionable materials are defined by reference to the Statute of the IAEA.

Under the amended SUA, Articles 3bis(1) and 5, states parties must criminalise and penalise the following activities (not all of the prohibited activities are listed here):

(i) for terrorist purposes, (a) using against or on a ship or discharging from a ship (b) radioactive material[110] or a BCN weapon to (c) cause death or serious injury or damage;

(ii) threatening to commit an act in (i);

(iii) transporting on board a ship (a) radioactive material (b) knowing that it is intended to cause or in a threat to cause (c) death or serious injury or damage for (d) terrorist purposes;

(iv) transporting on board a ship (a) any BCN weapon or (b) any unsafeguarded source or special fissionable material;

(v) transporting on board a ship equipment, material, software or technology for the design, manufacture or delivery of a BCN weapon.

Under the amended SUA, Article 3bis(2), there is a carve-out for activities involving source or special fissionable material or related equipment, material, software or technology [(iv) and (v) above] if the transport is not in violation of the NPT.

Under the amended SUA, Article 3quater, the following activities are also criminalised: (i) unlawfully and intentionally killing a person in connection with the offences in Article 3(1), Article 3bis, or Article 3ter; (ii) attempts; and (iii) other forms of participation and organisation. Article 5bis requires states parties to establish criminal, civil or administrative liability for legal entities committing offences under the amended SUA.

Under Article 6(1) of the amended SUA, states parties are required to exercise mandatory jurisdiction over offences against or on board a ship flying the flag of the state at the time the offence is committed; in the territory of the state, including its territorial sea; or by a national of the state. States can exercise optional jurisdiction under Article 6(2). Article 6(4) requires states parties to extradite or prosecute (*aut dedere, aut judicare*).

Article 8bis of the amended SUA facilitates co-operation between flag states and other states in respect of activities that may be prohibited under the convention on a flag state ship.

Articles 10 to 12bis concern prosecution, extradition and co-operation on criminal matters. Article 11bis disallows crimes under Articles 3, 3bis, 3ter or 3quater to be considered political offences for the purpose of extradition.

The amended SUA may have utility for controlling and repressing illicit trafficking because it criminalises unlawful transport of radioactive materials,

108. Protocol of 2005 to the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation (2005), LEG/CONF.15/21 (IMO, London).
109. *Ibid.* at Article 1.
110. This term is not defined in SUA 2005.

nuclear weapons and unsafeguarded source and special fissionable materials on ships. Indeed, states are greatly concerned about these materials being transported in shipping containers, and have spent significant treasure on detection equipment in ports around the world.

2. Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms Located on the Continental Shelf, and the 2005 Protocol thereto

The Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms Located on the Continental Shelf, or SUA PROT, was adopted in 1988 and entered into force in 1992.[111] It has 146 states parties. The 2005 Protocol to the SUA PROT, or SUA PROT 2005, entered into force in 2010; it has 17 states parties.[112] The Secretary-General of the IMO is the depositary for both instruments.

There is a great deal of (complex) interplay among the provisions of the amended SUA and SUA PROT, as amended by SUA PROT 2005. The following provisions of the amended SUA apply *mutatis mutandis* to the criminal offences in Articles 2, 2bis and 2ter of SUA PROT 2005, where the offences are committed on board or against fixed platforms located on the continental shelf:

- the definition of "BCN weapon" in Article 1(1)(d), which includes, *inter alia*, "nuclear weapon and other nuclear explosive device";
- Article 5bis, which requires states parties to establish criminal, civil or administrative liability for legal entities committing offences under SUA PROT as amended;
- Articles 10 to 12bis concerning prosecution, extradition and co-operation on criminal matters;
- Article 11bis, which disallows crimes under Articles 2, 2bis, or 2ter of the amended SUA PROT to be considered political offences for the purpose of extradition.

Under the amended SUA PROT, Articles 2bis and 5, states parties must criminalise and penalise the following activities (not all of the prohibited activities are listed here): (i) for terrorist purposes (a) use against or on a fixed platform or discharge from a fixed platform of any radioactive material[113] or a BCN weapon to (b) cause death or serious injury or damage. Article 2bis(c) also criminalises threats to commit such acts.

Under Article 2ter, the following activities are also criminalised: (i) unlawfully and intentionally injuring or killing a person in connection with the offences in Article 2(1) or 2bis; (ii) attempts; and (iii) other forms of participation and organisation.

Under Article 3(1) of the amended SUA PROT, jurisdiction is mandatory over offences committed under Articles 2, 2bis and 2ter if they are committed against or on board a fixed platform while it is located on the continental shelf of a state, or by a national of the state. States can exercise optional jurisdiction under Article 3(2). Article 3(4) requires states parties to extradite or prosecute (*aut dedere, aut judicare*).

111. Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms Located on the Continental Shelf (1988), available at: http://treaties.un.org/doc/db/Terrorism/Conv9-english.pdf, accessed 25 November 2011.
112. 2005 Protocol to the 1988 Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms Located on the Continental Shelf (2005), LEG/CONF.15/22 (IMO, London).
113. This term is not defined in SUA PROT 2005.

The utility of the amended SUA PROT in relation to illicit trafficking may be limited because (i) the use of fixed platforms on the continental shelf for illicit trafficking seems unlikely, and (ii) the protocol is more concerned with terrorist use of radioactive materials and nuclear weapons against or on a platform, or discharge from a platform, rather than transfers of these items to and from fixed platforms.

F. Regional treaties

There are four major regional treaties, which have created nuclear weapon-free zones in Africa, Latin America, the South Pacific and Southeast Asia. They are binding on the states parties that have adhered to the treaties in those regions. Each of the treaties also has protocols providing for negative security assurances from certain countries.

1. Treaty for the Prohibition of Nuclear Weapons in Latin America (Tlatelolco Treaty)

The Treaty for the Prohibition of Nuclear Weapons in Latin America,[114] or Tlatelolco Treaty, entered into force in 1969 and has 33 states parties; the Ministry of Foreign Relations of Mexico is the depositary.

Under Article 1 of the Tlatelolco Treaty, its states parties must prohibit and prevent the "… a. testing, use, manufacture, production or acquisition by any means whatsoever of any nuclear weapons, by the Parties themselves, directly or indirectly, on behalf of anyone else or in any other way; and b. the receipt, storage, installation, deployment and any form of possession of any nuclear weapon, directly or indirectly, by the Parties themselves, by anyone on their behalf or in any other way".[115]

The Tlatelolco Treaty includes a definition for "nuclear weapon" as follows: "… any device which is capable of releasing nuclear energy in an uncontrolled manner and which has a group of characteristics that are appropriate for use for warlike purposes. An instrument that may be used for the transport or propulsion of the device is not included in this definition if it is separable from the device and not an indivisible part thereof."[116]

The Tlatelolco Treaty also requires the states parties to enter into safeguards agreements with the IAEA, under Article 13. This is part of a so-called control system in Articles 13 to 18, which includes reporting to the IAEA and treaty secretariat, and inspections.

2. African Nuclear-Weapon Free Zone Treaty (Pelindaba Treaty)

The African Nuclear-Weapon Free Zone Treaty,[117] or Pelindaba Treaty, entered into force in 2009 and has 31 states parties. The depositary is the African Union.

Definitions are included in the Pelindaba Treaty in Article 1 for "nuclear explosive device" (which is the same definition used in the Rarotonga Treaty, see III.F.3 below), "nuclear installation" and "nuclear material" (which is defined as source or special fissionable material, in reference to Article XX of the Statute of the IAEA).

114. Treaty for the Prohibition of Nuclear Weapons in Latin America (1967), available at: www.opanal.org/opanal/Tlatelolco/P-Tlatelolco-i.htm, accessed 25 November 2011.
115. *Ibid.* at Article 1.
116. *Ibid.* at Article 5.
117. African Nuclear-Weapon Free Zone Treaty (Pelindaba Treaty) (1996), available at: www.iaea.org/Publications/Documents/Treaties//pelindaba.html, accessed 25 November 2011.

States parties renounce activities involving nuclear explosive devices in Article 3. It is unclear from the text, however, if liability attaches to natural and legal persons under these prohibitions. In Article 7, states parties are prohibited from allowing the dumping of radioactive waste and other matter (which is not defined in the treaty) in the nuclear weapon-free zone.

Article 9 of the Pelindaba Treaty requires states parties to enter into a comprehensive safeguards agreement with the IAEA, and to only trade in source or special fissionable material (and related equipment) with non-nuclear weapons states that also have comprehensive safeguards agreements.[118] Article 10 requires states parties to apply the physical protection measures found in the CPPNM and the IAEA's recommendations and guidelines.

3. South Pacific Nuclear Free Zone Treaty (Rarotonga Treaty)

The South Pacific Nuclear Free Zone Treaty, or Rarotonga Treaty, entered into force in 1986 and has 13 states parties.[119]

The Rarotonga Treaty includes a definition for "nuclear explosive device" in Article 1(c).[120] States parties renounce activities involving nuclear explosive devices in Article 3. It is unclear from the text, however, if liability attaches to natural and legal persons under these prohibitions.

Article 4 of the Rarotonga Treaty requires states parties to refrain from trading in source or special fissionable material[121] or related equipment or technology with non-nuclear or nuclear weapon states, unless they have entered into safeguards agreements with the IAEA. In Article 7, states parties are prohibited from allowing the dumping of radioactive waste and other matter (which is not defined in the treaty) in the nuclear weapon-free zone.

The treaty also creates a so-called control system under Article 8 with reporting, consultations and a complaints procedure. States parties are also required to enter into comprehensive safeguards agreements with the IAEA.

4. Southeast Asia Nuclear Weapon-Free Zone Treaty (Treaty of Bangkok)

The Southeast Asia Nuclear Weapon-Free Zone Treaty, or Treaty of Bangkok, entered into force in 1997 and has ten states parties.[122]

The Treaty of Bangkok includes a definition in Article 1(c) for "nuclear weapon" as "… any explosive device capable of releasing nuclear energy in an uncontrolled manner but does not include the means of transport or delivery of such device if separable from and not an indivisible part thereof".[123] The treaty is set apart from the other regional treaties in that it includes a definition for "radioactive material":

118. This requirement, and similar ones in the other regional treaties, is informed by Article III(2) of the NPT.
119. South Pacific Nuclear Free Zone Treaty (1986), INFCIRC/331 (IAEA, Vienna).
120. Defined as "… any nuclear weapon or other explosive device capable of releasing nuclear energy, irrespective of the purpose for which it could be used. The term includes such a weapon or device in unassembled and partly assembled forms, but does not include the means of transport or delivery of such a weapon or device if separable from and not an indivisible part of it." *Ibid.* at Article 1(c).
121. These terms are not defined in the treaty.
122. Southeast Asia Nuclear Weapon-Free Zone Treaty (1998), INFCIRC/548 (IAEA, Vienna).
123. *Ibid.* at Article 1(c).

"… material that contains radionuclides above clearance or exemption levels recommended by the International Atomic Energy Agency (IAEA)".[124]

Under Article 3, states parties are prohibited from undertaking activities involving nuclear weapons, or from dumping or discharging radioactive materials anywhere in the nuclear weapon-free zone. As with the other regional treaties, it is unclear from the text if liability attaches to natural and legal persons under these prohibitions.

Article 4 of the Treaty of Bangkok requires states parties to refrain from trading in source or special fissionable material[125] or related equipment or technology with non-nuclear or nuclear weapon states, unless they have entered into safeguards agreements with the IAEA. Article 5 requires all states parties to enter into safeguards agreements with the IAEA, while Article 6 requires them to accede to the Convention on Early Notification of a Nuclear Accident (discussed in Part III.B.6 above). Finally, Articles 10 to 13 (as well as Article 5 on safeguards) establish a so-called control system, which includes reporting and information exchange, requests for clarification and fact-finding missions.

G. Other arrangements

1. Zangger Committee

The Zangger Committee dates back to 1971. It consists of a group of major nuclear suppliers[126] who have been meeting for four decades to reach "… common understandings on how to implement Article III.2 of the NPT [see Part III.B.1] with a view to facilitating consistent interpretation of the obligations arising from that Article".[127] This group has been meeting in parallel to the Nuclear Suppliers Group, or NSG, which is discussed in more detail below.

The Zangger Committee submitted a so-called "Trigger List" to the IAEA in 1974, with "… items which would 'trigger' a requirement for safeguards and the Zangger guidelines ('common understandings') governing the export, direct or indirect, of those items to non-nuclear-weapon States that are not party to the NPT".[128] The 1974 submission and subsequent ones are published as IAEA documents in the INFCIRC/209 series.

INFCIRC/209/Rev.2 is the most recent consolidated document from the Zangger Committee, with two memoranda covering exports to non-nuclear weapon states of (i) source and special fissionable materials (Memorandum A) and (ii) equipment or material especially designed or prepared for the processing, use or production of

124. *Ibid.* at Article 1(e).
125. These terms are not defined in the treaty.
126. There are currently 38 member states in the Zangger Committee. www.zangger committee.org/Members/Seiten/default.aspx, accessed 27 November 2011.
127. IAEA (2009), "Communication of 1 October 2009 received from the Resident Representative of Hungary to the Agency on behalf of the Participating Governments of the Nuclear Suppliers Group", IAEA Document INFCIRC/539/Rev.4.
128. *Ibid.*

special fissionable material (Memorandum B).[129] In this document, there are three conditions for these exports: "… a non-explosive use assurance, an IAEA safeguards requirement and a re-transfer provision that requires the receiving State to apply the same conditions when re-exporting these items".[130]

The Zangger Committee is a voluntary arrangement; its guidelines and trigger lists are not legally binding on any of the IAEA member states. Moreover, they do not cover other radioactive materials. However, they may have some utility in controlling and repressing illicit trafficking to the extent that they require certain export controls in the exporting countries and requirements, including safeguards, for the importing countries in relation to the items under Article III.2 of the NPT.

2. Nuclear Suppliers Group

The Nuclear Suppliers Group, or NSG, dates back to 1975, and currently has 46 members.[131] The NSG has prepared guidelines which have the objective of ensuring that "… nuclear trade for peaceful purposes does not contribute to the proliferation of nuclear weapons or other nuclear explosive devices, and that international trade and co-operation in the nuclear field is not hindered unjustly in the process".[132] The NSG submitted its first set of export control guidelines to the IAEA in 1978. That document and subsequent ones are published as IAEA documents in the INFCIRC/254 series.

The most recent set of NSG guidelines are INFCIRC/254/Rev.10/Part 1 (2011) and INFCIRC/254/Rev.8/Part 2 (2010). Part 1 establishes the following guidelines for suppliers to non nuclear-weapons states: a non-explosive use assurance; physical protection measures; safeguards; special controls on sensitive exports; special arrangements for export of enrichment facilities, equipment and technology; controls on supplied or derived material usable for nuclear weapons or other nuclear explosive devices; controls on re-transfers and the non-proliferation principle (catch-all clause).[133] The lists in Part 1 cover: "… (i) nuclear material; (ii) nuclear reactors and equipment therefor; (iii) non-nuclear material for reactors; (iv) plant and equipment for the reprocessing, enrichment and conversion of nuclear material

129. IAEA (2000), "Communications of 15 November 1999 received from Member States regarding the Export of Nuclear Material and of Certain Categories of Equipment and other Material", IAEA Document INFCIRC/209/Rev.2. Modified and corrected by IAEA (2008), "Communication of 10 January 2008 received from the Permanent Mission of the United Kingdom regarding the Export of Nuclear Material and of Certain Categories of Equipment and Other Material", IAEA Document INFCIRC/209/Rev.2/Mod.1 (2008); IAEA (2009), "Communication of 2 June 2009 received from the Permanent Mission of the United Kingdom regarding the Export of Nuclear Material and of Certain Categories of Equipment and Other Material", IAEA Document INFCIRC/209/Rev.2/Corr.1.
130. IAEA (2009), "Communication of 1 October 2009 received from the Resident Representative of Hungary to the Agency on behalf of the Participating Governments of the Nuclear Suppliers Group", IAEA Document INFCIRC/539/Rev.4.
131. Nuclear Suppliers Group Participants, www.nuclearsuppliersgroup.org/Leng/03-member.htm, accessed 27 November 2011.
132. IAEA (2009), "Communication of 1 October 2009 received from the Resident Representative of Hungary to the Agency on behalf of the Participating Governments of the Nuclear Suppliers Group", IAEA Document INFCIRC/539/Rev.4.
133. IAEA (2011), "Communication Received from the Permanent Mission of the Netherlands regarding Certain Member States' Guidelines for the Export of Nuclear Material, Equipment and Technology", IAEA Document INFCIRC/254/Rev.10/Part 1.

and for fuel fabrication and heavy water production; and (v) technology associated with each of the above items".[134]

The second set of guidelines and lists in Part 2 have a much larger reach than the Zangger Committee's and cover: "… the export of nuclear related dual-use items and technologies, that is, items that can make a major contribution to an unsafeguarded nuclear fuel cycle or nuclear explosive activity, but which have non-nuclear uses as well, for example in industry".[135] The basic principle for Part 2 is:

> suppliers should not authorize transfers of equipment, materials, software, or related technology identified in the Annex: – for use in a non-nuclear-weapon state in a nuclear explosive activity or an unsafeguarded nuclear fuel-cycle activity, or – in general, when there is an unacceptable risk of diversion to such an activity, or when the transfers are contrary to the objective of averting the proliferation of nuclear weapons, or – when there is an unacceptable risk of diversion to acts of nuclear terrorism.[136]

The NSG is a voluntary arrangement; its guidelines and trigger lists are not legally binding on any of the IAEA member states. Moreover, they do not cover other radioactive materials. However, they may have some utility in controlling and repressing illicit trafficking to the extent that they have led to strengthened export controls in the exporting countries and several requirements for the importing countries for items under Article III.2 of the NPT and nuclear related dual-use items and technologies.

H. Part III conclusions

It is evident from the analysis in this part that there is a dizzying array of international and regional legal instruments, and other arrangements such as the Zangger Committee and NSG, to control nuclear weapons, nuclear explosive devices, source and special fissionable materials and other radioactive sources. As has been seen, some of these can contribute greatly to controlling and repressing illicit trafficking of nuclear and other radioactive materials; some of them not so much or not at all. Some conclusions about each set of instruments are provided below, and an attempt to organise the variety and complexity of these instruments can be found in the table in Annex I.

Regarding the IAEA instruments:

- they all cover nuclear materials except for the Code of Conduct;
- only the NPT and the amendment to the CPPNM appear to prohibit illicit trafficking, including cross-border movements, of nuclear materials
  - however, as noted above, the amendment to the CPPNM is not yet in force;
- the Code of Conduct covers radioactive materials but
  - it does not explicitly prohibit illicit trafficking; and

134. Nuclear Suppliers Group Guidelines, www.nuclearsuppliersgroup.org/Leng/02-guide.htm, accessed 27 November 2011.
135. *Ibid.*
136. IAEA (2010), "Communication Received from Certain Member States Regarding Guidelines for Transfers of Nuclear-related Dual-use Equipment, Material, Software and Related Technology", IAEA Document INFCIRC/254/Rev.8/Part 2.

  - it is not legally binding on members of the IAEA even though many states have expressed their strong support for its implementation;

- all of the IAEA's instruments (except for the accident and notification conventions) include provisions for accounting for, securing or physically protecting nuclear or other radioactive materials; and
- all of the IAEA's instruments (except for the accident and notification conventions) include or require export control measures.

Regarding the UN instruments:

- only the Nuclear Terrorism Convention and Terrorist Bombings Convention cover radioactive materials; the Nuclear Terrorism Convention and UNSCR 1540 and 1887 cover nuclear materials;
- only the Nuclear Terrorism Convention contains an express prohibition on illicit trafficking;
- the Nuclear Terrorism Convention and UNSCR 1540 and 1887 require states to implement measures to account for, secure and physically protect nuclear materials; only the Nuclear Terrorism Convention extends this to radioactive materials; and
- only UNSCR 1540 and 1887 require states to implement export controls, but this is only for nuclear materials.

The ICAO's Beijing Convention, with the objective of preventing unlawful activities involving aircraft, covers radioactive and nuclear materials and includes prohibitions on illicit trafficking as well as unlawful cross-border movements. The convention is not yet in force, however.

The IMO's SUA/SUA 2005 and SUA PROT/SUA PROT 2005 have the objective of preventing certain unlawful activities involving ships and fixed platforms on the continental shelf. The amended instruments cover radioactive and nuclear materials and they both have provisions to prohibit illicit trafficking. Only the amended SUA has specific prohibitions on unlawful cross-border movements of materials. None of the amended instruments include export controls or measures for accounting for, securing, or physically protecting radioactive or nuclear materials. Moreover, the application of the amended conventions is still somewhat limited by the small numbers of states that have adhered to SUA 2005 and SUA PROT 2005.

All of the regional treaties prohibit their states parties from engaging in any activities involving nuclear weapons or nuclear explosive devices. It is unclear from the texts, however, if the prohibitions also apply to natural and legal persons. All of the treaties also require their states parties to enter into safeguards agreements with the IAEA; and all but the Tlatelolco Treaty require their members to implement Article III(2) of the NPT for the prohibition of exports of source and special fissionable materials to states without safeguards. All of the treaties except for the Tlatelolco Treaty prohibit dumping of radioactive waste or "matter". What is not evident from any of these treaties, however, is how useful they are in controlling and repressing illicit trafficking, except to the extent that the states parties must implement safeguards agreements, which can have the effect of preventing such activities.

Finally, the Zangger Committee and NSG are non-legally binding export control arrangements among groups of supplier states. They only cover nuclear materials but have extensive requirements regarding safeguards agreements and export, re-export and catch-all measures. They do not have or require prohibitions regarding illicit trafficking.

Part IV: the role of national implementation

A. Introduction

There are two questions to consider in Part IV of this paper: 1) how can states implement the matrix of obligations in the instruments discussed in Part III – specifically relating to illicit trafficking and cross-border movements of nuclear and other radioactive materials – into their national legal frameworks, and 2) are they doing so already?

A look at these questions begins with the IAEA's recommendations on national measures, particularly in relation to illicit trafficking. The paper then considers whether there is a way to systematically examine the laws and regulations in countries around the world to see how they are currently implementing the illicit trafficking-related measures in the instruments discussed in Part III, whether there is precedent for this kind of systematic examination, and how such an examination could be structured. Finally, the paper considers whether all of the strands discussed in Part III, related to the control and repression of illicit trafficking in particular, should somehow be pulled together into a workable model law for states to incorporate into their national legal systems, or whether an international convention will be necessary to organise the process and focus the minds of governments.

B. IAEA recommendations on national measures

The publication Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities[137] (Recommendations) dates its origins to 1975. The fifth and latest revision was recently released in 2011. Though the Recommendations are not a legally binding document, they "… receive a legal status in some situations by virtue of their adoption in State regulatory frameworks and by reference within other regimes, such as in the Nuclear Suppliers Guidelines".[138] They do not apply to other radioactive materials.

The Recommendations set out a series of measures that should be enacted in national law in relation to physical protection of nuclear material and facilities. This arises out of the fundamental principle that: "the State is responsible for establishing and maintaining a legislative and regulatory framework to govern physical protection".[139] The framework should establish "… applicable physical protection requirements and include a system of evaluation and licensing or other procedures to grant authorization …".[140] A national legal framework should also provide for a "… system of inspection of nuclear facilities and transport to verify compliance with applicable requirements and conditions of the license or other authorizing document, and to establish a means to enforce applicable requirements and conditions, including effective sanctions".[141] On this latter point, the

137. IAEA (2011), "Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities", IAEA Nuclear Security Series No. 13, INFCIRC/225/Rev. 5.
138. IAEA (2002), "Prevention of the Inadvertent Movement and Illicit Trafficking of Radioactive Materials", IAEA Document TECDOC-1311, p. 4.
139. IAEA (2011), "Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities", IAEA Nuclear Security Series No. 13, INFCIRC/225/Rev. 5, p. 8.
140. *Ibid.* at pp. 8-9.
141. *Ibid.* at p. 9.

Recommendations propose that "sanctions against the unauthorized removal and against sabotage should be part of the State's legislative or regulatory system".[142]

The IAEA has also published a *Handbook on Nuclear Law – Implementing Legislation*,[143] which draws on the Recommendations but gives more detail on legislation to control and repress illicit trafficking. According to the Handbook, such legislation should include:

> (a) A physical protection regime for nuclear and other radioactive material and related facilities; (b) Provisions regarding authorization (licensing), inspection and enforcement measures relevant to nuclear material and nuclear facilities (and other radioactive material); (c) Measures for the prevention and detection of, and response to, incidents of theft or other unauthorized acquisition of or illicit trafficking in nuclear and other radioactive material or sabotage of related facilities; (d) Criminal offences for violations of applicable laws and regulations, with stringent penalties, particularly for malicious acts; (e) National arrangements necessary to implement international co-operation in protecting radioactive material, recovering stolen or lost material and dealing with offenders.[144]

Model provisions to implement this framework are proposed in the Handbook.[145]

The Handbook also proposes a series of model provisions to implement the criminal prohibitions in the CPPNM (and the amendment thereto), the Terrorist Bombings Convention and the Nuclear Terrorism Convention, which were jointly developed by the IAEA and the Terrorism Prevention Branch of the United Nations Office on Drugs and Crime.[146]

More will be said in Part IV.D below about the IAEA's model provisions to control and repress illicit trafficking.

C. National legislation surveys

Of the legal instruments reviewed in Part III, several of them require states to implement their obligations or recommendations into national legislative frameworks. These instruments include:

- IAEA:
  - CPPNM (and amendment)
  - Code of Conduct
- UN:
  - Nuclear Terrorism Convention
  - Terrorist Bombings Convention
  - Financing of Terrorism Convention
  - UNSCR 1540
  - UNSCR 1887
- the ICAO Beijing Convention

142. *Ibid.* at p. 9.
143. Stoiber, C. *et al.* (2010), *Handbook on Nuclear Law – Implementing Legislation*, IAEA, Vienna.
144. *Ibid.* at p. 135.
145. *Ibid.* at pp. 135-137.
146. *Ibid.* at pp. 139-143.

- IMO:
  - SUA/SUA 2005
  - SUA PROT/SUA PROT 2005
- the NSG's guidelines in INFCIRC/254/Rev.10/Part 1 and INFCIRC/254/Rev.8/Part 2.

The provisions calling for national implementation in each instrument are noted in the table in Annex I.

The instruments discussed in Part III are only enforceable at the national level if they are effectively implemented through laws and regulations. And it is very difficult to assess whether and how states are implementing these instruments without a systematic mechanism for doing so. The good news is that there is one, the "legislation survey", which has been used to assess national implementation of the Chemical and Biological Weapons Conventions.

Work on national implementation of the Chemical Weapons Convention,[147] or CWC, started shortly after its entry into force in 1997.[148] This work originated in the Office of the Legal Adviser (LAO) in the Organisation for the Prohibition of Chemical Weapons (OPCW), and continues to be carried out by LAO to this day, in co-ordination with the Implementation Support Branch in the International Co-operation and Assistance Division. Initial steps on implementation included national legislation surveys in 1998[149] and 2001,[150] workshops on legislative issues in 2000 and 2001, and legislation checklists and questionnaires in 2002[151] and 2004.[152]

For lack of staff capacity and time, the surveys of legislation for implementation of the CWC that LAO had carried out in 1998 and 2001 did not continue. Instead, LAO began to rely on self-reporting by states through the legislation questionnaires which came out in 2002 and 2004, but their answers were not always very detailed nor necessarily accurate. Moreover, the Technical Secretariat – and this fell largely to LAO – was tasked by the Eighth Conference of the States Parties in 2003, under the Plan of Action regarding the Implementation of Article VII Obligations,[153] to begin CWC drafting outreach fairly quickly, which left little capacity for systematic legislative analysis.

The first broad overview of legislation for national implementation of the Biological Weapons Convention, or BWC, was the VERTIC publication *Time to Lay*

147. Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction (1993), available at: www.opcw.org/chemical-weapons-convention/download-the-cwc/. See in particular Article VII.
148. The author worked as a Legal Researcher in the Office of the Legal Adviser at the OPCW during 2003-2006.
149. OPCW (1998), "Survey of National Implementing Legislation", OPCW Document S/85/98. The survey data are not included in the online document.
150. OPCW (2001), "Survey of National Implementing Legislation", OPCW Document S/259/2001. The survey data are not included in the online document.
151. OPCW (2002), "Legislation Questionnaire: Penal Enforcement of the Chemical Weapons Convention", OPCW Document S/308/2002.
152. OPCW (2004), "Questionnaire on the Implementation of Trade Measures under the Chemical Weapons Convention", OPCW Document S/440/2004. Also see the other tools available at: www.opcw.org/our-work/national-implementation/implementing legislation /models-checklists-questionnaires/.
153. OPCW (2003), "Plan of Action regarding the Implementation of Article VII Obligations", OPCW Document C-8/DEC.16.

Down the Law[154] in 2003. During 2006-2007, Interpol's Biocriminalization Project consisted largely of gap analysis of laws and regulations related to implementation of the BWC.[155] This included looking at definitions, criminal offences, jurisdiction, control lists, biosecurity and biosafety measures, transfer controls and enforcement. Two years later, in 2008, this work would continue and expand at VERTIC under a fully revamped National Implementation Measures (NIM) Programme.[156]

Under the NIM Programme, VERTIC has completed 130 analyses or legislation surveys of countries' national laws and regulations to implement the BWC.[157] These surveys are based on a template with 96 criteria covering the areas mentioned in the previous paragraph. On the basis of the data, it has become much easier to identify which countries require new laws and regulations to implement the BWC; and this has in turn led to direct legislative assistance to over 20 countries in all regions of the world, with several draft laws currently under inter-ministerial review or being considered by national assemblies. The laws and regulations that have been collected by VERTIC staff to prepare these surveys have been posted on the VERTIC website;[158] there are now over 2 000 entries.

It is less clear if there has been a systematic analysis of countries' laws and regulations to implement the legal instruments discussed in Part III of this paper (or at least an analysis that is publicly available), apart from a self-assessment questionnaire in Annex I of the Guidance on the Import and Export of Radioactive Sources.[159] There may be an opportunity then for a comprehensive review of whether and how states are implementing the instruments discussed in Part III, with a particular focus on measures to control and repress illicit trafficking.

The following outline is one possibility for structuring such a legislation survey:

- Definitions:
  - nuclear material (and source material and special fissionable material);
  - radioactive material (and radioactive source and orphan source);
  - explosive or other lethal device (and device);
  - nuclear weapon;
  - nuclear explosive device;
  - BCN (biological, chemical and nuclear) weapon;
  - radiological dispersion device;
  - illicit trafficking.
- Prohibitions/penalties for:
  - unlawful (or unauthorised) import, export, possession, sale, delivery, movement, use, storage, disposal or transfer of nuclear and other radioactive materials;

154. VERTIC, *Time to Lay Down the Law: National Legislation to enforce the BWC*, available at: www.vertic.org/media/assets/Time%20to%20lay%20down%20the%20law%20-%20final%20report.PDF.
155. The author was the Biocriminalization Project Manager in the Bioterrorism Prevention Unit.
156. See www.vertic.org. The author is now VERTIC's Senior Legal Officer.
157. As at 30 November 2011. These surveys are not publicly available.
158. See VERTIC BWC Legislation Database, www.vertic.org/pages/homepage/databases/bwc-legislation-database/introduction.php.
159. IAEA (2005), "Guidance on the Import and Export of Radioactive Sources", IAEA Document IAEA/CODEOC/IMP-EXP/2005.

  - other malicious acts involving nuclear or other radioactive materials, or weapons produced with these materials
    - including those involving aircraft, ships and fixed platforms on the continental shelf;
  - preparatory offences and alternative criminal liability;
  - penalties for legal persons.
- Jurisdiction (including extraterritorial) over unlawful acts or unauthorised activities.
- Measures to account for and secure nuclear and other radioactive materials (and penalties for failures to ensure proper accounting or security).
- Physical protection measures (and penalties for failures to ensure physical protection).
- Measures for a regulatory authority for implementation (authorisation, licensing) and enforcement (reporting, national and international inspections).
- Measures to control exports and imports, including:
  - authorisation (permits);
  - control lists ("trigger" lists; dual-use equipment, materials, software and technology lists);
  - catch-all clause;
  - end-use/user;
  - re-export, transit, transhipment.
- Law enforcement:
  - investigations;
  - surveillance and intelligence gathering;
  - entry/warrant/seizure;
  - evidence collection;
  - prosecutions;
  - international co-operation (e.g. mutual criminal assistance, extradition).

In addition, the following types of laws (and their regulations) should be reviewed and analysed for the legislation survey: laws to implement the nuclear law corpus, penal and criminal procedure codes, laws on counter-terrorism and organised crime, laws to prevent weapons of mass destruction, customs codes, licensing laws, import/export and trade laws (including trade in strategic or dual-use goods legislation), money laundering laws, laws on mutual criminal assistance and extradition, laws on the management and transport of hazardous or dangerous substances, aircraft and ship/airport and port security laws, rail security laws, laws on surveillance and intelligence gathering, etc.

Finally, based on VERTIC's experience, legislation surveys should be based on laws and regulations in the Arabic, English, French, Portuguese, Russian and Spanish languages. This covers a good number of the world's official gazettes.

D. An integrated legal framework for illicit trafficking situations

Once there is a more comprehensive understanding through legislation surveys of whether and how states are implementing the instruments in Part III, the next

question is how to assist them to fill in the gaps in their national legal frameworks. This may need to be through an integrated legal framework (e.g. model law) or, to focus the minds of governments, an international convention. This latter possibility will be discussed in Part V.

What would such an integrated legal framework look like?

It should be recalled from Part IV.A above that the IAEA has proposed recommendations for the physical protection of nuclear material and facilities in the Nuclear Security Recommendations. In addition, the *Handbook on Nuclear Law – Implementing Legislation* provides model provisions on nuclear security, physical protection and illicit trafficking, as well as model criminal provisions, which can be incorporated into national legislation to control and repress illicit trafficking of nuclear and other radioactive materials. These two guides together provide elements for an integrated legal framework, and cover most of the instruments discussed in Part III.B and C.

In addition, this paper has identified other elements that should be included in an integrated legal framework, including provisions to control and repress illicit trafficking via aircraft, ships and (perhaps) fixed platforms on the continental shelf. These are in the ICAO's Beijing Convention and the IMO's SUA/SUA 2005 and SUA PROT/SUA PROT 2005 discussed in Part III.D and E.

There are other matters, however, that must be considered for the development of an integrated legal framework. Some instruments are not yet in force (the amendment to the CPPNM, the Beijing Convention), some instruments still have few states parties (the Nuclear Terrorism Convention, SUA 2005 and SUA PROT 2005), some instruments or guidelines are not legally binding (Code of Conduct, Zangger Committee, NSG) and some instruments cover only radioactive materials or nuclear materials, but not always both. Finally, some governments may not wish to subscribe to every single one of the instruments in Part III and, yet, illicit trafficking, especially of radioactive materials, remains a serious problem.[160]

Resolution 1540[161] provides the final elements for an integrated legal framework. First, it requires all UN member states to enact certain criminal prohibitions against biological, chemical and nuclear weapons. Second, it requires all UN member states to establish domestic controls over materials which could be used to produce biological, chemical or nuclear weapons. This includes measures to account for, secure and physically protect such materials, and export controls.

Resolution 1540 has a disadvantage – it does not cover radioactive materials. But it does contribute important elements for an integrated legal framework to counter illicit trafficking, with the imprimatur of adoption under Chapter VII of the UN Charter. Moreover, Resolution 1540 goes beyond nuclear weapons and materials and encompasses measures against biological and chemical weapons proliferation. There is no reason not to include optional modules in an integrated legal framework, which deal with the illicit trafficking of these weapons and related materials, in addition to the illicit trafficking of nuclear and other radioactive materials.

Part V: conclusion

We now return to the main question raised by this paper – do we need an international convention for the control and repression of illicit trafficking of nuclear

160. See Part II.C.
161. See Part III.C.4.

and other radioactive materials? Or is the existing international regime necessary and sufficient, and is it being effectively implemented into national law? Or is there room for an integrated legal framework to strengthen and streamline the process?

Several steps should be taken before efforts to develop yet another international convention begin, particularly in light of the number of hard and soft-law instruments for the control of nuclear and radioactive weapons and materials. The first step has been taken with Part III and Annex I of this paper: identifying which instruments may have some bearing on the illicit trafficking of nuclear and other radioactive materials, and comparing them in a systematic way. This analysis has shown that the international regime to prevent illicit trafficking involves an array of instruments, and that there are gaps in some areas of the regime and overlaps in others.

The second step is to see whether and how states are implementing this regime. A systematic way of doing this has been proposed in Part IV.C based on precedent from the BWC and CWC contexts. It may be premature to conclude that an international convention is necessary until we have a better understanding of how well (or poorly) implemented the existing international regime is, on the basis of a large sample set of surveys.

The third step is to consider whether an integrated legal framework, which includes all of the elements discussed in Part IV.D, could strengthen and streamline the international regime to prevent illicit trafficking. Such a framework could strengthen the regime by including elements that may not currently be covered by the IAEA's set of model provisions, and by including optional modules to prevent the proliferation and illicit trafficking of biological and chemical weapons and materials. An integrated legal framework could streamline the process by building on the analysis in Part III and Annex I, and by creating a coherent model that draws in all of the relevant elements from the different hard and soft-law instruments.

Once these steps are taken, the need for an international convention could be reconsidered. There would still remain, however, one additional but significant problem: a new international convention would still have to be implemented into national law in order to be enforced. This is the Achilles heel in the proposed Convention on the Prevention and Punishment of the Crime of Developing, Producing, Acquiring, Stockpiling, Retaining, Transferring or Using Biological or Chemical Weapons.[162] Though the convention purportedly turns activities involving biological and chemical weapons into international crimes, they would actually be national crimes, prosecuted by national courts. And the convention's prohibitions would still have to be implemented into national law,[163] just as those in the BWC and CWC must be. There is no reason to believe the same conundrum would not face a convention to control and repress the illicit trafficking of nuclear and other radioactive materials. In conclusion, it seems sensible to start with the three steps above before concluding that a new convention is necessary.

162. Harvard Sussex Program, Draft Convention on the Prevention and Punishment of the Crime of Developing, Producing, Acquiring, Stockpiling, Retaining, Transferring or Using Biological or Chemical Weapons, available at: www.sussex.ac.uk/Units/spru/hsp/Harvard-Sussex-Program-draft-convention-Implementation.html, accessed 2 December 2011.
163. *Ibid*. at Article IV.

Annex I: Table of comparison of legal instruments

Instrument	Paper reference	Legally binding	In force	Number of states parties/ members[1]	Covers radio-active material	Covers nuclear material	Relevant definitions	Prohibitions relevant to illicit trafficking[2]	Prohibitions relevant to cross-border movements[3]	Juris-diction	Measures to account for/ secure/physically protect	EXIM control	National implement-tation	International co-operation and assistance /extradition
IAEA	III.B.													
NPT	III.B.1	Yes	Yes	189	No	Yes		Arts. I, II, III	Arts. I, II		Art. III	Art. III		
CPPNM (and amendment)	III.B.2	Yes	Yes[4]	145	No	Yes	Art. 1(a): nuclear material	Art. 7, Amendment: Art. 7(1)(d)	Amendment: Art. 7(1)(d)	Art. 8	Arts. 3, 4; Annex I; Amendment: Art. 2A	Art. 4	Arts. 4(4), 14; Amendment: Art. 2A	Arts. 5, 11, 13; Amendment: Arts. 11A, 11B
Radioactive Sources: Code of Conduct and Guidance on Import and Export	III.B.3	No	n/a	[5]	Yes	No	Code: Para. 1: orphan source, radioactive source				Code: Paras. 18, 19, 20, 22	Code: Paras. 23-29 Guidance: especially Paras. 8(a), 8(c), 11(a), 11(c), 13(a), 13(c)	Code: Paras. 18-19	Guidance: Para. 21
Safeguard Agreement[6]	III.B.4	Yes	Yes[7]	[8]	No	Yes	Para. 110: nuclear material				Paras. 7, 31, 32, 41, 51 et seq.	Paras. 12, 91-97		
Additional Protocol	III.B.5	Yes	Yes[9]	[10]	No	Yes	Art. 18(h): nuclear material				Art. 2(a)(vi)(a) and (vii)	Art. 2(a)(vi)(b)-(c)		
Conv. on Early Notification	III.B.6	Yes	Yes	112	Yes	Yes								Art. 2
Conv. on Assistance	III.B.7	Yes	Yes	107	Yes	Yes								Arts. 1-5

1. As at 29 November 2011.
2. Including preparations and alternative criminal liability. The prohibitions here refer to "illicit trafficking" in the broadest sense of the IAEA definitions discussed in Part I.A of this paper.
3. Including preparations and alternative criminal liability. The prohibitions here refer particularly to unlawful cross-border movements of nuclear or other radioactive materials.
4. The amendment is not yet in force.
5. As at 5 September 2011, 105 IAEA member states have written to the Director General stating that they are working towards following the guidance contained in the revised Code of Conduct.
6. INFCIRC/153 corrected.
7. With those states that have entered into such an agreement with the IAEA.
8. 178 states have entered into safeguards agreements with the IAEA (www.iaea.org/OurWork/SV/Safeguards/what.html).
9. With those states that have entered into such an agreement with the IAEA.
10. 112 states have agreed an additional protocol to their safeguards agreements with the IAEA (www.iaea.org/OurWork/SV/Safeguards/documents/AP_status_list.pdf).

Instrument	Paper reference	Legally binding	In force	Number of states parties/ members[11]	Covers radio-active material	Covers nuclear material	Relevant definitions	Prohibitions relevant to illicit trafficking[12]	Prohibitions relevant to cross-border movements[13]	Juris-diction	Measures to account for/ secure/physically protect	EXIM control	National implement-tation	International co-operation and assistance /extradition
UN	III.C													
Nuclear Terrorism Convention	III.C.1	Yes	Yes	77	Yes	Yes	Art. 1(1): radioactive material; Art. 1(2): nuclear material; Art. 1(4): device	Art. 2		Art. 9	Art. 8, 18		Arts. 5-7	Arts. 7, 13-17
Terrorist Bombings Convention	III.C.2	Yes	Yes	164	Yes	No	Art. 1(3)(b): explosive or other lethal device			Art. 6			Arts. 4-5, 15	Arts. 8-13, 15
Financing of Terrorism Conv.	III.C.3	Yes	Yes	175	No	No[14]		Art. 2(1)(a)[15]		Art. 7			Arts. 4-6, 18	Arts. 10-16, 18
Resolution 1540	III.C.4	Yes[16]	Yes	193	No	Yes[17]	Preamble: means of delivery; non-state actor; related materials				OP 3(a)-(b)	OP 3(c)-(d)	OP 2-3, 6, 8(b)	OP 7, 10
Resolution 1887	III.C.4	No	Yes	193	No	Yes					OP 15	OP 13	OP 27	OP 26

11. As at 29 November 2011.
12. Including preparations and alternative criminal liability. The prohibitions here refer to "illicit trafficking" in the broadest sense of the IAEA definitions discussed in Part I.A of this paper.
13. Including preparations and alternative criminal liability. The prohibitions here refer particularly to unlawful cross-border movements of nuclear or other radioactive materials.
14. Article 2(1)(a) prohibits funding of acts which are offences under, *inter alia*, the CPPNM and Terrorist Bombings Convention.
15. Article 2(1)(a) prohibits funding of acts which are offences under, *inter alia*, the CPPNM and Terrorist Bombings Convention.
16. UNSCR 1540 is a Chapter VII resolution.
17. "Related material" is defined in the Preamble as "… materials, equipment and technology covered by relevant multilateral treaties and arrangements, or included on national control lists, which could be used for the design, development, production or use of nuclear, chemical and biological weapons and their means of delivery".

Instrument	Paper reference	Legally binding	In force	Number of states parties/ members[18]	Covers radio-active material	Covers nuclear material	Relevant definitions	Prohibitions relevant to illicit trafficking[19]	Prohibitions relevant to cross-border movements[20]	Juris-diction	Measures to account for/ secure/physically protect	EXIM control	National implement-tation	International co-operation and assistance /extradition
ICAO	III.D													
Beijing Convention	III.D.1	Yes[21]	No	22[22]	Yes	Yes	Art. 2(e): radioactive material; Art. 2(f): nuclear material; Art. 2(h): BCN weapon; Art. 2(j): source and special fissionable material	Art. 1(1)(g)-(i), (3)-(5)	Art. 1(1)(i), (4)-(5)	Art. 8			Arts. 3-4	Arts. 12-18
IMO	III.E													
SUA/SUA 2005	III.E.1	Yes	Yes	157/21	Yes	Yes	Art. 1(1)(d): BCN weapon; Art 1(2)(b): source and special fissionable material	Art. 3bis(1)(a)(i), (iv), (b), (2); 3quater(b)-(e)	Art. 3bis(1)(b), (2); 3quater(c)-(e)	Art. 6			Arts. 5, 5bis	Arts. 7, 8, 8bis, 11, 11bis, 11ter, 12, 12bis, 13, 14
SUA PROT/SUA PROT 2005	III.E.2	Yes	Yes	146/17	Yes	Yes	[23]	Arts. 2bis(a), (c), 2ter		Art. 3			[24]	[25]
Regional treaties	III.F													
Tlatelolco Treaty	III.F.1	Yes	Yes	33	No	Yes	Art. 5: nuclear weapon				Art. 13	Art. 13		
Pelindaba Treaty	III.F.2	Yes	Yes	31	[26]	Yes	Art. 1(c): nuclear explosive device; Art. 1(f): nuclear material				Arts. 9(b)-(c) 10; Annex II	Art. 9(b)-(c); Annex II		

18. As at 29 November 2011.
19. Including preparations and alternative criminal liability. The prohibitions here refer to "illicit trafficking" in the broadest sense of the IAEA definitions discussed in Part I.A of this paper.
20. Including preparations and alternative criminal liability. The prohibitions here refer particularly to unlawful cross-border movements of nuclear or other radioactive materials.
21. Once it enters into force.
22. Signatories.
23. Article 1(1)(d) [BCN weapon] of the SUA 2005 applies *mutatis mutandis* to SUA PROT as amended.
24. Articles 5 and 5bis of the SUA as amended by SUA 2005 apply *mutatis mutandis* to SUA PROT as amended.
25. Articles 7, 11, 11bis, 11ter, 12, 12bis, 13, and 14 of the SUA as amended by SUA 2005 apply *mutatis mutandis* to SUA PROT as amended.
26. Reference is made in Article 7(b) to radioactive waste and matter – these terms are not defined.

Instrument	Paper reference	Legally binding	In force	Number of states parties/ members[27]	Covers radio-active material	Covers nuclear material	Relevant definitions	Prohibitions relevant to illicit trafficking[28]	Prohibitions relevant to cross-border movements[29]	Juris-diction	Measures to account for/ secure/physically protect	EXIM control	National implement-tation	International co-operation and assistance /extradition
Rarotonga Treaty	III.F.3	Yes	Yes	13	[30]	Yes	Art. 1(c): nuclear explosive device	Art. 7(1)(b)-(c)[31]			Arts. 4, 8(2)(c); Annex 2	Arts. 4, 8(2)(c); Annex 2		
Treaty of Bangkok	III.F.4	Yes	Yes	10	Yes	Yes	Art. 1(c): nuclear weapons; Art. 1(e): radioactive material; Art. 1(f): radioactive wastes; Art. 1(g): dumping				Arts. 4(2)(b)-(e), (3), 5, 10(2)(a)	Arts. 4(3), 5, 10(2)(a)		Arts. 11(2)
Other arrangements	III.G													
Zangger Committee	III.G.1	No	n/a	38	No	Yes	Memo. A, Section 2: [32] source and special fissionable material				INFCIRC/ 209/Rev.2 (modified, corrected)	INFCIRC/ 209/Rev.2 (modified, corrected)		
NSG	III.G.2	No	n/a	46	No	Yes	Annex A, Material and Equipment:[33] source and special fissionable material				INFCIRC/ 254/ Rev.10 /Part 1 INFCIRC/ 254/Rev.8 /Part 2	INFCIRC/ 254/ Rev.10/ Part 1 INFCIRC/ 254/Rev.8 /Part 2	INFCIRC/ 254/Rev.10/ Part 1 (Section 11) INFCIRC/ 254/Rev.8 /Part 2 (Sections 4-5)	INFCIRC/ 254/Rev.10/ Part 1 (Sections 12-17)

27. As at 29 November 2011.
28. Including preparations and alternative criminal liability. The prohibitions here refer to "illicit trafficking" in the broadest sense of the IAEA definitions discussed in Part I.A of this paper.
29. Including preparations and alternative criminal liability. The prohibitions here refer particularly to unlawful cross-border movements of nuclear or other radioactive materials.
30. Reference is made in Article 7(1) to radioactive waste and matter – these terms are not defined.
31. These provisions refer to dumping of radioactive waste and matter.
32. INFCIRC/209/Rev.2 (modified, corrected).
33. INFICIRC/254/Rev.10/Part 1.

Case law

Canada

Appellate decision upholding nuclear regulatory licensing process and practices for consultation with aboriginal groups: Fond du Lac Denesuline First Nation v. Canada (Attorney General)[1] *(5 March 2012)*

This case relates to the judicial review of a licence renewal decision made by the Canadian Nuclear Safety Commission (CNSC or Commission) respecting a uranium mine and mill operating licence held by AREVA Resources Canada Inc. (AREVA). It explores the legal duty that exists under Canadian constitutional law for the state to consult with Aboriginal groups when contemplating any action or decision which has the potential to adversely affect existing Aboriginal and Treaty rights. As it relates to the CNSC's regulatory decision-making under the Nuclear Safety and Control Act,[2] the case addresses the scope of the CNSC's role as an agent of the state[3] with respect to the Aboriginal consultation duty and the potential impact of the mining operation on Aboriginal rights.

The decision from the Federal Court of Appeal was an appeal from a lower court decision reviewing the CNSC licence renewal decision. Both Courts have confirmed the CNSC's understanding of its role as an agent of the Crown, for the purposes of ensuring that its regulatory decisions respect the constitutional duty owed to Canada's Aboriginal peoples. The decision recognises the jurisdiction of the Commission to determine whether a duty to consult Aboriginal groups has been triggered, and if so whether that duty has been satisfied; it also makes clear that for a duty to consult to exist, there must be evidence that a right may be harmed in some non-trivial, non-speculative way by the decision at issue.

Background

AREVA has a uranium mine and mill operation in the Athabasca Basin of northern Saskatchewan, and it sought renewal of its operating licence, as well as consolidation of two separate licences, in 2009. In the licensing hearing before the Commission, a group calling itself the "Athabasca Regional Government", made up of three recognised First Nations groups and some non-First Nations municipalities in the region, was granted intervener status to participate in the proceeding, and expressed concern respecting environmental protection and the potential effects on the community, if the Commission renewed and consolidated the licences. The group submitted that there was a duty to consult with them before the licensing decision was made.

1. *Fond du Lac Denesuline First Nation v. Canada* (*Attorney General*) 2012 FCA 73 per Evans J.A.
2. S.C. 1997, c.9.
3. In Canada, as a result of its history and its nature as a constitutional monarchy, "the Crown" is the term often used to represent generally the notion of the state or the government, as well as the sovereign. For that reason, the duty on the state with respect to Aboriginal consultation is considered the Crown's duty.

Canada's constitution recognises the existing Aboriginal and Treaty rights of Canada's Aboriginal peoples, the Indian, Inuit and Métis peoples.[4] The Crown's duty to consult stems from this recognition, and reflects the intention of reconciliation between Canada and its First Nations.

In its licensing decision, the Commission noted that the concerns of the interveners related mostly to information and the ability of community members to understand the relevant information and that, "in this case, the submissions of the interveners did not indicate that there were specific unresolved impacts on rights, which could be addressed within the authority of the Commission's powers". The Commission concluded:

> The Commission is satisfied that the intervenors have been informed of the Commission process and of the licensing action at issue, and have had a full opportunity to express their concerns and identify issues ... to the extent that a duty to consult was engaged, it was fulfilled in this case respecting the licensing action, by the Commission process and by the opportunities that were afforded for consultation within that process.

The Commission renewed AREVA's operating licence for eight years. The intervener group applied to the Federal Court of Canada for judicial review of the Commission's decision on the basis that their constitutional right to be consulted with respect to the decision to license AREVA's operation, had not been respected.

Federal Court Decision

The Federal Court determined that the intervener group had not established a reviewable error in the Commission's decision. The Court ruled that the applicants had failed to identify or establish specific Aboriginal or Treaty rights that could potentially be adversely affected by a decision to grant AREVA's application and failed to provide evidence of adverse impact or interference with specific Aboriginal rights. Instead, the Court found that the applicants had expressed broad and generalised concerns on matters unrelated to the particular licensing application before the Commission.

With respect to the appropriate role of the Commission, the Court found that as an agent of the Crown with a broad mandate over health, safety and environmental protection arising from nuclear-related activities, the Commission had a process that was the appropriate forum in which to address potential impacts on Aboriginal rights, such as protected hunting and fishing rights. With its remedial powers and ability to set terms and conditions of licences, the Commission would be well-placed to do the consultation and mitigation of impacts, should there be potential effects on Aboriginal rights, which was not the case here. The intervener group appealed this decision.

Findings of the Federal Court of Appeal

First, the Appeal Court recognised that before exercising its licensing powers the Commission had implicit jurisdiction to determine whether the appellants had an Aboriginal right to be consulted on the licence renewal and if they did, whether it had been satisfied. It noted that the Canadian Parliament should not be taken to have authorised the Commission to renew AREVA's licence if the First Nations' constitutional right to be consulted had not been satisfied.

Second, with respect to the appellants' principal ground of appeal, that the Commission's decision was erroneous in law because it was made in breach of their

4. Constitution Act, 1982, being Schedule B to the Canada Act, 1982 (UK), 1982, c. 11, s.35.

constitutional right to be consulted, the Court observed that the appellants adduced no evidence that the proposed licence might harm a protected Aboriginal or Treaty right:

> we agree with the Judge that the Appellants did not establish that a duty to consult arose on the present facts, because they failed to identify any potential harm to an Aboriginal or Treaty right that might be caused by the Commission's decision to renew AREVA's licence. True, the First Nations Appellants have existing Treaty rights to hunt and fish for food over an area of land that includes the McClean Lake and Midwest sites. However, they adduced no evidence that these Treaty rights might be harmed in some non-trivial manner by the licence renewal.

The Court was not persuaded that the Federal Court below had made any error that would warrant interference when it held that the appellants had not established that any of them, including the three First Nations appellants, had a right to be consulted on the matter before the Commission made its licensing decision.

Conclusion

This appeal judgement importantly recognises the jurisdiction of the Commission to determine whether a duty to consult Aboriginal groups has been triggered by a potential licensing decision, and if so, whether that duty has been satisfied through its licensing process and decision-making. The decision also makes clear that for the constitutional duty to consult to be found, there must be evidence that a right may be harmed in some non-trivial, non-speculative way.

The area of law dealing with the constitutional duty to consult Aboriginal groups with respect to their rights is evolving in Canada. Questions of the role of industry licensees, as well as different levels of government with various authorities respecting nuclear projects, are being answered as the jurisprudence evolves. This case is important to nuclear regulation, and makes it clearer to industry and the regulator, what the appropriate roles are, and when they are triggered.

In Canada, the constitution recognises and protects Aboriginal rights. In nuclear regulation, the Canadian Nuclear Safety Commission provides a public licensing hearing process that can provide a forum for participants to identify potential effects on rights that could arise from the activities sought to be licensed. Where such information reveals a duty to consult, and may give rise to a need to mitigate such potential or to accommodate in some way the potentially affected right, the Commission can do its licensing in a way that respects the Constitution. For the Commission, this is an integrated part of its mandate to protect the health, safety and environment for the benefit of Canadians.

France

Court of Appeal of Nîmes, 30 September 2011, Judgement No. 11-00899 (regarding the SOCATRI incident in July 2008)

Following the incident that occurred on the site of the SOCATRI company on 8 July 2008, the Carpentras Criminal Court rendered its judgement on 14 October 2010. The public prosecution, civil parties as well as SOCATRI then appealed the judgement to the Court of Appeal of Nîmes (*Cour d'Appel de Nîmes*).

In the judgement of the court of first instance, SOCATRI had been found innocent of the charge of polluting waterways but was fined to EUR 40 000 for the offence of not declaring without delay the incident following Article 54 of the Act

relating to Nuclear Transparency and Safety. The Court of Appeal reversed the judgement and reclassified the offence.

The Court of Appeal acknowledged that no harm to the fauna and flora had been caused by the spillage of uranium-bearing effluents. However, based on local orders then released in order to restrain the use of water, it considered that "the spillage of uranium-bearing effluents made by SOCATRI in the hydrological network temporarily led to important modifications of the normal water supply regime and caused restrictions of use to be placed on swimming areas".

The Court of Appeal therefore fined SOCATRI to pay an overall sum of EUR 300 000, on the one part for polluting waterways, and on the other part for the offence of not declaring the incident without delay.

Conseil d'État, *9 December 2011, request No. 324294 (regarding the association* Réseau « Sortir du nucléaire »)

On the 21 January 2009, the association *Réseau « Sortir du nucléaire »* went to the *Conseil d'État* seeking annulment of the Order of 18 November 2008 authorising EDF to complete the full dismantling of nuclear facility number 45, known as plant 1 of the Bugey nuclear electricity generating centre.

The plaintiff based its request on the alleged lack of compliance with the obligation incumbent on an operator to deliver information to the public. Indeed, Article R. 122-12 of the Environment Code requires the owner of a construction site to make available to the public a file with the impact assessment of the project, if no public survey or public consultation procedure has been made. The *Conseil d'État* considered that, insofar as a public survey had been voluntarily carried out by EDF although it was not legally required, the modalities of public information had been complied with.

The plaintiff further invoked the obligation to organise a public debate (public participation process before a project may be carried out) or, at least, to go to the *Commission nationale du débat public*, an independent administrative authority in charge of ensuring compliance with the obligation of public participation in development or construction plans. However, as a matter of fact, these provisions do not apply to definitive closure and dismantling operations (known as MAD/DEM). The *Conseil d'État* therefore rejected the request of the plaintiff, estimating that all obligations applicable to the operations had been complied with.

Switzerland

Judgement of the Federal Administrative Court in the matter of Balmer-Schafroth a.o.v. BKW FMB Energy Ltd on the repeal of the time limitation with respect to the operating licence for the Mühleberg nuclear power plant[5]

On 1 March 2012, the Federal Administrative Court partially approved the appeal filed by Ursula Balmer-Schafroth and others against the decision of the Federal Department of the Environment, Transport, Energy and Communications (DETEC) to repeal the time limitation with respect to the operating licence for the Mühleberg nuclear power plant.

5. See www.bvger.ch; press release 2012.

BKW has operated the Mühleberg power plant since 1972. The operating licence was originally granted until 31 December 2012. In a decision dated 17 December 2009, DETEC repealed the time limitation with respect to the operating licence.

The Federal Administrative Court examines appeals against decisions of the Federal Administration. In this matter, the Federal Administrative Court decided that in light of concerns over fissures in the core shroud of the Mühleberg nuclear power plant, the unfinished assessment of risks related to earthquakes and the lack of cooling water supply independent from the Aar River, the Mühleberg nuclear power plant was granted the licence to operate until mid-2013 at the latest.

The court considered that if BKW FMB Energy Ltd (BKW) wishes to extend the operating licence of the power plant beyond mid-2013, it must file an application for such extension with DETEC accompanied by a comprehensive maintenance plan for the plant. This document should explain how and by what means of investment the defects are to be remediated and how long BKW intends to keep the power plant in operation. Thus, both the need of BKW in terms of return on its investment and the general interest in legal certainty will be taken into account with respect to any decision to extend the operating licence for the plant.

The judgement rendered by the Federal Administrative Court can be appealed to the Federal Supreme Court (*Tribunal fédéral*). BKW[6] and DETEC[7] have decided to file an appeal to the Federal Supreme Court against the judgement of the Federal Administrative Court dated 1 March 2012.

United States

Judgement of a US District Court granting a permanent injunction against the State of Vermont in order to prevent certain State laws from prohibiting Vermont Yankee nuclear power plant's continued operation

This case concerns several challenges that Entergy, the owner of Vermont Yankee nuclear power plant, brought against the state of Vermont.[8] The Nuclear Regulatory Commission (NRC) had renewed Vermont Yankee's license, and Entergy sought to invalidate various Vermont laws that attempted to prohibit the continued operation of Vermont Yankee past the expiration of its original operating license.

Specifically, Entergy alleged that the following three Vermont statutes were pre-empted by the Atomic Energy Act (AEA): 1) Act 160, which required the Vermont general assembly to make an affirmative finding that continued operation of Vermont Yankee would "promote the general welfare," 2) Act 74, which required legislative approval for continued onsite spent fuel storage, and 3) Act 189, which called for a public assessment of the plant's continued reliability. Entergy also claimed that Vermont's conditioning of Vermont Yankee's continued operation on Entergy's agreement to provide the state with power for a below-market rate was pre-empted by the Federal Power Act, which provided the Federal Energy Regulatory Commission (FERC) with the exclusive authority to regulate wholesale electricity. Alternatively, Entergy argued that requiring a below-market rate power-purchase agreement was unconstitutional because it violated the "dormant" Commerce

6. See www.bkwfmb.ch/bkwfmb/fr/home/ueber_uns/Medien/medienmitteilunge/2012/Maerz/instandhaltungskonzept.html
7. See www.uvek.admin.ch/dokumentation/00474/00492/index.html?lang=fr&msg-id=43883
8. *Entergy Nuclear Vermont Yankee v. Shumlin*, No. 1:11-cv-99, 2012 WL 162400 (D. Vt. 19 January 2012).

Clause. The United States District Court for the District of Vermont agreed with nearly all of Entergy's claims and issued a permanent injunction against Vermont's enforcement of the challenged state laws.

In order to operate, Vermont Yankee requires both an NRC license and a "certificate of public good" from the Vermont Public Service Board (PSB). Vermont Yankee's NRC license, which was renewed in 2011, authorised the plant to operate for another 20 years after the expiration of the original NRC operating license in 2012. However, the PSB had not yet issued a renewed certificate of public good, in part because the state statutes noted above required legislative action before the PSB could renew the certificate. Since the legislature had not acted, and Vermont Yankee's original certificate of public good was set to expire in March 2012, Entergy filed a lawsuit to obtain an injunction against the state laws requiring legislative action.

The District Court ruled that the three Vermont statutes challenged by Entergy were indeed pre-empted by the AEA. The court relied on the Supreme Court's decision in Pacific Gas,[9] which held that states are only allowed to regulate economic and other non-safety aspects of nuclear power because NRC's congressionally mandated authority to regulate safety issues under the AEA pre-empts any state attempt to do so. The District Court noted that prior cases indicated that if a statute had some permissible purposes intermingled with impermissible ones, the impermissible purposes "doom the statute", and it will be pre-empted. The court found that the legislative histories of each of the three Vermont statutes at issue were riddled with impermissible radiological safety concerns, and that the statutes were therefore pre-empted.

However, the court rejected Entergy's Federal Power Act pre-emption claim because it held that although FERC had to ensure that any rate agreement between Vermont and Entergy was reasonable, it was unclear whether the Federal Power Act pre-empted Vermont from requiring a below-market agreement. Nevertheless, the court held that the below-market agreement violated the "dormant" Commerce Clause of the Federal Constitution because it discriminated against out-of-state residents by requiring Vermont Yankee to provide power to in-state residents at a reduced cost, which impermissibly burdens interstate commerce.

After the court rejected Vermont's four equitable defences, it granted Entergy a permanent injunction and prohibited Vermont from taking any action to compel Vermont Yankee to shut down after March 2012 for its failure to obtain legislative approval for a renewed certificate of public good. However, the court pointed out that Vermont could decline to renew the certificate of public good for any reason that was not pre-empted by, and did not violate, federal law.

The State of Vermont has appealed the District Court's decision.

9. See *Pac. Gas & Electric Co. v. State Energy Res. Conserv. & Develop. Comm'n*, 461 U.S. 190 (1983).

National legislative and regulatory activities

Armenia

Nuclear safety and radiation protection

New procedure for investigation of nuclear power plant operational events

The Decree on Approval of the Procedure for Investigation of Nuclear Power Plant Operational Events (No. 418) adopted by the Government of the Republic of Armenia on 5 April 2012 sets the parameters for categories of events and establishes requirements concerning the provision of information, the conduct of investigations and the submission of incident reports by nuclear power plant operators. The Decree also establishes the procedures for conducting additional investigations by the regulatory authority, if necessary, as well as requirements for the preparation of the reports resulting from such investigations.

New requirements for the accounting of radiation sources

The Ministerial Act Establishing Requirements for the Accounting of Radioisotopic and Ionising Radiation Sources at Atomic Energy Utilisation Installations (registration number 12512188) registered by the Ministry of Justice of the Republic of Armenia entered into force on 11 April 2012. This document establishes requirements relating to the accounting of radioisotopic and ionising radiation sources in atomic energy utilisation installations. In particular, the Ministerial Act sets requirements for the radioisotopic and ionising radiation sources subject to accounting, including the procedures for their inventory. The Ministerial Act also establishes guidelines concerning the use of such sources and, in certain circumstances, their exemption from accounting.

Australia

Radioactive waste management

New law regarding the development of a radioactive waste management facility

The National Radioactive Waste Management Act 2012, No. 29, 2012, "An Act to make provision in relation to the selection of a site for, and the establishment and operation of, a radioactive waste management facility, and for related purposes", became law on 4 April 2012 paving the way for the development of Australia's first centralised radioactive waste storage and disposal facility. The aim of the Act is to establish the process for the selection of the site for the radioactive waste management facility on voluntarily nominated land in Australia and to establish and operate such a facility on the selected site to ensure that all of Australia's radioactive waste is safely and securely managed.

Australia is a federation of six states and two internal territories with a division of power between the national (Commonwealth) government and the states and

territories. The states and territories are generally responsible for the regulation of radioactive waste held by private entities. The Act gives the Commonwealth power to make arrangements for the safe and secure management of radioactive waste generated, possessed or controlled by the Commonwealth or a Commonwealth entity. The Act also allows implicitly the waste facility to accept radioactive waste from the states and territories and private entities on the payment of a fee. However, the Act specifically excludes the storage or disposal of radioactive waste generated outside Australia at a waste facility established under the Act.

A significant feature of the Act is that the nomination and selection of a site to locate a radioactive waste facility is based on volunteerism. No site can be considered as a potential location for a radioactive waste management facility without the voluntary nomination of that site and the agreement of persons with relevant rights and interests.

The Act applies a decision-making process based on natural justice and puts in place provisions for procedural fairness, including a right to be heard by the Minister before a decision is reached. A person aggrieved by a decision of the Minister in relation to the selection of a site for a radioactive waste facility may apply for judicial review by the Australian Federal Court.

The Act ensures that a waste facility cannot be established unless it obtains necessary environmental and regulatory approvals under the Environment Protection and Biodiversity Conservation Act 1999, the Australian Radiation Protection and Nuclear Safety Act 1998 and the Nuclear Non-Proliferation (Safeguards) Act 1987 (these acts are available at: www.comlaw.gov.au).

The Act also provides for the establishment of a regional consultative committee to communicate with local communities during the environmental and regulatory approval process and the construction and operational stages of the project.

Given the need for sites to be volunteered, nominations to be accepted, thorough environmental assessment and regulatory approval processes and possible court challenges to be heard, it is not expected that a facility will be operable until the latter part of this decade.

The National Radioactive Waste Management Act 2012 is reprinted in this volume and available at: www.comlaw.gov.au/Details/C2012A00029.

Austria

Nuclear safety and radiation protection

Substantive changes to nuclear safety and radiation protection requirements

The amendment of the General Radiation Protection Ordinance (*Allgemeine Strahlenschutzverordnung*) (*Federal Law Gazette II* No. 76/2012) serves primarily as the means for the transposition of Council Directive 2009/71/EURATOM of 25 June 2009 establishing a Community framework for the safety of nuclear installations. Due to the fact that according to the Federal Constitutional Law "for a Nuclear-free Austria" (*Federal Law Gazette I* No 149/1999), nuclear power plants must not be constructed nor operated and the transport of fissile material for purposes of energy production and disposal are forbidden, an implementating law was only required with respect to "research reactors". Consequently, the revised General Radiation Protection Ordinance provides rules regarding site selection and design as well as requirements for periodic safety reviews and the decommissioning of such installations. Furthermore, legislation on the education and training of personnel for research

reactors has been adopted and the rules regarding radiation protection training were revised. Finally, the amendment sets specific criteria for the classification of exposed workers as well as for the revision of access provisions for non-exposed workers in radiation areas.

Belgium

Nuclear security

New requirements for the protection of critical infrastructures

The Act of 1 July 2011 on Security and Protection of Critical Infrastructures transposed the Council Directive 2008/114/EC of 8 December 2008 on the identification and designation of European critical infrastructures and the assessment of the need to improve their protection and aims to ensure the optimal security and protection of these assets. The Directive requires member states of the European Union to put in place security mechanisms protecting "European critical infrastructures".

The purpose of the Act is therefore to maintain functions such as vital energy generation and transmission, crucial transportation junction points, essential components of the electronic payment system, and vital connectors of electronic communications. Along with European critical infrastructures, the Belgium territory has other assets which must be protected.

The transposition of the Directive creates the opportunity to integrate the new concept of critical infrastructure, to create a level-playing field to ensure the security and protection of European and national critical infrastructures alike, to enlarge the scope of the missions of the Organ of Co-ordination for the Analysis of Threats (OCAM) in the field of analysing the threats to critical infrastructures and, in a broader context, to ensure that federal and local assets are protected in an optimal way. The Act thus establishes a security and protection mechanism for European and national critical infrastructures as well as for other assets of federal or local interest.

Nuclear safety

Changes to safety measures for nuclear facilities

On 30 November 2011, on the proposal of the Federal Agency for nuclear control (*Agence Fédérale de Contrôle Nucléaire* or AFCN), the King signed a Decree prescribing safety measures for nuclear facilities that was published in the *Belgian Official Gazette* on 21 December 2011. The release of this Decree is of particular importance following the events at the TEPCO Fukushima Daiichi nuclear power plant.

The Decree is aimed at operators of Class I nuclear facilities, in particular those who operate electricity-generating reactors. It prescribes a series of safety measures which must be implemented by operators. This approach, which is very common among international norms and rules in the field of nuclear safety, is based on a goal-oriented regulation. The Belgian nuclear regulatory authorities, the AFCN assisted by Bel V shall ensure that operators are setting up implementation processes in order to meet the objectives set out in the Decree, and that these processes are efficient. In addition, the Decree establishes a set of requirements for operators of Class I facilities that used to be required by AFCN and Bel V that were not available in a single, freestanding document.

The text of the Decree is divided into two major parts. The first part sets forth the prescriptions of general safety which apply to every Class I facility. The second part sets forth prescriptions which are specific to power reactors. Supplementary

chapters will be added in the future to establish prescriptions specifically designed for other types of facilities.

This Decree will also provide prescriptions of the planned near-surface radioactive waste repository in Dessel, which was agreed upon by the Federal Council of Ministers in June 2006.

The Decree is structured as follows.

- Safety management

Operators must declare in writing that they consider safety to be a major priority in their activities and commit themselves to enhance safety as well as to assess their performance and progress in respect thereof. They have to establish and document an appropriate organisational structure for carrying out their activities safely. Their decisions concerning safety matters have to be sufficiently examined. The educational needs of personnel have to be systematically listed, defined and documented for all duties relating to safety. They must have an integrated and rigorous management system in order to ensure that the issue of safety is a concern at all levels and during the preparation and implementation of all actions and processes.

- Conception phase

During the facility conception phase, principles such as defence-in-depth, single failure criterion and "fail safe" should be implemented. With respect to reactors, special prescriptions regulate the main systems, structures and major safety components such as shutdown functions, control instrumentation, the protection system, the containment structure and the control room. As regards reactors, it is recommended that serious accidents which have not been taken into account during the conception phase should be analysed in order to identify those issues for which it is possible to take prevention and attenuation measures. Some articles of the Decree require structures, systems and components to be classified according to their importance for safety. Classified equipment should be submitted for special qualification procedures.

- Operation

The operation of nuclear facilities must comply with the limits and conditions relating to safety, requirements regarding staffing and equipment availability, as well as measures to be taken in case of equipment failure. Operators are required to implement a programme to manage the aging of facilities in order to maintain the availability of safety functions and the reliability of structures, systems and major safety components during their entire lifetime. In addition, operators have to manage the feedback in a systematic way from operating their own nuclear power plant as well as similar facilities (including foreign ones) in order to learn relevant lessons and take action as required. Maintenance programmes, in-service inspections, tests and functional testing have to be defined, documented and implemented. For nuclear power plants, procedures should be defined in case of potential accidents which were foreseen during the conception phase, and handbooks for managing serious accidents must be available for situations which were not foreseen during the conception phase.

- Safety monitoring

Nuclear facilities are required to be designed and operated in compliance with a safety report, which must be kept up to date for the entire lifetime of the installation. A probabilistic safety analysis must be developed for each nuclear power plant. Those analyses shall assess the probability of core fusion (level 1 analysis) and of radioactive leakages into the environment (level 2 analysis). These

analyses will serve as a support to assessments and decisions relating to safety. Periodic safety reviews are required to confirm the facility's level of safety; in principle, these reviews should take place every ten years. Operators must apply a rigorous methodology to manage modifications, whether temporary or permanent, through a phased approach.

- Preparation for emergency situations

Operators must implement an internal emergency preparedness plan. They must provide adequate resources in terms of staffing, material, and onsite infrastructure as well as appropriate interfaces with external stakeholders if necessary. The internal emergency plan must be regularly rehearsed. In addition, operators must implement a strategy against the risk of fire.

Nuclear safety and radiation protection

New requirements regarding the detection of orphan sources

The Royal Decree of 14 October 2011 relating to the detection of radioactive substances in certain waste and material flows and relating to the management of sensitive facilities in the field of orphan sources (*Belgian Official Gazette* of 25 November 2011) introduces changes to the way that sources in non-nuclear facilities such as waste recycling and processing installations are handled. A subsequent, complimentary AFCN Decree of 3 November 2011 established the guidelines to be followed in case of detection or discovery of an orphan source at a non-nuclear facility.

This Decree requires that major scrap metal dealers purchase radiation portal monitors for their premises in order to automatically screen all material brought into their facilities. Such a measure aims at preventing uncontrolled orphan sources from being mixed with other material in the treatment process, and, as a consequence, any potential emission of ionising radiation and any contamination. Any alarm has to be reported and the source of potential contamination has to be eliminated to ensure an optimal level of protection for workers. Other facilities that might receive orphan sources such as stockyards for containers are advised to be as vigilant as possible. To this effect, they are assisted by the AFCN, which organises in particular annual educational sessions for involved workers. The Belgian body managing radioactive waste and enriched fissile material (*Organisme national des déchets radioactifs et des matières fissiles enrichies* or ONDRAF) guarantees that funds will be available to retrieve and manage any orphan source.

New requirements regarding medical uses of radiation

The Decree of the Federal Agency for nuclear control of 28 September 2011 regarding patient dosimetry updates the guidance on this issue that was first issued by the authorities in 2006.

In addition, the Decree of 25 July 2011 establishing acceptability criteria for X-ray devices designed for diagnostic radiology medicine aims at determining the criteria for annual quality control. This Decree establishes testing modalities and effective limits, and also establishes criteria for the conformity assessment.

A new framework for monitoring radon exposure

The Decree of the Federal Agency for nuclear control of 10 August 2011 identifying radon risk areas creates a new framework for monitoring radon exposure. In the framework of Articles 4 and 70 of the General Radiation Protection Regulation (RGPRI: *règlement général de la protection de la population, des travailleurs et de*

l'environnement contre le danger des rayonnements ionisants), the AFCN defined hazardous areas requiring radon surveillance. The above Decree of the AFCN classifies administrative areas and Belgian municipalities according to their risk of radon exposure. The definition of areas subject to radon-related risk is based on measurement campaigns carried out by AFCN in collaboration with regions, communities and provinces. Apart from areas at risk from geological radon where radon originates from natural geological properties of the subsoil, the Decree also takes account of radon-affected areas where radon results from industrial activities (for example in gypsum landfills). This classification of radon-affected areas will give the competent authorities the opportunity to decide when preventive measures or measures to reduce radon levels are appropriate.

Brazil

Nuclear security

Establishment of new nuclear security organisation

The Brazilian Presidency has adopted Order 31 of 26 March 2012 creating an Articulation Committee concerning Security and Logistics of the Protection System for Brazil's Nuclear Programme (*Comitê de Articulação nas áreas de Segurança e Logística Proteção ao Programa Nuclear Brasileiro* or *CASLON*) (*Brazilian Official Bulletin* of 27 March 2012). The Committee will provide information on situations that are likely to affect the security of nuclear activities in Brazil. The Committee will take joint actions with the federal government and the municipal government in order to neutralise activities which could hamper the functioning of nuclear facilities and the transport of nuclear materials or sensitive equipment for the Brazilian nuclear programme. The Committee may also take preventive measures against interference in the activities of the Brazilian nuclear programme by organs, organisations or entities without legal authority to intervene into Brazilian nuclear activities.

France

Liability and compensation

Increase in the amount of operator liability in case of nuclear incident

The purpose of the Government Order No. 2012-6 of 5 January 2012 amending Books I and V of the French Environmental Code, published in the *Official Journal of Laws and Decrees* of 6 January 2012, p. 218, text number 4, is to insert into the Environmental Code some provisions of the following existing acts, which were not codified into the Code of Energy:

- Act No. 68-943 of 30 October 1968, as amended, on third party liability in the field of nuclear energy;
- Act No. 2006-686 of 13 June 2006, on transparency and security in the nuclear field;
- Planning Act No. 2006-739 of 28 June 2006 concerning the sustainable management of radioactive materials and waste.

In accordance with the French Constitution, this Order has only regulatory value until it has been ratified by Parliament. As such, a draft law for purposes of ratifying

this Order was introduced to Parliament on 21 March 2012. Once this ratification law is passed by Parliament, this Order will retroactively acquire legislative value.

The draft law ratifying the Order also modifies the amounts to which operators can be held liable in case of a nuclear incident, thereby anticipating the amount of operator liability foreseen by the Protocol of 12 February 2004 to amend the Paris Convention. The initial amounts of operator liability were established by the abovementioned Act No. 68-943 of 30 October 1968.

Indeed, the maximum amount for which an operator can be currently held liable will be increased from EUR 91.5 million to EUR 700 million. In addition, that amount is intended to increase from EUR 22 million to EUR 70 million for lower-risk nuclear installations and to EUR 80 million for the carriage of nuclear substances. These provisions shall enter into force after the ratification law has been passed by Parliament and published in the official bulletin of the French Republic.

General legislation

New comprehensive requirements for basic nuclear installations

The Ministerial Order of 7 February 2012 establishing general rules for basic nuclear installations (INB or *Installations nucléaires de base*) published in the Journal of Laws and Decrees (*Journal Officiel Lois et Décrets*), 8 February 2012, p. 2231, text number 12, aims at completing the new legal framework created by Act No. 2006-686 of 13 June 2006, on transparency and security in the nuclear field, as well as incorporating into a single text several regulations applicable to INBs, thereby repealing three previous Ministerial Orders which had established the technical rules regulating such installations. Most of the provisions of the Order will enter into force on 1 July 2013.

The Order deals primarily with the organisation and responsibilities of INB operators with respect to nuclear safety, control over nuisances and their impact on public health and environment, waste management and emergency preparedness and management. In addition, the Order introduces into French law a number of the "reference levels" which have been established by the Western European Nuclear Regulators' Association (WENRA).

In accordance with the terms of this Order, the operator is responsible for establishing and implementing a policy to protect security, public health, and nature and the environment. The operator's policy must ensure that protection of these interests is treated as the top priority through implementation of nuclear safety measures including accident prevention and consequence mitigation. These policies must ensure that protection of these interests is given priority over the advancement of industrial or economic benefits associated with operation of the nuclear installation and over the progress of research activities related to the nuclear installation. The operator's policy must also provide for the constant search for ways to improve protection of its top priorities. This policy must define these objectives, setting out the operator's strategy for accomplishing these goals and committing the necessary financial resources. The operator is required to formalise this policy and its commitment to implement it in a document that is available to the nuclear safety authority and its official representatives.

New report by the Court of Auditors (Cour des Comptes) *on the costs of nuclear energy*

At the Prime Minister's request, the Court of Auditors carried out a survey to "appraise the costs of the nuclear industry, including those costs related to dismantling and site insurance".

The results of the survey presented in the report address the following issues:

- Past expenditures: a very heavy initial investment is required, especially considering the fact that the construction cost per megawatt has risen considerably over time. The Court of Auditors noted the major research expenditures from both public and private funds.

- Operating expenses: the report presents the costs borne by EDF as an operator and public spending for research and for costs relating to security, safety and information to the public.

- Future costs: with respect to the dismantling of nuclear facilities, the Court of Auditors found that the methods used by EDF to calculate these costs were appropriate, but the Court could not validate their technical parameters. Regarding the long-term management of spent fuel and radioactive waste, the Court of Auditors came to the conclusion that future costs were properly identified but were not assessed with the same degree of accuracy by all operators. Taking into account the uncertainties surrounding the future cost of waste disposal, the Court estimated that these expenses are very likely to increase in the future.

- Updating of available funds: the Court of Auditors noted that heavy investments will have to be made with respect to maintenance.

- Potential changes in expenses to come: the Court of Auditors stated that the service life of existing nuclear power plants is a major factor in the analysis of the overall cost of nuclear energy. Maintaining the current objective of a 40-year service life would require a huge investment effort in order to keep up the current electronuclear production at the same level, an effort which appears almost impossible. The Court therefore noted that other alternatives consist in either have this duration evolve, or to change significantly and rapidly the composition of the energy mix to other energy sources. The Court of Auditors estimated that whatever choices are made, the present rates of maintenance, the investment will have to be at least doubled, resulting in an average increased production cost around 10%.

The report concludes by calling for a clear energy strategy to be formulated, debated and adopted in a fully transparent and precise manner.

Germany

Nuclear safety and radiation protection

Amendments to the Radiation Protection Ordinance and to the X-Rays Ordinance

The Federal Government and the Federal Ministry for the Environment, Nature Conservation and Reactor Safety issued the Ordinance of 4 October 2011 to amend the Radiation Protection Ordinances (*Bundesgesetzblatt 2011,* p. 2000). The amendments relate to the 2001 Radiation Protection Ordinance as amended (*Nuclear Law Bulletin,* No. 68, p. 59) and to the 2003 X-Rays Ordinance (*Nuclear Law Bulletin,* No. 73, p. 85). The amendments entered into force on 1 November 2011.

The Ordinance, *inter alia*, covers the following main fields:

- Medical research: a simplified licensing procedure is introduced for so-called accompanying diagnostics. The amendment applies to both the Radiation Protection Ordinance and the X-Rays Ordinance.

- Unjustified activities: certain activities must be permitted no longer such as the use of materials containing uranium or thorium for the production of colours to be used to glaze porcelain which may have contact with food. The amendment applies to both the Radiation Protection Ordinance and the X-Rays Ordinance.

- Clearance: the amendment harmonises the clearance levels of the Radiation Protection Ordinance with the requirements under the general law of waste management in order to ensure that material which is covered no longer by the Radiation Protection Ordinance does not present a radiation risk if disposed of at a conventional waste disposal site or if re-used for another purpose.

- Loss of radioactive substances: the duty to notify the authorities about the loss of substances under the Radiation Protection Ordinance is extended to situations involving substances regarding which only a suspicion exists that they may exceed the levels of an unlimited clearance from the Radiation Protection Ordinance. Moreover, the regulatory body and the police shall inform each other on the loss and the recovery of radioactive substances.

- Restriction of transboundary shipment of naturally occurring radioactive material (NORM): residual radioactive materials originating from industrial processes in other countries, e.g. sludge or deposition originating from the production of oil or natural gas, which for further use are imported into Germany, shall be controlled in the same way as materials produced in Germany. The amendment fills a gap in the Radiation Protection Ordinance. The import of such material for final disposal in Germany is not permitted.

For further details see the *Exposé des Motifs* of the Ordinance at *Bundesrats-Drucksache* 266/11.

Transport of radioactive material

New consolidated versions of Ordinances on the Transport of Dangerous Goods

A consolidated version of the Ordinance on the Domestic and Transboundary Transport of Dangerous Goods by Road, Rail and Internal Waterways (Dangerous Goods Ordinance Road, Rail, Waterways) was published on 16 December 2011 in *Bundesgesetzblatt 2011*, p. 2 733. The version incorporates the following amendments to the Ordinance: Ordinance of 17 June 2009 (*Nuclear Law Bulletin,* No. 84, p. 134); Ordinance of 3 August 2010 (*Bundesgesetzblatt 2010*, p. 1139); Ordinance of 4 March 2011 (*Bundesgesetzblatt 2011*, p. 347); Ordinance of 8 November 2011 (*Bundesgesetzblatt 2011*, p. 2 178); Ordinance of 29 November 2011 (*Bundesgesetzblatt 2011*, p. 2 349). The new version entered into force on 3 December 2011.

The Ordinance on the Transport of Dangerous Goods by Sea-Going Vessels (Dangerous Goods Ordinance Sea) was likewise published in a consolidated version on 16 December 2011 (*Bundesgesetzblatt 2011*, p. 2 784). The version covers the amendments by Ordinances of 22 February 2010 (*Bundesgesetzblatt 2010*, p. 238), of 3 August 2010 (*Bundesgesetzblatt 2010*, p. 1 139), of 29 November 2011 (*Bundesgesetzblatt 2011*, p. 2 349) and of 16 December 2011 (*Bundesgesetzblatt 2011*, p. 2 780). The new version entered into force on 22 December 2011.

International trade

Changes to the list of foreign trade laws and regulations

The Federal Ministry for Economics and Technology published in Circular Decree No. 1/2012 of 3 January 2012 a complete list of all acts, ordinances and ministerial

orders covering foreign trade issues, including nuclear trade, which were in force on 31 December 2011 (*Bundesanzeiger 2012*, No. 4 p. 62) (see also *Nuclear Law Bulletin,* No. 81, p. 106). Part I of the list covers acts and ordinances; Part II enumerates relevant ministerial decrees.

Changes to the basic legal instruments governing foreign trade

Main legal source of foreign trade is the Foreign Trade Act in its consolidated version of 27 May 2009 as last amended by Act of 27 July 2011 to implement EU Directive 2009/43/EC of 6 May 2009 (*Bundesgesetzblatt 2009*, p. 1 150; *2011*, p. 1 595). The Act is implemented by the Ordinance to Implement the Foreign Trade Act (Foreign Trade Ordinance) in its consolidated version of 22 November 1993 as last amended by the 92nd Ordinance to amend the Foreign Trade Ordinance of 16 August 2011 (*Bundesgesetzblatt 1993*, pp. 1 934 and 2 993; *Bundesanzeiger 2011*, p. 2 933).

The Export List is published as annex AL to the Foreign Trade Ordinance. Currently, the 109th Ordinance of 31 March 2010 to amend the Export List applies (*Bundesanzeiger 2010*, p. 1 351).

The Import List is published as an annex to the Foreign Trade Act. The latest status of the List is contained in the 161st Ordinance of 15 December 2011 to amend the Import List (*Bundesanzeiger 2011*, p. 4 653).

Hungary

Nuclear safety and radiation protection

Changes to nuclear safety requirements

The Atomic Energy Act requires that the Hungarian Atomic Energy Authority (HAEA) review the national nuclear safety requirements every five years and make improvements thereto taking into account scientific developments and national and international experience. In accordance with this obligation, the HAEA recently reviewed the 2005 nuclear safety regulation (Governmental Decree 89/2005). During HAEA's review process, the Western European Nuclear Regulators Association (WENRA) safety reference levels were incorporated. In addition to the WENRA safety reference levels, the requirements and recommendations of the IAEA with respect to nuclear safety published since 2005, the suggestions of international experts and experience gained through application of the national safety requirements were taken into consideration. The resulting new safety requirements were put into force on 1 November 2011 by Governmental Decree 118/2011 (VII.11.) on the nuclear safety requirements for nuclear facilities and the procedures of the Hungarian Atomic Energy Authority in nuclear safety regulatory matters.

General legislation

Modification of Act CXVI of 1996 on Atomic Energy

Recent modifications to the Atomic Energy Act have led to a number of significant changes. Under Hungarian law, the scope of authority and duties of a government office such as the Hungarian Atomic Energy Authority (HAEA) must be regulated at the statutory level. Until 2011, the Act on Atomic Energy and the Government Decree 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 regulated the scope and duties of the HAEA.

Now, all of the activities and functions of the HAEA are written into the Atomic Energy Act.

In addition, the modification to the Atomic Energy Act expanded significantly the authority of the HAEA with respect to regulatory oversight. HAEA's role had been limited to licensing, inspection and enforcement. The Act provides that HAEA's regulatory assessment process may be used as a tool to improve the overall regulatory structure through assessment of experience gained from operational experience and its effectiveness, assessment of technical and organisational processes, assessment of technical and event indicators referring to changes in safety levels, and assessment of online accessible data and other relevant factors. Modifications to the Act also change the inspections required for the licensing process for modifications to nuclear facilities and the inspection programme that tracks the lifecycle of the modification.

India

Liability and compensation

Final versions of recent liability and compensation legislation available online

The final versions of the Civil Liability for Nuclear Damage Act, 2010 and the Civil Liability for Nuclear Damage Rules, 2011 are now available on the Government of India Department of Atomic Energy website. These documents are available at the following weblinks:

- Civil Liability for Nuclear Damage Act, 2010: http://www.dae.gov.in /rules/civilnucliab.pdf
- Civil Liability for Nuclear Damage Rules, 2011: http://www.dae.gov.in /rules/liab_rules.pdf
- Notification of entry into force: http://www.dae.gov.in/rules/liab_notif.pdf

An earlier version of the Civil Liability for Nuclear Damage Act, 2010 was reprinted in *Nuclear Law Bulletin* No. 88 at pages 145-162. Readers should be aware that the bill as published was not the final version of the Act.

Ireland

Transport of radioactive material

New regulations relating to the transport of dangerous goods by road

Statutory Instrument No. 349 of 2011 transposed into Irish law Directive 2008/68/EC on the inland transport of dangerous goods by road, adopting the annexes to the directive into Irish law for the first time. The Irish Minister for Jobs, Enterprise and Innovation in July 2011 provided the regulatory basis to enable Ireland to implement EC regulations regarding the carriage of dangerous goods by road and the use of transportable pressure equipment. The Regulations apply to the transport of dangerous goods by road in tanks, in bulk and in packages. The Regulations also cover the packing, loading, filling and unloading of dangerous goods in relation to their carriage.

The Regulations and the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) place duties on the various participants

associated with the transport. The requirements for vehicles, tanks, containers, receptacles and packages containing dangerous goods during transport include that drivers and other individuals involved have adequate training and, in the case of drivers, hold certificates of such training. The Regulations also contain provisions on the EU harmonised approach to enforcement measures such as road checks.

The Regulations designate the Radiological Protection Institute of Ireland as the competent authority with respect to matters relating to the carriage by road of ADR Class 7 radioactive materials. The Radiological Protection Institute is thus responsible for the inspections of vehicles and premises, the approval of specialisation courses for the training of drivers of vehicles carrying ADR Class 7 radioactive material and the examination of persons who have participated in those courses required under the relevant provisions.

Lithuania

Licensing and regulatory infrastructure

Changes to site evaluation reports

Resolution No. 83 dated 25 January 2012 of the Government of the Republic of Lithuania on the approval of rules of procedure of the assessment of the nuclear power plant's site evaluation report establishes the procedure for submission and review of the site evaluation report as well as the procedure of presenting findings by state agencies, which are required to review and assess the report, and final approval of the report by State Nuclear Power Safety Inspectorate. The Resolution is available at: www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id=417688&p_query=&p_tr2=2 (Lithuanian only).

The specific requirements for the nuclear power plant's site evaluation are established by the Nuclear Safety Requirements BSR-2.1.3-2010 "General Requirements for the Site evaluation of a Nuclear Power Plant", approved by the Order of the Head of State Nuclear Power Safety Inspectorate No. 22.3-58, 20 July 2010. The requirements document is available at: www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id=379066&p_query=&p_tr2= (Lithuanian only)

Nuclear safety and radiation protection

Amendments to various laws relating to nuclear safety

In the end of 2011 and beginning of 2012, the system of nuclear safety was reviewed and supplemented with new legal documents and amendments of existing legal documents. These changes were necessary due to the adoption of amendments to the main nuclear energy related laws including the Law on Nuclear Energy (I-1613, adopted on 28 June 2011), the Law on Radioactive Waste Management (VIII-1190, adopted on 28 June 2011), and the Law on Radiation Protection (VIII-1019, adopted on 28 June 2011) and the adoption of the Law on Nuclear Safety (XI-1539, adopted on 28 June 2011). These amendments entered in force on 1 October 2011.

Revised requirements relating to modifications of nuclear installations

The Nuclear Safety Requirements BSR-1.8.2-2011 "Categories of Modifications of Nuclear Installations and Procedure of Performing the Modifications", approved by the Order of the Head of State Nuclear Power Safety Inspectorate No. 22.3-99, 7 October 2011 that entered into force on 1 December 2011 replaced a previous version of requirements of a similar scope. The revised requirements establish

categories of modifications of nuclear installations and assign the licensee with the responsibility to document the modification process, carry out safety assessments, and, in the case of safety related modifications, to submit documents for the approval of the State Nuclear Power Safety Inspectorate. The requirements document is available at: www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id =408366&p_query=&p_tr2=2 (Lithuanian only).

New safety reporting requirements

Nuclear Safety Requirements BSR-2.1.4-2011 "The Preparation and Usage of the Safety Analysis Report of a Nuclear Power Plant", approved by the Order of the Head of State Nuclear Power Safety Inspectorate No. 22.3-117, dated 25 November 2011 that entered into force on 1 January 2012 provide the basic requirements of structure, content and form of the safety analysis report (preliminary, updated and final) of a nuclear power plant. The Requirements apply to nuclear power plants with pressurised water reactors, boiling water reactors and heavy water channel reactors. The requirements document is available at: www3.lrs.lt/pls/inter3 /dokpaieska.showdoc_l?p_id=413274&p_query=&p_tr2=2 (Lithuanian only).

New requirements relating to releases of radionuclides

Nuclear Safety Requirements BSR-1.9.1-2011 "The Limits of the Discharges of Radionuclides from Nuclear Facilities and Requirements for the Plan of Discharge of Radionuclides", approved by the Order of the Head of State Nuclear Power Safety Inspectorate No. 22.3-89 dated 27 September 2011 establish the limits of the discharges and releases of the radionuclides from nuclear power plants to the atmosphere and water. These requirements also establish the methodology for calculating the activity levels of radionuclides discharged to environment, the requirements for the preparation and submission of the plan of discharge of radionuclides and the requirements for control of such discharges. The requirements document is available at: www3.lrs.lt/pls/inter3/dokpaieska. showdoc_l?p_id=407594&p_query=&p_tr2= (Lithuanian only).

New conditions for removal of items from regulatory control

Nuclear Safety Requirements BSR-1.9.2-2011 "Assessment and Application of the Clearance Levels for Materials and Waste generated during Nuclear Activities", approved by the Order of the Head of State Nuclear Power Safety Inspectorate No. 22.3-90 dated 27 September 2011 establish conditions and criteria for the removal from regulatory control of materials, waste, devices, installations and structures that have been used in nuclear activities and contaminated with radionuclides or that contain radionuclides. The requirements provide also for the decontamination of materials and waste for removal from regulatory control. The requirements do not apply to liquid radioactive waste and containers and vehicles contaminated during transportation of radioactive material. The requirements document is available at: www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id =407604&p_query=&p_tr2= (Lithuanian only).

New radiation protection requirements

Nuclear Safety Requirements BSR-1.9.3-2011 "Radiation Protection in Nuclear Facilities", approved by the Order of the Head of State Nuclear Power Safety Inspectorate No. 22.3-95 dated 6 October 2011 establish the radiation protection requirements for workers, in particular with respect to at-risk groups of workers in nuclear installations constantly or temporarily and other persons conducting activities in nuclear installations. These requirements establish general radiation protection requirements at nuclear facilities, requirements for admission to

controlled and monitored zones, requirements for internal procedures of the licensee for insuring radiation protection, requirements for establishing dose limits for outside workers, monitoring of ionising radiation and workplaces of workers and outside workers. The requirements also cover issues relating to personal protective equipment, the radiation control system, the application of the as low as reasonably achievable (ALARA) principle, training, and other related issues. Requirements for the facility's radiation protection programme are also established in this document. The requirements document is available at: www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id=408190&p_query=&p_tr2= (Lithuanian only).

New inspection procedure requirements

Nuclear Safety Requirements BSR-1.1.3-2011 "Inspections by State Nuclear Power Safety Inspectorate", approved by the Order of the Head of State Nuclear Power Safety Inspectorate No. 22.3-82 dated 25 August 2011 establish procedures for different types of inspections carried out by the inspectors of State Nuclear Power Safety Inspectorate. The requirements entered into force on 1 October 2011, replacing previous requirements of a similar scope, which were reviewed and revised after the adoption of the Law on Nuclear Safety and the revised Law on Nuclear Energy. The requirements document is available at: www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id=405297&p_query=&p_tr2= (Lithuanian only).

New procedure for compliance enforcement

Officials of the State Nuclear Power Safety Inspectorate are entitled to apply enforcement measures in case of non-compliance with the requirements of the State Nuclear Power Safety Inspectorate. The Inspectorate may order an operator to eliminate the violations, to suspend particular activities within the terms set by the Head of State Nuclear Power Safety Inspectorate, to shut down a nuclear reactor or reduce the power of the reactor, and/or to suspend the operation of other installations or other activities) pursuant to Law on Nuclear Safety. The Inspectorate may impose administrative penalties or other disciplinary sanctions pursuant to the Code of the Administrative Offences for the persons and penalties for legal persons pursuant to the Law on Nuclear Safety.

Nuclear Safety Requirements BSR-1.1.4-2011 "Rules of Procedure of the Application of Enforcement Measures by State Nuclear Power Safety Inspectorate", approved by the Order of the Head of State Nuclear Power Safety Inspectorate No. 22.3-106, dated 24 October 2011 established detailed procedures for the application of the enforcement measures mentioned above. The requirements document is available at: www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id=409554&p_query=&p_tr2= (Lithuanian only).

Nuclear security

Establishment of a design basis threat review process

Resolution No. 1273 of 2 February 2012 of the Government of the Republic of Lithuania on the approval of rules of procedure of the development and review of the design basis threat and submission of information to state power safety inspectorate establish the procedure for the development and review of the design basis threat, including procedural arrangements of the work of the Design Basis Threat Development Commission. These rules of procedure also establish the respective responsibilities of state agencies and other legal entities to submit information required to develop and review the design basis threat. The requirements document is available at: www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id=417874&p_query=&p_tr2=2 (Lithuanian only).

Moldova

General legislation

Co-operation with the International Atomic Energy Agency

In February 2012, the Moldovan National Agency for Regulation of Nuclear and Radiological Activities submitted its first national report to the International Atomic Energy Agency (IAEA) prepared in accordance with Article 32 of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. Moldova joined the Joint Convention in December 2009 through Law No. 111 of 18 December 2009 that was published on 31 December 2009 in the *Official Monitor*, No. 197-200, article No. 652.

During 5-7 March 2012, IAEA inspectors paid a visit to Chisinau to perform an initial ad-hoc inspection and to verify the nuclear materials located at certain radiological facilities in Moldova. This visit took place following the February 2012 ratification of the Additional Protocol to Safeguards Agreement between the Republic of Moldova and the IAEA on the application of safeguards in relation to the Nuclear Non-Proliferation Treaty, signed in Vienna on 14 December 2011.

Poland

General legislation

Amendments to the Atomic Law Act

The consolidated text of the Atomic Law Act was published in the *Journal of Laws*, item 264, on 13 March 2012. The text is available at: http://dokumenty.rcl.gov.pl/D2012001026401.pdf.

In addition, the unofficial English translation of the consolidated text of the Atomic Law Act has been prepared by the National Atomic Energy Agency (PAA) and is now available at: www.paa.gov.pl/en/doc/atomic_law_consolidated.pdf (changes introduced by 2011 Amendment are indicated in bold-face text).

Liability and compensation

New requirements for civil liability insurance

The Atomic Law Act obliges an operator of a nuclear facility to conclude a contract for insurance against civil liability for nuclear damage and sets, as a general rule, the minimum guaranteed amount of such insurance in relation to a single event as the equivalent in Polish currency to SDR 300 million. The Act also envisages exceptions to this rule with respect to two separate kinds of activities:

- operation of a research reactor or facility in which nuclear material originating from a research reactor is stored; or
- transportation of nuclear material from a research reactor or facility in which nuclear material originating from a research reactor is stored.

For these two kinds of activities, the Regulation by the Minister of Finance of 14 September 2011 (*Journal of Laws*, No. 206, item 1217) on guaranteed minimum amount of the compulsory civil liability insurance of the nuclear facility's operator

sets the equivalent in Polish currency of SDR 400 000 as the guaranteed minimum amount of compulsory civil liability insurance.

Organisation and structure

New advisory council established

The 2011 Amendment of the Atomic Law Act abolished of the Council for Atomic Matters and created a new Council for Nuclear Safety and Radiological Protection with the purpose to advise the President of the PAA in making regulatory decisions. The Regulation by the Minister of the Environment of 18 November 2011 (*Journal of Laws*, No. 279, item 1643) on the Council for Nuclear Safety and Radiological Protection specifies the method and procedure of operation of the Council, including the duties of the Chairman, Deputy Chairman, and Secretary of the Council.

Nuclear safety and radiation protection

New requirements for employees working at nuclear power plants

According to the Atomic Law Act, an authorisation is required for any individual performing activities considered important from the viewpoint of nuclear safety and radiological protection if that person is involved in the commissioning, operation or decommissioning of a nuclear power plant. One of the requirements to obtain such authorisation is a medical certificate certifying the absence of any mental or psychological disorders. The Regulation by the Minister of Health of 29 September 2011 (*Journal of Laws*, No. 220, item 1310) on psychiatric and psychological tests of employees performing activities important for nuclear safety and radiological protection at the organisational unit conducting activities related to exposure which consist of commissioning, operation or decommissioning of a nuclear power plant specifies the list of such disorders, the scope of psychiatric and psychological tests which are required to obtain such a medical certificate, and the qualifications of doctors and psychologists entitled to conduct such tests.

Portugal

General legislation

Integration of the Nuclear Technological Institute into the Technical University of Lisbon

The successor to the *Junta de Energia Nuclear* that was created in the 1950s, the Nuclear Technological Institute (*Instituto Tecnológico Nuclear* or ITN) was created following the revolution of 1974, primarily to carry out public sector research and training relating to the peaceful applications of ionising radiation and nuclear energy. Aside from its main research and advisory tasks set out in its statutes, ITN was entrusted with a wide array of regulatory competences by several laws relating to radiological protection and nuclear safety. It was also the operator of the only nuclear reactor in Portugal, a 1 MWe pool nuclear research reactor.

In light of the financial crisis and the government's efforts to streamline and reduce the size of the administration, it was decided to abolish ITN and to transfer its assets including the research reactor, personnel and competences to the *Instituto Superior Técnico* (IST, Higher Technical Institute), a subdivision of the Technical University of Lisbon. These changes were accomplished by articles 31(4) and 34 of Decree-Law No. 125/2011, of 29 December, and by Decree-Law No. 29/2012, of 9 February (DL 29/2012).

While under broad supervision by the Ministry of Education and Science, IST is an autonomous legal entity, separate from the state. That being said, the government has retained financial responsibility for the purchase and removal of fuel and for the eventual dismantlement or refurbishment of the research reactor as well as the obligation to transfer funds from the state budget equivalent to 2011 figures for ITN.[1]

Decree-Law No. 29/2012 has guaranteed that IST succeeds ITN in all the competences previously listed in its statutes.[2] Unfortunately, it did not include the usual general clause of succession in any and all outstanding competences. This lack of clear guidance means that it is now disputable whether a large number of competences previously granted to ITN by other laws have been transferred to IST.

In some cases, it may be argued that the Directorate-General for Health of the Ministry of Education has re-acquired competences that had been awarded to it by older legal provisions which had never been expressly revoked, only implicitly derogated,[3] and therefore can now be considered to apply once again. This is the case with respect to the powers to:

- authorise the holding, transport, import, sale and any other type of transfer of sealed radioactive sources or equipment including such sources and keep the registry of these sources and equipment;
- authorise the transport of radioactive waste and irradiated nuclear fuel;
- inspect and enforce safety provisions in facilities using ionising radiation for research or educational purposes;
- inspect safety conditions during transport of radiation sources, nuclear fuel and radioactive waste; and
- define conditions for the approval of food irradiation facilities.

On the other hand, some competences seem to no longer be attributed to any public authority in light of the abolishment of ITN:

- ITN was responsible for receiving and recording radiation doses received by workers exposed to ionising radiation;
- ITN had to be consulted before the licensing of persons wishing to provide services connected with radiological protection;
- ITN was responsible for ensuring metrology of ionising radiation measurement systems and for the calibration and inspection of the instruments; and
- ITN was also responsible for collecting and storing solid radioactive waste (depleted sources) as well as for intervening in the case of the discovery of orphan sources.

None of these functions has been transferred expressly to IST. It is unclear to what extent these ambiguities may or may not create practical difficulties in the future, or whether they will be rectified by the legislature.

1. Articles 4(3) and 5(4) of Decree-Law No. 29/2012, of 9 February.
2. Article 5 of Decree-Law No. 29/2012, of 9 February.
3. See e.g. Article 7 of Decree-Law No. 348/89, and Articles 34(b) and 54 of Regulatory-Decree No. 9/90, as well as Article 11(a) and (i) of Decree-Law No. 165/2002.

Another issue raised by this incomplete succession of legal bodies is that it is unclear which entity is now responsible for compliance with European Union Directives such as the Basic Safety Standards Directive and Sealed Sources Directive.

Recognition of qualifications of medical physicists

Decree-Law No. 180/2002, of 8 August (DL 180/2002), required "physicists qualified in medical physics" to undergo a public sector traineeship for which vacancies had to be open by public authorities. These traineeships failed to be opened for years on end. It was also impossible to obtain legal qualification as a "specialist in medical physics", because such certification was dependent on first obtaining the previous qualification and on meeting conditions that were to be established in a regulation that was never adopted. As a result, for several years, the legal requirements for the qualifications of medical physicists in Portugal were impossible to meet.

As a result, public and private hospitals and clinics were legally obligated to include duly qualified medical physicists on staff, but only a very small number of such specialists were available on the market. This situation was resolved informally by the authorities by allowing hospitals and clinics to operate with medical physicists that held certain higher education qualifications, but a large degree of legal uncertainty remained.

Decree-Law No. 72/2011 of 16 June 2011 was adopted to try to resolve this situation. It changed the definition of "physicists qualified in medical physics"[4] so that it is no longer necessary to undergo a public sector traineeship as long as "equivalent" training is obtained.

As for qualification as a "specialist in medical physics", this new legislation introduced a transitional regime for six months, whereby experts who met certain requirements could ask for their qualifications to be recognised by the *Administração Central do Sistema de Saúde* (AACS, a directorate of the Health Ministry), for a renewable period of five years. Only those who met one of the following two conditions could benefit from this transitional regime: (i) equivalent qualification in the public sector and minimum relevant work experience of three years; or (ii) minimum relevant work experience of five years in public or private hospitals/clinics recognised by the Health Ministry.

The method for the verification of the fulfilment of these conditions was to be defined by an order of the Minister of Health. The required order has not been published and requests for recognition as "specialist in medical physics" presented under the transitional regime are still pending. The regulation foreseen in DL 180/2002, concerning recognition as a specialist outside the context of the transitional regime has also not yet been adopted.

Lastly, it should be noted that DL 72/2011 also brought back into force provisions of DL 180/2002 which had been revoked mistakenly in 2009.[5]

4. Revising article 2 of Decree-Law No. 180/2002, of 8 August.
5. See article 3 of Decree-Law No. 72/2011, of 16 June.

Nuclear safety and radiation protection

Creation of the Regulatory Commission for the Safety of Nuclear Facilities

Decree-Law No. 30/2012 of 9 February has been adopted to implement the obligations arising from Directive 2009/71/EURATOM (Nuclear Safety Directive). It reproduces the relevant provisions from the Directive and creates the Regulatory Commission for the Safety of Nuclear Facilities (*Comissão Reguladora para a Segurança das Instalações Nucleares* or COMRSIN,) as the required independent nuclear regulator.

COMRSIN has been entrusted with proposing a number of new laws and regulations relating to nuclear safety in the short term. COMRSIN is composed of three members each appointed by the Prime Minister for a renewable five-year mandate from "personalities of recognised merit in the academic, scientific and technical domain".[6] They exercise their functions subject to the same legal impartiality requirements applicable to civil servants but receive no salary (merely travel expenses). As COMRSIN has no staff of its own, the Secretariat-General of the Ministry of Education and Science provides logistic, administrative and legal-technical support.

COMRSIN may require the assistance of other public and private sector bodies in the fulfilment of its mission. While public bodies must pay for their staff's salary when working for COMRSIN upon its request, services by private bodies will have to be paid for by COMRSIN (as well as travel expenses, in both cases). It has been foreseen that the state budget shall include provisions relating to COMRSIN, but these have not yet been quantified.

COMRSIN has been created in parallel with the existence of the Independent Commission for Radiological Protection and Nuclear Safety (*Commissão Independente para a Protecção Radiológica e Segurança Nuclear* or CIPRSN). Although there is some overlap in the competencies of the two bodies, COMRSIN will take precedence in such cases (under the *lex posteriori* principle). That being said, CIPRSN continues to hold a number of exclusive competences concerning radiological protection, even though the mandate of its previous members has ended and no new members have been appointed.

Romania

Environmental protection

Changes to fuel production regulations

Under Romanian law, the environmental licence for facilities with a high degree of nuclear risk is issued by governmental decision. The production of CANDU-6 nuclear fuel based on natural and depleted uranium is carried out in the nuclear fuel plant at Pitesti. The need to increase the production of such nuclear fuel arose as a consequence of the expansion of the Cernavoda nuclear power plant, specifically the operation of Unit 2. The capacity production of the plant had remained unchanged since the establishment of the plant.

Governmental Decision No. 1061/2011 for issuing the environmental licence for the national company Nuclearelectrica branch nuclear fuel plant at Pitesti regulates

6. The members of COMRSIN have been appointed by Order No. 4382/2012, of 20 March, from the office of the Prime Minister.

the conditions and the operating parameters of the production activity of CANDU-6 nuclear fuel based on natural and depleted uranium, in bundles of nuclear fuel and its related activities, taking into account the significant environmental impact of this type of activity.

Achieving the nuclear fuel production necessary for the functioning of the Cernavoda nuclear power plant is an objective of strategic importance under the Romanian Energy Strategy for 2007-20 approved by the Governmental Decision No. 1069, and it is anticipated that this issue will be included in the draft of the energy strategy for 2011-35 which is under preparation.

Slovenia

Nuclear safety and radiation protection

New rules governing worker qualification

Rules on providing qualification for workers in radiation and nuclear facilities were adopted by the Minister of the Environment and Spatial Planning on 5 April 2011 and were published in the *Official Gazette* No. 32/2011. These rules determine the tasks and duties that come under the management of the technological processes in radiation or nuclear facilities and control over the processes associated with radiation and nuclear safety, the conditions of professional qualification, work experience, psycho-physical characteristics and non-addiction to alcohol, drugs and other psychoactive substances. These rules determine the methods for verification of these issues and other related issues. Upon entry into force of these rules, the previous rules published in the *Official Gazette* No. 74/2005 cease to apply.

Sweden

Nuclear safety and radiation protection

New regulation on clearance from regulation

The Swedish Radiation Safety Authority (SSM) has adopted new regulations on the clearance of materials, rooms, buildings and land in practices involving ionising radiation (SSMFS 2011: 2). Clearance means that items are exempted from continued regulation from a radiation protection point of view. A prerequisite is that the presence of radioactive substances is so low that it can be seen as innocuous from the radiation protection point of view. The new regulations that came into effect from 1 January 2012 are reprinted in this volume. See also *Nuclear law Bulletin* No. 88, Vol. 2011/2, pp. 93-94.

Ukraine

General legislation

New requirements relating to the purchase of fuel elements

The law on peculiarities of purchasing non-irradiated fuel elements (cartridges) for nuclear reactors (from 9 December 2011 No. 4101 – VI) requires that the purchase of non-irradiated fuel elements (i.e. fuel, facilities for its production, storage and processing) take place using a sole source procurement procedure.

The Act does not establish the justification for the sole source procurement procedure with respect to customer purchases of nuclear fuel. However, agreement on the purchase of nuclear fuel must not be reached earlier than 14 days after the publication of data about the sole-source supplier.

The new law will allow for the purchase of fuel for manufacturers, their subsidiaries or other associated entities on the basis of direct contracts.

Nuclear safety and radiation protection

New plans for a comprehensive safety upgrade

The law on approval of the comprehensive (consolidated) programme to improve the safety of power units of nuclear power plants (No. 1270 of 7 December 2011) approved a comprehensive programme to improve safety at nuclear power plants in Ukraine from 2012-17 for a total cost of UAH 12.453 billion.

According to the resolution, sources of funding for the programme will include loans from the European Bank for Reconstruction and Development and EURATOM and equity in the National Nuclear Energy Generating Company (NAEC) Energoatom.

In July 2011, Energoatom appraised the cost of the seven-year programme to improve the safety of nuclear power plants at 1.18 billion EUR and expected that up to 70% of its loans will be financed by the EBRD and EURATOM. The rest of the funds will be provided at its own expense. The absence of tariffs for electricity supply means that extra measures were required to attract the necessary funds to implement this programme.

New community outreach requirements

The order on approval of the action plan with respect to outreach to the population that lives in the areas of operating nuclear power plants (from 1 February 2012 No. 58-p) provides for increased awareness of the population living in areas of operating nuclear power plants. Ministries and other concerned executive agencies are required to enforce these measures.

In order to enhance public understanding of nuclear power plants, a variety of measures will be implemented including planned visits to manufacturing and technical facilities of nuclear and industrial sites, informational meetings with target audiences, and the publication and dissemination of brochures, booklets, brochures and newsletters.

This order will facilitate the implementation of effective and accessible forms of communication with the public aimed at rapidly providing reliable information about the nuclear energy industry. In addition, the study of public opinion on topical issues of nuclear power in Ukraine will be undertaken that will guide the development and implementation of state policy with respect to the use of nuclear energy. Financing of these activities will be carried out from the applicable tariff for electricity generated by nuclear power plants, budget allocations provided by authorities and other government agencies in the state budget of Ukraine, as well as from other sources not prohibited by law.

New transparency and information availability requirements

The action plan established by the order on approval of the action plan on ensuring openness and accessibility of information related to the use of nuclear energy, as well as improving nuclear safety culture in nuclear power (from 3 August 2011 No. 736-p) requires prompt publication on official websites of information about the safety status of nuclear power plants and the most important events and decisions

on the formation and implementation of Ukraine's nuclear energy policy. The action plan provides also for programmes at middle and higher education institutions relating to the safe use of nuclear energy in addition to various other outreach programmes. These requirements in addition to other measures as provided in the action plan aim to ensure the establishment of the most open and effective means of improving nuclear safety culture and establishing nuclear energy policy in Ukraine.

Nuclear security

Changes to the state-level physical protection regime

The decree on approval of the functioning of the state system of physical protection (from 21 December 2011 No. 1337) defines the principles of the state system of physical protection to achieve the objectives of physical protection with respect to nuclear facilities, and facilities for management of radioactive waste and other sources of ionising radiation, the transport of nuclear materials, radioactive waste and other sources of ionising radiation. Radioactive materials found in illicit trafficking are also covered by this decree.

There are many relevant government authorities involved in the state system of physical protection, including the State Nuclear Regulatory Inspectorate of Ukraine (*Gosatomregulirovanie*), which is involved in the formation of state policy in the area of physical protection, as well as developing a mechanism to implement this state policy.

The Security Service of Ukraine also plays an important role by assessing the threat of sabotage, theft, unauthorised removal of any radioactive materials (with other government agencies, as necessary) and co-ordinating the activities of other government agencies in assessing such threat. The Security Service also undertakes operational and investigative activities for the prevention, detection, suppression and disclosure of violations in the area of physical protection.

The Ministry of Internal Affairs is involved in the assessment of the threat of sabotage, theft, or unauthorised removal of any other radioactive material. This Ministry is also involved in determining and maintaining the design basis threat and participates in the development and implementation of national, state, and other programmes for physical protection. In addition, this Ministry is involved in the establishment and operation a single system for secure communications as well as responsible for the protection and defence of certain matters of national concern.

The Administration of State Border Service is involved in the assessment of threats to commit unlawful acts and ensures the implementation of operational-search activities to identify unauthorised attempts to move radioactive materials across the state border. This Administration is also responsible for ensuring the implementation of measures to detect radioactive materials in illicit trafficking and for physical protection of any seized radioactive materials.

The central bodies of executive power in charge of public administration, the National Academy of Sciences and Interior Ministry troops all play important roles in the state physical protection system.

Radioactive waste management

New centralised repository planned

The law on the treatment of spent nuclear fuel with respect to location, design and construction of a centralised repository for spent nuclear fuel from VVER reactors of domestic nuclear power plants (from 9 February 12 No. 4384-VI) will help create an alternative system for the treatment of spent nuclear fuel for Ukrainian

nuclear power plants to enhance energy security for the government. A centralised repository is planned for the site that is located between the villages of Old Krasnitsa, Buryakivka, Chistogalovka, Stechanka and the Kiev region in the exclusion zone on the territory that was subjected to radioactive contamination following the Chernobyl disaster. Storage should be part of a unified complex for spent nuclear fuel and the State Specialised Enterprise Chernobyl NPP that will use "dry" container storage of spent nuclear fuel in an engineering system. The construction of the repository will be funded through loans, the repayment of which will be performed by NAEC Energoatom within four years after commissioning. The source of funds for repayment will be incorporated into the fees charged by the National Nuclear Energy Generating Company (NAEC), which currently provides Russian companies with services for temporary storage and reprocessing of spent nuclear fuel from Ukrainian nuclear power plants.

United States

Radioactive waste management

Status of the high-level waste repository programme

On 30 September 2011, the Nuclear Regulatory Commission's (NRC or Commission) Atomic Safety and Licensing Board (Licensing Board) suspended the adjudicatory proceeding in which it was considering the Department of Energy's (DOE) application to construct a high-level waste repository at Yucca Mountain, Nevada.[7] The Licensing Board noted that the Commission was evenly divided on whether to take affirmative action on the Licensing Board's ruling that DOE does not have authority to withdraw the license application. However, the Licensing Board decided, consistent with prior Commission direction, that the proceeding should be suspended because it was uncertain whether there would be continued funding for any activities related to the high-level waste programme.

On 23 December 2011, the President signed the Consolidated Appropriations Act of 2012, which funded the NRC through fiscal year 2012 but did not provide any funding to Yucca Mountain high-level waste programme activities.[8]

On 11 January 2012, the NRC filed its brief in a lawsuit brought by several parties from South Carolina and Washington who are seeking mandamus relief against the NRC for the agency's alleged inaction and delay in the Yucca Mountain licensing proceeding. The petitioners want the Court of Appeals for the District of Columbia Circuit to require the NRC to restart the Yucca Mountain licensing proceeding. The NRC argued that the petitioners lacked standing to request mandamus relief because they did not show that they will suffer imminent harm from continued storage of high-level waste in their states or that a court order to restart the licensing proceeding would be a sufficient remedy given the third-party factors involved. The NRC further argued that mandamus relief is not justified because Congress' defunding of the Yucca Mountain proceeding prevents the agency from litigating the numerous contentions raised in the proceeding and deciding whether to approve or disapprove DOE's license application. The Court of Appeals heard oral arguments on this matter on 2 May 2012 and subsequently ordered the filing of additional briefs by mid-June 2012.

7. US Department of Energy (High-Level Waste Repository), LBP-11-24 (30 September 2011) (slip op.).
8. Consolidated Appropriations Act of 2012, H.R. 2055, Public L. 112-074 (23 December 2011).

Issuance of the Final Report of the Secretary of Energy's Blue Ribbon Commission

On 26 January 2012, the Blue Ribbon Commission on America's Nuclear Future (BRC) issued its final report to the Secretary of Energy.[9] The BRC, which was tasked with conducting a comprehensive review of policies for managing the back end of the nuclear fuel cycle, determined that deep geologic disposal continues to be the best long-term solution. The BRC recommended: 1) a new, consent-based approach to siting future nuclear waste management facilities; 2) a new organisation dedicated solely to implementing the waste management programme and empowered with the authority and resources to succeed; 3) access to the funds nuclear utility ratepayers are providing for the purpose of nuclear waste management; 4) prompt efforts to develop one or more geologic disposal facilities; 5) prompt efforts to develop one or more consolidated storage facilities; 6) prompt efforts to prepare for the eventual large-scale transport of spent nuclear fuel and high-level waste to consolidated storage and disposal facilities when such facilities become available; 7) support for continued US innovation in nuclear energy technology and for workforce development; 8) active US leadership in international efforts to address safety, waste management, non-proliferation, and security concerns. The BRC also asserted confidence that its recommendations could be implemented using existing revenue from the Nuclear Waste Fund and ratepayer fees.

Congress asked DOE to respond to these recommendations by July 2012.[10]

Emergency preparedness

Final rule on enhancements to emergency preparedness regulations

A nuclear power plant licensee's emergency preparedness can decrease the chance of a radiological emergency leading to a severe accident by increasing the effectiveness of mitigation measures. On 23 November 2011, the NRC amended its emergency preparedness regulations for nuclear power plants.[11] These new requirements enhance the ability of licensees to take protective measures when facing a radiological emergency, address some security concerns identified after the events of 11 September 2001, and modify emergency preparedness measures to be more effective, efficient, and consistent among licensees. The rule both codified generically applicable requirements similar to measures that were previously imposed by Commission orders and amended emergency plan requirements based on the NRC staff's comprehensive review of its emergency preparedness regulations and guidance.

Among its security-related amendments, the rule explicitly limited the duties of on-shift emergency responders so that they do not become overburdened during an emergency event. The rule imposed a number of requirements to ensure that a licensee's response to a hostile event onsite is more effective: it standardised the emergency action levels used by licensees to determine when to notify state and local agencies and involve them in an emergency response to a hostile action, and required the emergency response organisation to be able to staff an alternative office during an emergency involving a hostile action. It also required licensees to: identify in their emergency plan the federal, state, and local agencies that would

9. Blue Ribbon Commission on America's Nuclear Future Final Report to the Secretary of Energy (26 January 2012), available at: http://brc.gov/sites/default/files/documents/brc_finalreport_jan2012.pdf.
10. Conference Report for the Energy and Water Development Appropriations Act for Fiscal Year 2012, H.R. Rep. No. 112-331 (15 December 2011).
11. Final Rule: Enhancements to Emergency Preparedness Regulations, 76 Fed. Reg. 72,560 (23 November 2011) (to be codified at 10 C.F.R. Part 50 and 52).

respond to a hostile action and the assistance that licensees expect from them; protect onsite personnel during a hostile action so that they can effectively perform the functions of the emergency plan and safely shut down the reactor; and include hostile action scenarios in the drills and exercises they perform to develop and maintain their emergency response skills.

The rule also amended safety-related emergency planning regulations by requiring licensees to: have backup alert and notification capability should primary systems fail; have the capability to assess, classify, and declare an emergency condition within 15 minutes of its discovery; and periodically review and update their evacuation time estimates. Additionally, the rule replaced criteria requiring that an emergency operations facility be a set distance from a power reactor site with new performance based criteria.

Finally, the rule imposed clearer requirements on licensees who wish to amend their emergency plans. These new requirements are designed to ensure that changes are properly evaluated by licensees, the effectiveness of the emergency plan is not reduced, and any change that does reduce a plan's effectiveness is reviewed and approved by the NRC prior to its implementation.

Licensing and regulatory infrastructure

Final rules certifying amendments to the AP1000 and ABWR standard reactor designs

On 16 December 2011, the NRC certified an amendment to the US advanced boiling water reactor (ABWR) standard design to comply with the NRC's aircraft impact assessment (AIA) regulations.[12] This amendment allows applicants or licensees intending to construct or operate a US ABWR to comply with the NRC's AIA regulations by referencing the amended design certification rule. This rule became effective on 17 January 2012.

On 30 December 2011, the NRC certified an amendment to the AP1000 standard reactor design, which allows applicants or licensees intending to construct and operate an AP1000 to reference this regulation certifying the design.[13] Further, the AP1000 design certification amendment incorporated design improvements to the containment vessel, the passive containment cooling system and shield building, and the spent fuel pools. The amendment also replaced generic design acceptance criteria with specific design information, ensured compliance with NRC's AIA regulations, and increased the standardisation of the AP1000 design. The AP1000 rule became effective on 30 December 2011. A group of petitioners are challenging the rule in federal court.

Issuance of combined licenses for Southern Nuclear Operating Company's Vogtle Electric Generating Plant, Units 3 and 4

On 9 February 2012, the NRC concluded the uncontested portion of its hearing on Southern Nuclear Operating Company's (SNC) application to construct and operate two new Westinghouse Electric Company AP1000 reactors at SNC's Vogtle site near Augusta, Georgia. In a 4-1 decision, with the chairman dissenting, the Commission held that the NRC staff's safety and environmental review of the application was

12. Final Rule: US Advanced Boiling Water Reactor Aircraft Impact Design Certification Amendment, 76 Fed. Reg. 78,096 (16 December 2011) (to be codified at 10 C.F.R. Part 52, Appendix A).
13. Final Rule: AP1000 Design Certification Amendment, 76 Fed. Reg. 82,079 (30 December 2011) (to be codified at 10 C.F.R. Part 52, Appendix D).

sufficient to make the necessary regulatory findings for the issuance of the combined construction and operating licenses.[14]

In his dissent, the chairman stated that a combined license should not be issued unless the NRC staff imposed a binding obligation on the new plants to implement all of the lessons learnt from the TEPCO Fukushima Daiichi accident before beginning operations. The other commissioners however emphasised that regardless of when licenses are issued, all affected nuclear plants, including the new Vogtle units, will be required to comply with NRC directives resulting from lessons learnt from this accident.

On 10 February 2012, the NRC issued the combined licenses for Vogtle Units 3 and 4.[15]

A group of petitioners are challenging in federal court the Commission's decision authorising the issuance of the Vogtle combined licenses.

Issuance of combined licenses for South Carolina Electric & Gas Company's Summer Nuclear Station, Units 2 and 3

On 30 March 2012, the NRC issued its decision following an uncontested hearing on South Carolina Electric & Gas Company's (SCE&G) application to construct and operate two new Westinghouse Electric Company AP1000 reactors at SCE&G's Summer site in Fairfield County, South Carolina. In a 4-1 decision, with the chairman dissenting, the Commission held that the NRC staff's safety and environmental review of the application was sufficient to make the necessary regulatory findings for the issuance of the combined construction and operating licenses.[16]

In his dissent, the chairman supported his colleagues' decision to impose a license condition on the new Summer plants requiring their compliance with one of the safety orders recently issued in light of the TEPCO Fukushima Daiichi accident, but also reiterated that in his view, a combined license should not be issued unless the NRC staff imposed a broader license condition on the new plants to implement all of the lessons learnt from the Fukushima accident before beginning operations. The other commissioners again emphasised that regardless of when licenses are issued, all affected nuclear plants, including the new Summer units, will be required to comply with NRC directives resulting from lessons learnt from the accident at the TEPCO Fukushima Daiichi plant.

On 30 March 2012, the NRC issued the combined licenses for Summer Units 2 and 3.

Nuclear safety

Update on the NRC's response to the events at the TEPCO Fukushima Daiichi nuclear power plant

In a Staff Requirements Memorandum (SRM) dated 15 December 2011, the Commission approved the NRC staff's prioritisation of the Near-Term Task Force's recommendations for improving the safety of the United States' nuclear reactor fleet

14. Southern Nuclear Operating Co. (Vogtle Electric Generating Plant, Units 3 and 4), CLI-12-02 (9 February 2012) (slip op.).
15. See Vogtle Electric Generating Plant, Units 3 and 4; Issuance of Combined Licenses and Limited Work Authorizations and Record of Decision, 77 Fed. Reg. 12, 332 (29 February 2012).
16. South Carolina Electric & Gas Co. (Summer Nuclear Station, Units 2 and 3), CLI-12-09 (30 March 2012) (slip op.).

in light of the events at the TEPCO Fukushima Daiichi nuclear power plant.[17] The Commission requested that the NRC staff consult with the Commission before issuing any orders to licensees implementing the Task Force's recommendations, and to inform the Commission before initiating any requests for information from licensees regarding the Task Force's recommendations.

After consulting with the Commission[18] and obtaining its approval,[19] the NRC staff issued three orders on 12 March 2012. Two of the orders apply to all power reactor licensees and holders of NRC construction permits. The first of these orders requires implementation of certain procedures to mitigate the adverse effects of beyond design basis external events, such as those that occurred at Fukushima Daiichi.[20] The second of these orders requires enhanced spent fuel pool instrumentation to ensure provision of accurate water-level readings in the spent fuel pool.[21] A third order applies only to operating boiling water reactor licensees with Mark I and Mark II containments. It requires the specified boiling water reactor licensees to have reliable hardened containment vents to help prevent a situation like that at Fukushima Daiichi in which operators were unable to vent the containment, which in turn inhibited efforts to cool the reactor core.[22]

Also on 12 March 2012, the NRC staff, after informing the Commission,[23] requested information from all power reactor licensees and holders of NRC construction permits to assist the NRC staff's evaluation of regulatory changes that may be needed in light of the accident at Fukushima Daiichi.[24]

Earlier, on 23 December 2011, the President signed the Consolidated Appropriations Act of 2012, which said that the NRC shall require reactor licensees to re-evaluate the seismic, tsunami, flooding, and other hazards at their sites against applicable NRC regulations and guidance. Licensees must respond to the NRC by affirming that their design basis meets the requirements of their license. Based on review of the licensees' re-evaluations and other information, the NRC shall require licensees to update their design basis, if necessary.[25]

17. Staff Requirements – SECY-11-0137 – Prioritization of Recommended Actions to be Taken in Response to Fukushima Lessons Learned (15 December 2011). This and other NRC-developed documents referenced in this update are available at: www.nrc.gov/japan/japan-activities.html.
18. See SECY-12-0025, Proposed Orders and Requests for Information in Response to Lessons Learned from Japan's March 11, 2011, Great Tohoku Earthquake and Tsunami (17 February 2012).
19. See Staff Requirements – SECY-12-0025 – Proposed Orders and Requests for Information in Response to Lessons Learned from Japan's March 11, 2011, Great Tohoku Earthquake and Tsunami (9 March 2012).
20. EA-12-049, Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (12 March 2012).
21. EA-12-051, Issuance of Order to Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (12 March 2012).
22. EA-12-050, Issuance of Order to Modify Licenses with Regard to Reliable Hardened Containment Vents (12 March 2012).
23. See SECY-12-0025, Proposed Orders and Requests for Information in Response to Lessons Learned from Japan's March 11, 2011, Great Tohoku Earthquake and Tsunami (17 February, 2012).
24. Request for Information Pursuant to Title 10 of the Code Of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3 and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident (12 March 2012).
25. Consolidated Appropriations Act of 2012, H.R. 2055, Public L. 112-074 (23 December 2011).

Intergovernmental organisation activities

European Atomic Energy Community

Proposed legislative instruments

Proposal for a Council Regulation on Union support for the nuclear decommissioning assistance programmes in Bulgaria, Lithuania and Slovakia (COM/2011/783 final)

The European Commission implements the Nuclear Decommissioning Assistance Programme in Bulgaria, Lithuania and Slovakia, which provides financial support to the three member states based on their Treaties of Accession. These Treaties had foreseen early closure and subsequent decommissioning of the nuclear reactors of Ignalina Units 1 and 2 (Lithuania), Bohunice V1 Units 1 and 2 (Slovakia) and Kozloduy Units 1-4 (Bulgaria). Financial support from the European Union (EU) has been provided as this early closure represents an exceptional financial burden not commensurate with the economic strength of each country. This support includes:

- projects for decommissioning and waste management; and
- projects in the energy sector to mitigate the closure consequences (e.g. replacement capacity for electricity production, energy efficiency measures).

The overall financial support for the three programmes totals some EUR 2 830 million up to 2013.

Regarding the EU financial assistance beyond 2013, the Commission has adopted a proposal on 24 November 2011 for a Council Regulation under the EURATOM Treaty to further support the decommissioning in the three member states. These additional funds, which amount to EUR 500 million (at 2011 prices), should support the efforts of Bulgaria, Lithuania and Slovakia which are ultimately responsible for nuclear safety and the decommissioning financing. The EU assistance for decommissioning of nuclear power plants aims at reaching an irreversible state in the decommissioning process (such that it would not make sense to start the reactor again) and eliminating the major source of radiological hazard.

Proposal for a Council Regulation establishing an Instrument for Nuclear Safety Cooperation (COM/2011/841)

On 7 December 2011, the European Commission adopted a proposal for a Council Regulation under the EURATOM Treaty establishing an Instrument for Nuclear Safety Cooperation (INSC). It will replace Council Regulation 300/2007/EURATOM of 19 February 2007 which has established the current INSC and expires on 31 December 2013.

The aim of the proposal is to provide financial support for the European Union's external policies in the area of nuclear safety, waste management and safeguards. This proposed support amounts to EUR 631.1 million over the period 2014-20.

The purpose of the proposal is to establish the framework for the planning of co-operation and provision of assistance aimed at supporting the promotion of a

high level of nuclear safety, radiation protection and the application of efficient and effective safeguards of nuclear material in non-EU countries. It aims also at simplifying the current instrument and provides for the extension of the geographical scope of the INSC to include all non-EU countries (including those currently covered by the Instrument for Pre-Accession).

This proposal was adopted together with a proposal for a Regulation of the European Parliament and the Council, under the Treaty on the Functioning of the European Union, establishing a new Instrument for Stability for 2014-20.[1] The objective of this instrument is to enable the EU to provide a consistent and integrated response to situations of crisis and emerging crisis, to address specific trans-regional security threats and to enhance crisis preparedness in non-EU countries.

Proposal for a Council Regulation on the Research and Training Programme of the European Atomic Energy Community (2014-2018) contributing to the Horizon 2020 – The Framework Programme for Research and Innovation (COM/2011/812)

On 30 November 2011, the European Commission adopted a proposal for a Council Regulation under the EURATOM Treaty establishing a EURATOM Research and Training Programme for the period from 1 January 2014 to 31 December 2018.

The proposal aims to ensure that EU-funded research and training activities in nuclear science and technology are continued during 2014-18. It concerns research activities in nuclear energy (fusion and fission) and radiation protection and covers all relevant aspects for the implementation of research activities in these fields, setting the scientific and technological objectives and laying down appropriate rules for the participation of research organisations, universities and industry.

Proposal for a Council Directive laying down requirements for the protection of the health of the general public with regard to radioactive substances in water intended for human consumption (COM/2012/147)

On 27 June 2011, the European Commission adopted a draft proposal for a Council Directive under the EURATOM Treaty, laying down requirements for the protection of the health of the general public with regard to radioactive substances in water intended for human consumption.

In accordance with Article 31 of the EURATOM Treaty, the Commission submitted the draft proposal to the European Economic and Social Committee (EESC) for its formal opinion. The EESC adopted its opinion on 27 October 2011 and advocates for the inclusion of long-lived decay products of radon (Rn-222) in the scope of the proposed Directive and in the definition of Total Indicative Dose, as well as the inclusion of water from the distribution network put in bottles and containers.

The Commission agrees with the EESC recommendation and has adopted its formal proposal to the Council on 28 March 2012, which now provides for the inclusion of radon gas in the Directive. In order to address the specific feature of radon gas, it is included as a separate indicator parameter, while the long-lived decay products of radon are included in the evaluation of total indicative dose as defined in Directive 98/83/EC.

1. COM(2011) 845 final.

Adopted legislative instruments

Council Decision No. 2012/93/EURATOM of 19 December 2011 concerning the Framework Programme of the European Atomic Energy Community for nuclear research and training activities (2012-13) (OJ L 47 of 18 February 2012, pp. 25-32)

Council Decision No. 2012/94/EURATOM of 19 December 2011 concerning the specific programme, to be carried out by means of indirect actions, implementing the Framework Programme of the European Atomic Energy Community for nuclear research and training activities (2012-13) (OJ L 47 of 18 February 2012, pp. 33-39)

Council Decision No 2012/95/EURATOM of 19 December 2011 concerning the specific programme, to be carried out by means of direct actions by the Joint Research Centre, implementing the Framework Programme of the European Atomic Energy Community for nuclear research and training activities (2012-13) (OJ L 47 of 18 February 2012, pp. 40-46)

On 19 December 2011, the Council of the European Union adopted three decisions under the EURATOM Treaty establishing a multiannual framework programme for nuclear research and training activities for the period from 1 January 2012 to 31 December 2013.

The Framework Programme builds on the achievements of the Seventh Framework Programme for nuclear research and training activities (2007-11), whilst including reinforced emphasis on nuclear safety.

Commission Implementing Regulation (EU) No. 1371/2011 of 21 December 2011 amending Implementing Regulation (EU) No. 961/2011 imposing special conditions governing the import of feed and food originating in or consigned from Japan following the accident at the Fukushima nuclear power station (OJ L 341 of 22 December 2011, pp. 41-44)

Commission Implementing Regulation (EU) No. 250/2012 of 21 March 2012 amending Implementing Regulation (EU) No. 961/2011 imposing special conditions governing the import of feed and food originating in or consigned from Japan following the accident at the Fukushima nuclear power station (OJ L 82 of 22 March 2012, p.3)

The European Commission continued to monitor the situation in Japan. Regulation 961/2011 was amended two times on the basis of the development of the radiological situation around the TEPCO Fukushima Daiichi nuclear power plant. Regulation 250/2012 provides for the reduction of the frequency of the controls given the very favorable results of the controls at import. It also extends the existing measures until 31 October 2012.

Non-legislative instruments

Communication from the Commission to the Council and the European Parliament on the interim report on the comprehensive risk and safety assessments ("stress tests") of nuclear power plants in the European Union (SEC/2011/1395 final)

On 24 November 2011, the Commission adopted an interim report on the stress tests of European nuclear power plants, which were launched in the aftermath of the accident that occurred at the Fukushima Daiichi nuclear plant in Japan.

The Communication is based on the progress reports that were made available by the national regulators by 15 September 2011. It provides the Commission's initial assessment on the process as the final results of the stress tests will only be known after the completion of the whole assessment, i.e. in June 2012.

The Communication identifies a number of policy areas where further action is deemed necessary, either through better co-ordination among member states or by proposing new EU legislation on nuclear safety.

It highlights in particular the necessity to ensure the full implementation of existing EU rules and mentions scope for improving the governance as well as the legal framework of nuclear safety, improving emergency preparedness and response, re-inforcing the EU nuclear liability regime, and enhancing scientific and technological competence.

The Communication also presents initial findings from the preliminary security assessments, made in a parallel process run under the auspices of the Council of the EU. On the basis of the progress report of the Council Ad-hoc Group on Nuclear Security, it highlights member states' commitment to nuclear security, as well as their ambition to disseminate good practice at the EU level.

Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the Energy Roadmap 2050 (COM/2011/885 final)

On 15 December 2012, the European Commission adopted a Communication on the Energy Roadmap 2050, which explores the challenges posed by delivering the EU's decarbonisation objective while at the same time ensuring security of energy supply and competitiveness. The document describes the consequences of a carbon-free energy system and examines the impacts, challenges and opportunities of possible ways of modernising the energy system. The analysis is based on illustrative scenarios, created by combining in different ways the four main decarbonisation routes (energy efficiency, renewables, nuclear and carbon capture and storage).

The Energy Roadmap 2050 identifies a number of elements which have positive impacts in all circumstances, and shows that gas, oil, coal and nuclear figure in all scenarios in different proportions, allowing member states to keep flexible options in their energy mix. Nuclear energy remains a key source of low carbon electricity generation and will be needed to provide a significant contribution in the energy transformation process in those member states where it is pursued.

Other activities

Public meeting on the EU stress tests and the peer review process, 17 January 2012, Brussels

On 17 January, the first public meeting was held in Brussels to discuss the stress test process. The event was well attended with over 150 delegates and included presentations on the stress tests and peer review process and included perspectives from a range of stakeholders.

Topical peer review meetings, from 5 to 17 February 2012, Luxembourg

The procedure on peer reviews of EU nuclear power plants stress tests was agreed upon at the last meeting of the European Nuclear Safety Regulators Group (ENSREG) on 11 October 2011. It was decided that peer reviews will be conducted in two complementary phases with firstly horizontal/topical reviews covering the three main topics of national reports on nuclear safety (i.e. initiating events, loss of safety functions and severe accident management) and secondly vertical country reviews.

The three topical review meetings took place in Luxembourg from 5 to 17 February 2012. The peer review process is expected to be finished by the end of April 2012 and the European Commission would then report to the European Council in June 2012.

17th plenary meeting of the European Nuclear Safety Regulators Group (ENSREG) – 24 February 2012, Brussels

The 17th plenary meeting of ENSREG took place in Brussels on 24 February 2012 in Brussels. Further information is available on the ENSREG website: www.ensreg.eu.

OECD Nuclear Energy Agency

NEA free report on Japan's compensation system for nuclear damage

With exceptional assistance from the Permanent Delegation of Japan to the OECD and other Japanese officials, NEA Legal Affairs is co-ordinating the development of a report on Japan's compensation system for nuclear damage in light of the TEPCO Fukushima Daiichi accident. The report, which is being published in English, will include an extensive compilation of relevant legislation, rules, orders and guidelines applicable to the compensation system. The report will also include several articles that analyse Japan's compensation system for nuclear damage and provide an up-to-date review of the measures taken to provide relief to victims of the accident.

This publication is expected to be published later this year and will be available free for downloading on the NEA website.

Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO)

Treaty actions 2011-12

The Comprehensive Nuclear-Test-Ban Treaty (CTBT) will enter into force 180 days after all 44 of the states listed in Annex 2 have deposited their instruments of ratification with the United Nations Secretary-General, as depositary. During 2011 Ghana and Guinea deposited their instruments; Guatemala and Indonesia (Annex 2 state) did so in January and February 2012, respectively. As of April 2012, 183 states have signed the CTBT (Niue was the latest to do so in 2012) and 157 of those states have ratified it. There are eight remaining Annex 2 states which have not yet ratified: China, Democratic People's Republic of Korea, Egypt, India, Islamic Republic of Iran, Israel, Pakistan and the United States of America.

In September 2011, the biennial Conference on facilitating the entry into force of the CTBT was convened by the United Nations Secretary-General pursuant to Article XIV of the CTBT. Co-chaired by Mexico and Sweden, foreign ministers and senior officials from the majority of ratifying states met at United Nations headquarters in New York to reconfirm their commitment to the CTBT and discuss what measures may be taken to accelerate the ratification process. The results were recorded in the final declaration which is available at: www.ctbto.org.

Status of the establishment of the CTBT verification regime

The CTBT's verification regime, to monitor compliance with the Treaty, will consist of the IMS, the IDC, consultation and clarification procedures, on site inspections and confidence-building measures.

The IMS consists of 337 facilities (seismic, hydro-acoustic, infrasound, radionuclide stations and radionuclide laboratories) to be located in 89 countries. As of April 2012, 85% of the stations have been certified and are in provisional operation. Additional stations are being established and are transmitting test data to the IDC, pending

certification. The legal arrangements for the hosting of the facilities have been concluded with 42 of those countries and 34 of the agreements are in force. During 2011 Facility Agreements were concluded with Mexico, Portugal and Tunisia.

During 2012 the Commission is conducting build-up exercises for on site inspection (OSI), to prepare for the OSI Integrated Field Exercise (IFE14), a major event which will take place in 2014 to test and train OSI capabilities in an all encompassing way.

Civil and scientific applications of the IMS data

In addition to the purpose and value of IMS data to detect nuclear explosions worldwide, its civil and scientific applications are increasingly being recognised. Possible uses include tsunami warning, research on the Earth's core, monitoring of earthquakes and volcanoes, climate change research, atmospheric monitoring and biological research.

Following the Indian Ocean tsunami in December 2004, it was realised that the IMS data could be useful to facilitate tsunami alerts as the IMS data provides up to three minutes lead-time compared with most data from other sources for tsunami warning. As a result, in 2006 the Commission decided to provide real-time and continuous data to UNESCO-approved tsunami warning centres under terms and conditions approved by the Commission in a model agreement. In 2011, agreements were concluded with Malaysia and Turkey, bringing the total number to ten.

In March 2011, following the magnitude 9 earthquake in Japan, in addition to the authorised users in its member states, the Commission began sharing IMS data with relevant international organisations to assist with the mitigation of the possible consequences of the TEPCO Fukushima Daiichi nuclear power plant accident. Commission experts collaborated closely with the International Atomic Energy Agency (IAEA), World Health Organization (WHO), World Meteorological Organization (WMO) and the United Nations Office on Disarmament Affairs (UNODA) to assess the radionuclide risk for human health and the environment. The Commission participated in the high-level meeting convened by the United Nations Secretary-general who indicated that the existing institutional arrangements need to be reviewed and strengthened. Shortly thereafter the Commission began participating in the IAEA-organised Inter-Agency Committee for Response to Nuclear Accidents (IACRNA).

In June 2011 the biennial conference for the scientific community (Science and Technology 2011 Conference) was convened in Vienna. Over 700 scientists, diplomats, representatives of civil society and the media from 104 countries gathered to discuss advances in science and technology relevant to test ban verification as well as other scientific applications, including the potential use for disaster management. The results of 270 research projects, including those utilising IMS data through the new virtual Data Exploitation Centre (vDEC) platform, were presented. The next such conference will be convened in June 2013. Interested scientists have been encouraged to apply for vDEC access which may be granted following conclusion of an agreement with the Commission setting out the terms and conditions of their participation.

Australia

National Radioactive Waste Management Act 2012

No. 29, 2012

An Act to make provision in relation to the selection of a site for, and the establishment and operation of, a radioactive waste management facility, and for related purposes

[Assented to 4 April 2012]

The Parliament of Australia enacts:

Part 1 – Preliminary

1 Short title

This Act may be cited as the *National Radioactive Waste Management Act 2012*.

2 Commencement

This Act commences on the day this Act receives the Royal Assent.

3 Object of Act

The object of this Act is to provide for:

(a) the selection of a site for a radioactive waste management facility on voluntarily nominated land in Australia; and

(b) the establishment and operation of such a facility on the selected site;

to ensure that radioactive waste generated, possessed or controlled by the Commonwealth or a Commonwealth entity is safely and securely managed.

4 Definitions

In this Act:

Aboriginal land means Aboriginal land within the meaning of the *Aboriginal Land Rights (Northern Territory) Act 1976*.

Commonwealth contractor means:

(a) a person who is a party to a contract with the Commonwealth or a Commonwealth entity; or

(b) a person who is a subcontractor for a contract with the Commonwealth or a Commonwealth entity.

Commonwealth entity means:

(a) a body corporate established for a public purpose by or under an Act; or

(b) a company in which a controlling interest is held by any one of the following persons, or any 2 or more of the following persons together:

(i) the Commonwealth;

(ii) a body covered by paragraph (a).

Controlled material means controlled material within the meaning of the *Australian Radiation Protection and Nuclear Safety Act 1998* that is of domestic origin, but does not include high level radioactive material or spent nuclear fuel. For this purpose, controlled material is ***of domestic origin*** if it has been used in Australia, generated by activities in Australia, or sent to Australia under contractual arrangements relating to the conditioning or reprocessing of ANSTO spent nuclear fuel (within the meaning of the *Australian Nuclear Science and Technology Organisation Act 1987*).

Facility means a facility for the management of controlled material generated, possessed or controlled by the Commonwealth or a Commonwealth entity.

General nomination start time means the time at which a declaration under section 6 takes effect.

High level radioactive material means material which has a thermal energy output of at least 2 kilowatts per cubic metre.

Land Council means a Land Council within the meaning of the *Aboriginal Land Rights (Northern Territory) Act 1976*.

Land Trust means a Land Trust within the meaning of the *Aboriginal Land Rights (Northern Territory) Act 1976*.

Nominator of land means the following:

(a) a Land Council that nominated the land as a potential site under subsection 5(1);

(b) a person who nominated the land as a potential site under subsection 7(2) or (3).

Selected site means the site, or the specified part of a site, in relation to which a declaration by the Minister under subsection 14(2) is in effect.

Site means a site approved by the Minister under section 9.

Spent nuclear fuel means material that:

(a) is or was capable of producing energy by a self-sustaining chain process of nuclear fission; and

(b) has been irradiated in, and permanently removed from, a nuclear reactor (which is a structure containing material to which paragraph (a) applies in such an arrangement that a self-sustaining chain process of nuclear fission can occur in the structure without an additional source of neutrons).

Statutory authority, in relation to the Crown in right of the Commonwealth, a State or a Territory, means any authority or body (including a corporation sole) established by a law of the Commonwealth, the State or Territory other than a general law allowing incorporation as a company or body corporate.

Subcontractor, for a contract, means a person who is a party to:

(a) a contract with a Commonwealth contractor (within the meaning of paragraph (a) of the definition of ***Commonwealth contractor***); or

(b) a contract with another subcontractor (under a previous application of this definition).

Traditional Aboriginal owners means traditional Aboriginal owners within the meaning of the *Aboriginal Land Rights (Northern Territory) Act 1976*.

Part 2 – Nomination of sites

Division 1 – Nomination by a Land Council

5 Nomination by a Land Council

(1) A Land Council may, before the general nomination start time, nominate Aboriginal land in the area of the Land Council as a potential site.

Note: After the general nomination start time, certain persons may nominate land in a State or Territory as a potential site—see Division 2 of this Part.

(2) A nomination must:

(a) be in writing; and

(b) be made to the Minister; and

(c) specify the land nominated by reference to portion number (if any), survey points (if available) and geographical co-ordinates; and

(d) contain evidence of all interests in the land; and

(e) if there is a sacred site within the meaning of the *Aboriginal Land Rights (Northern Territory) Act 1976* on or near the land—contain evidence that the persons for whom the site is sacred or is otherwise of significance are satisfied that there is no substantial risk of damage to or interference with the sacred site as a result of the nomination or subsequent action under this Act; and

(f) contain evidence that:

(i) the Land Council has consulted with the traditional Aboriginal owners of the land; and

(ii) the traditional Aboriginal owners understand the nature and effect of the proposed nomination and the things that might be done on or in relation to the land under this Act if the Minister approves the nomination; and

(iii) the traditional Aboriginal owners as a group have consented to the proposed nomination being made (that consent as a group being determined in accordance with section 77A of the *Aboriginal Land Rights (Northern Territory) Act 1976*); and

(iv) any Aboriginal community or group that may be affected by the proposed nomination has been consulted and has had adequate opportunity to express its view to the Land Council.

(3) The Minister may request further information from the Land Council.

(4) Failure to comply with subsection (2) does not invalidate a nomination.

(5) A nomination is not a legislative instrument.

Division 2 – General nominations

6 Minister may declare that nominations can be made under section 7

(1) The Minister may make a declaration in writing that nominations of potential sites may be made under section 7.

Note: After a declaration is made:

(a) a nomination cannot be made under section 5 (see subsection 5(1)); and

(b) the Minister must not approve land nominated under section 5, or declare land so nominated to be the selected site for a facility (see subsections 9(2) and 14(3)).

(2) In deciding whether to make a declaration, the Minister must have regard to whether it is unlikely that a facility will be able to be constructed and operated on Aboriginal land that has been nominated as a potential site under section 5 (whether or not that land has been approved as a site under section 9).

(3) A declaration takes effect at the time specified in the declaration, which must not be earlier than the time the declaration is made.

(4) A copy of a declaration must be published in the Gazette within 7 days of the declaration being made.

(5) Failure to comply with subsection (4) does not invalidate a declaration.

(6) A declaration is not a legislative instrument.

7 Nominations of potential sites

- Nominations may be made

(1) If a declaration under section 6 is in effect, a person or persons may, in accordance with this section, nominate land in a State, the Australian Capital Territory or the Northern Territory as a potential site.

- Nominations by holders of certain interests in land

(2) A person may nominate land under this subsection as a potential site if:

(a) the person holds an interest in the land; and

(b) the interest is:

(i) an estate in fee simple; or

(ii) a lease of land granted by or on behalf of the Crown, a Minister of the Crown, a statutory authority or any other prescribed person, under a law of the Commonwealth, a State or a Territory; and

(c) the person does not hold the interest as a joint tenant or a tenant in common.

(3) The persons who, as joint tenants or tenants in common, hold one of the following interests in land may jointly nominate the land under this subsection as a potential site:

(a) an estate in fee simple;

(b) a lease of the land granted by or on behalf of the Crown, a Minister of the Crown, a statutory authority or any other prescribed person, under a law of the Commonwealth, a State or a Territory.

- Nominations where native title exists

(4) A person may nominate land under this subsection as a potential site if:

(a) an approved determination of native title covers an area containing the land; and

(b) the approved determination of native title determines that:

(i) native title exists in relation to the land; and

(ii) the native title rights and interests confer possession, occupation, use and enjoyment of the land on the native title holders to the exclusion of all others; and

(c) one of the following applies:

(i) in the case of an approved determination of native title by the Federal Court – the person is a prescribed body corporate that holds the native title rights and interests concerned on trust, or is an agent prescribed body corporate in relation to the native title rights and interests concerned;

(ii) in the case of an approved determination of native title by a recognised State/Territory body – the person is a body corporate that holds the native title rights and interests concerned on trust, or that is determined in relation to the native title under a provision of a law of the State or Territory concerned that corresponds to section 57 of the Native Title Act 1993.

(5) In this section:

agent prescribed body corporate has the same meaning as in the *Native Title Act 1993*.

approved determination of native title has the same meaning as in the *Native Title Act 1993*.

prescribed body corporate has the same meaning as in the *Native Title Act 1993*.

recognised State/Territory body has the same meaning as in the *Native Title Act 1993*.

8 Rules about nominations

(1) A nomination made under section 7 must:

(a) be in writing; and

(b) be made to the Minister; and

(c) specify the land nominated in accordance with subsection (2); and

(d) in the case of a nomination under subsection 7(2) or (3)—contain evidence that the interest in the land held by the nominator or nominators of the land is an interest referred to in subparagraph 7(2)(b)(i) or (ii) or subsection 7(3); and

(e) in the case of a nomination under subsection 7(4)—contain evidence of the matters specified in that subsection; and

(f) contain such other evidence (if any) as is prescribed by the regulations, including, but not limited to, the following:

(i) evidence that one or more specified groups of persons have been consulted in relation to the nomination;

(ii) evidence that one or more specified groups of persons are satisfied of specified matters in relation to the nomination;

(iii) evidence that one or more specified groups of persons have consented to the making of the nomination.

(2) For the purposes of paragraph (1)(c), land must be specified by reference to:

(a) survey points (if available); and

(b) geographical co-ordinates; and

(c) whichever of the following is appropriate:

(i) portion number;

(ii) district, division, section and block;

(iii) certificate of title;

(iv) plan and lot number;

(v) volume and folio number;

(vi) lot on plan;

(vii) title identifier;

(viii) parcel identifier;

(ix) deposited plan;

(x) title diagram;

(xi) registered plan;

(xii) a descriptor of a kind similar to a descriptor referred to in this paragraph.

(3) The Minister may request further information from a nominator of the land.

(4) Failure to comply with subsection (1) does not invalidate a nomination made under section 7.

(5) A nomination made under section 7 is not a legislative instrument.

Division 3 – Approval of nominated land

9 Approval of nominated land

(1) Subject to subsection 10(6), the Minister may, in his or her absolute discretion, approve in writing land, or a specified part of land, nominated as a site under section 5 or 7.

(2) Despite subsection (1), the Minister must not, after the general nomination start time, approve land nominated as a site under section 5.

(3) The Minister does not have a duty to consider a nomination.

(4) An approval takes effect at the time specified in the approval, which must not be earlier than the time the approval is made.

(5) A copy of an approval must be published in the Gazette within 7 days of the approval being made.

(6) Failure to comply with subsection (5) of this section, or subsection 5(2), 6(4) or 8(1), does not invalidate an approval.

(7) An approval is not a legislative instrument.

Division 4 – Procedural fairness in relation to Minister's declarations and approvals

10 Procedural fairness in relation to Minister's declarations and approvals

- Declaration under section 6

(1) Before the Minister decides to make a declaration under section 6, the Minister must:

(a) give a notice in writing to each Land Council; and

(b) publish a notice:

(i) in the *Gazette*; and

(ii) in a daily newspaper that circulates generally in each State, the Australian Capital Territory and the Northern Territory.

(2) A notice under paragraph (1)(a) or (b) must:

(a) state that the Minister proposes to make a declaration under section 6; and

(b) invite comments on the proposed declaration; and

(c) specify the address to which comments may be sent; and

(d) specify the date by which comments must be received, which must be at least 60 days after the notice is given or published.

(3) In deciding whether to make a declaration under section 6, the Minister must take into account any relevant comments in response to an invitation referred to in paragraph (2)(b).

- Approval under section 9

(4) Before the Minister decides to approve land, or a specified part of land, under section 9, the Minister must:

(a) give a notice in writing to each nominator of the land; and

(b) publish a notice:

(i) in the *Gazette*; and

(ii) in a daily newspaper that circulates generally in each State, the Australian Capital Territory and the Northern Territory; and

(iii) in a local newspaper (if any) circulating in the area in which the land is situated.

(5) A notice under paragraph (4)(a) or (b) must:

(a) state that the Minister proposes to approve land, or a specified part of land, under section 9; and

(b) if the notice is given under paragraph (4)(a)—invite each nominator of the land to comment on the proposed approval; and

(c) if the notice is published under paragraph (4)(b)—invite persons with a right or interest in the land to comment on the proposed approval; and

(d) specify the address to which comments may be sent; and

(e) specify the date by which comments must be received, which must be at least 60 days after the notice is given or published.

(6) In deciding whether to approve land, or a specified part of land, under section 9, the Minister must take into account any relevant comments given to the Minister, by a nominator of the land, or a person with a right or interest in the land, in response to an invitation referred to in paragraph (5)(b) or (c).

- Exhaustive statement

(7) This section is taken to be an exhaustive statement of the requirements of the natural justice hearing rule in relation to:

(a) the Minister's decision whether to make a declaration under section 6; and

(b) the Minister's decision whether to approve land, or a specified part of land, under section 9.

Part 3 – Selecting the site for a facility

11 Authority to conduct activities

(1) This section applies to:

(a) the Commonwealth; and

(b) a Commonwealth entity; and

(c) a Commonwealth contractor; and

(d) an employee or agent of a person mentioned in paragraph (a), (b) or (c).

(2) A person to whom this section applies may, in a State or Territory, do anything necessary for or incidental to the purposes of selecting a site on which to construct and operate a facility.

(3) Without limiting subsection (2), the person may do any or all of the following under that subsection (whether or not on a site):

(a) gain access to and enter land and drive vehicles or fly aircraft to and from it;

(b) in order to drive vehicles to and from land—use existing roads or construct roads on, or grade, land;

(c) construct or rehabilitate bores;

(d) operate drilling equipment;

(e) extract water;

(f) collect samples of flora and fauna;

(g) place monitoring equipment (including meteorological and hydrological measuring equipment);

(h) build structures to protect bores, monitoring equipment or other things;

(i) move or extract sand, gravel, soil, mineral and rock samples;

(j) conduct seismic or geological investigations;

(k) conduct archaeological or heritage investigations;

(l) clear vegetation.

(4) A person doing a thing under this Part must:

(a) take all reasonable steps to ensure that the doing of the thing causes as little detriment and inconvenience, and does as little damage, as is practicable to the land and to anything on, or growing or living on, the land; and

(b) remain on the land only for such period as is reasonably necessary; and

(c) leave the land, as nearly as practicable, in the condition in which it was immediately before the thing was done.

12 Application of State and Territory laws

(1) A law, or a provision of a law, of a State or Territory (whether written or unwritten), so far as it relates to:

(a) the use or proposed use of land or premises; or

(b) the environmental consequences of the use of land or premises; or

(c) the archaeological or heritage values of land, premises or objects (including the significance of land, premises or objects in the traditions of Indigenous people); or

(d) controlled material, radioactive material or dangerous goods; or

(e) licensing (however described) in relation to:

(i) employment; or

(ii) carrying on a particular kind of business or undertaking; or

(iii) conducting a particular kind of operation or activity;

has no effect to the extent that it would, apart from this section, regulate, hinder or prevent the doing of a thing authorised by section 11.

(2) The regulations may prescribe a law, or a provision of a law, of a State or Territory for the purposes of this subsection. The prescribed law or provision has no effect to the extent that it would, apart from this subsection, regulate, hinder or prevent the doing of a thing authorised by section 11.

(3) Regulations made for the purposes of subsection (2) may prescribe a law, or a provision of a law, whether or not it is a law or a provision of a kind described in subsection (1).

(4) The regulations may prescribe a law, or a provision of a law, of a State or Territory for the purposes of this subsection. The prescribed law or provision has effect despite anything else in this section.

13 Application of Commonwealth laws

(1) The following laws have no effect to the extent that they would, apart from this section, regulate, hinder or prevent the doing of a thing authorised by section 11:

(a) the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*;

(b) the *Environment Protection and Biodiversity Conservation Act 1999*.

(2) The regulations may prescribe another law, or a provision of another law, of the Commonwealth for the purposes of this subsection. The prescribed law or provision has no effect to the extent that it would, apart from this subsection, regulate, hinder or prevent the doing of a thing authorised by section 11.

Part 4 – Acquisition or extinguishment of rights and interests

Division 1 – Minister may declare a site as the site for a facility

14 Minister's declaration of land as selected site or required for road access

(1) This section applies if:

(a) land has been nominated as a site under section 5 or 7; and

(b) the Minister has approved the nominated land, or a specified part of the nominated land, as a site under section 9.

(2) Subject to section 18, the Minister may, in his or her absolute discretion, declare in writing that the site approved by the Minister, or a specified part of the site, is selected as the site for a facility. The declaration may specify all or some of the rights or interests in the selected site.

(3) Despite subsection (2), the Minister must not, after the general nomination start time, make such a declaration in relation to land nominated as a site under section 5.

(4) Subject to section 18, the Minister may, in his or her absolute discretion, declare in writing that all or specified rights or interests in land in a State or Territory specified in the declaration are required for providing all-weather road access to the selected site.

(5) To avoid doubt, rights and interests specified in a declaration under subsection (2) or (4) may include the following:

(a) rights to minerals (if any);

(b) native title rights and interests (if any);

(c) an interest in the land, being an interest that did not previously exist;

(d) an easement in gross (if any).

(6) To avoid doubt, this section has effect subject to section 9 of the *Racial Discrimination Act 1975*.

(7) A declaration under subsection (2) or (4) is not a legislative instrument.

15 Formalities relating to Minister's declarations

(1) A copy of a declaration under subsection 14(2) or (4) must be published in the *Gazette* within 7 days of the declaration being made.

(2) Failure to comply with subsection (1) of this section, or subsection 5(2), 6(4), 8(1) or 9(5), does not invalidate a declaration.

16 When Minister's declarations take effect etc.

(1) A declaration under subsection 14(2) or (4) takes effect at the time specified in the declaration, which must not be earlier than the time the declaration is made.

(2) The Minister may, subject to this section, make more than one declaration under subsection 14(2) or (4), but only one declaration under subsection 14(2) may be in effect at a particular time.

(3)If:

(a) a declaration under subsection 14(2) (the ***original declaration***) is in effect at a particular time; and

(b) at that time, the Minister makes another such declaration (the ***later declaration***);

the Minister is taken, immediately before the time of effect specified in the later declaration, to have revoked the original declaration under section 17.

17 Revocation of Minister's declaration

(1) The Minister may, in his or her absolute discretion, revoke in writing a declaration made under subsection 14(2) or (4).

(2) A revocation takes effect at the time specified in the revocation, which must not be earlier than the time the revocation is made.

(3) To avoid doubt, if a declaration made under subsection 14(2) or (4) is revoked:

(a) the revocation does not affect the operation of section 19 in relation to the land that was the subject of the revoked declaration; and

(b) on and from the revocation, Part 5 does not apply to that land.

(4) Section 18 does not apply to a revocation under this section.

(5) A copy of a revocation must be published in the *Gazette* within 7 days of the revocation.

(6) Failure to comply with subsection (5) does not invalidate a revocation.

(7) Subsection 33(3) of the *Acts Interpretation Act 1901* does not apply to a revocation.

Division 2 – Procedural fairness

18 Procedural fairness in relation to Minister's declarations

(1) Before the Minister decides to make a declaration under section 14 in relation to land, the Minister must:

(a) give a notice in writing to each nominator of the land; and

(b) publish a notice:

(i) in the *Gazette*; and

(ii) in a daily newspaper that circulates generally in each State, the Australian Capital Territory and the Northern Territory; and

(iii) in a local newspaper (if any) circulating in the area in which the land is situated.

(2) A notice under paragraph (1)(a) or (b) must:

(a) state that the Minister proposes to make a declaration under subsection 14(2) or (4); and

(b) set out details of the proposed declaration; and

(c) if the notice is given under paragraph (1)(a)—invite each nominator of the land to comment on the proposed declaration; and

(d) if the notice is published under paragraph (1)(b)—invite persons with a right or interest in the land to comment on the proposed declaration; and

(e) specify the address to which comments may be sent; and

(f) specify the date by which comments must be received, which must be at least 60 days after the notice is given or published.

(3) In deciding whether to make a declaration under section 14, the Minister must take into account any relevant comments given to the Minister, by a nominator of the land, or a person with a right or interest in the land, in response to an invitation referred to in paragraph (2)(c) or (d).

(4) A reference in this section to each nominator of the land, in relation to a declaration under subsection 14(4) that rights or interests in land are required for providing all-weather road access to the selected site, is a reference to each person who nominated the selected site under section 5 or 7.

- Exhaustive statement

(5) This section is taken to be an exhaustive statement of the requirements of the natural justice hearing rule in relation to the Minister's decision whether to make a declaration under section 14.

Division 3 – Acquisition or extinguishment

19 Acquisition or extinguishment

(1) At the time a declaration under subsection 14(2) takes effect, any rights or interests in the selected site that are specified in the declaration are, by force of this section:

(a) acquired by the Commonwealth or extinguished; and

(b) freed and discharged from all other rights and interests and from all trusts, restrictions, dedications, reservations, obligations, mortgages, encumbrances, contracts, licences, charges and rates.

(2) At the time a declaration under subsection 14(4) takes effect, the rights or interests in the specified land that are specified in the declaration are, by force of this section:

(a) acquired by the Commonwealth or extinguished; and

(b) freed and discharged from all other rights and interests and from all trusts, restrictions, dedications, reservations, obligations, mortgages, encumbrances, contracts, licences, charges and rates.

20 Application of Commonwealth and State or Territory laws

(1) Section 19 has effect despite any other law of the Commonwealth, a State or a Territory (whether written or unwritten).

(2) Without limiting subsection (1), section 19 has effect despite the following laws of the Commonwealth:

(a) the *Lands Acquisition Act 1989*;

(b) the *Native Title Act 1993*.

21 Notice to Registrar-General or other appropriate officer

(1) The Secretary of the Department may lodge with the Registrar-General, the Registrar of Titles or other appropriate officer of a State or Territory a copy of a Minister's declaration under section 14, certified by writing signed by the Secretary.

(2) The officer with whom the copy is lodged may deal with and give effect to it as if it were a grant, conveyance, memorandum or instrument of transfer of relevant rights and interests done under the laws of the State or Territory.

Division 4 – Regional consultative committee

22 Regional consultative committee

(1) Immediately after a declaration under subsection 14(2) takes effect, the Minister must, by writing, establish a committee to be known as the regional consultative committee.

Note: For variation and revocation, see subsection 33(3) of the *Acts Interpretation Act 1901*.

(2) The functions of the committee are:

(a) to facilitate communication between the Commonwealth, the operator of the facility (if any) at the selected site and persons living in or near the region where the selected site is situated; and

(b) such other functions as are prescribed under paragraph (4)(a).

(3) An instrument made under subsection (1) is not a legislative instrument.

(4) The regulations may prescribe matters relating to the committee, including, but not limited to, the following:

(a) the functions of the committee;

(b) the operation and procedures of the committee;

(c) membership of the committee;

(d) term of appointment of members;

(e) remuneration of members;

(f) resignation of members;

(g) disclosure of interests by members;

(h) termination of appointment of members;

(i) leave of absence of members.

(5) If no regulations are in force under subsection (4), the committee may operate in the way determined in writing by the committee.

Part 5 – Conducting activities in relation to selected site

23 Authority to conduct activities

(1) This section applies to:

(a) the Commonwealth; and

(b) a Commonwealth entity; and

(c) a Commonwealth contractor; and

(d) an employee or agent of a person mentioned in paragraph (a), (b) or (c).

(2) A person to whom this section applies may, in relation to the selected site, do anything necessary for or incidental to any or all of the following:

(a) gathering or preparing information for a Commonwealth regulatory scheme that relates to:

(i) the construction or operation of a facility; or

(ii) anything done in preparation for the construction or operation of a facility;

(b) conducting activities that relate to gathering or preparing information for such a regulatory scheme;

(c) preparing the selected site for a facility;

(d) preparing to construct and operate a facility;

(e) constructing a facility;

(f) constructing roads on, or grading, land in a State or Territory;

(g) erecting fences and other access controls on land specified in the declaration under subsection 14(4);

(h) operating a facility;

(i) maintaining a facility;

(j) keeping a facility safe;

(k) decommissioning a facility.

(3) Without limiting subsection (2), the person may, under that subsection, do a thing mentioned in subsection 11(3) in relation to the selected site.

(4) Subsection (2) extends to doing things outside the selected site.

(5) A person to whom this section applies may, in relation to the selected site:

(a) transport (including through a State or Territory) people and materials (including controlled material) to or from a facility; and

(b) use transport infrastructure for that transport.

24 Application of State and Territory laws

(1) A law, or a provision of a law, of a State or Territory (whether written or unwritten), so far as it relates to:

(a) the use or proposed use of land or premises; or

(b) the environmental consequences of the use of land or premises; or

(c) the archaeological or heritage values of land, premises or objects (including the significance of land, premises or objects in the traditions of Indigenous people); or

(d) controlled material, radioactive material or dangerous goods; or

(e) licensing (however described) in relation to:

(i) employment; or

(ii) carrying on a particular kind of business or undertaking; or

(iii) conducting a particular kind of operation or activity;

has no effect to the extent that it would, apart from this section, regulate, hinder or prevent the doing of a thing authorised by section 23.

(2) A law, or a provision of a law, of a State or Territory (whether written or unwritten), so far as it relates to the transport of controlled material, radioactive material or dangerous goods, has no effect to the extent that it would, apart from this section, regulate, hinder or prevent transport authorised by section 23.

(3) The regulations may prescribe a law, or a provision of a law, of a State or Territory for the purposes of this subsection. The prescribed law or provision has no effect to the extent that it would, apart from this subsection, regulate, hinder or prevent the doing of a thing authorised by section 23.

(4) Regulations made for the purposes of subsection (3) may prescribe a law, or a provision of a law, whether or not it is a law or a provision of a kind described in subsection (1) or (2).

(5) The regulations may prescribe a law, or a provision of a law, of a State or Territory for the purposes of this subsection. The prescribed law or provision has effect despite anything else in this section.

25 Application of Commonwealth laws

(1) The regulations may prescribe a law, or a provision of a law, of the Commonwealth for the purposes of this subsection. The prescribed law or provision has no effect to the extent that it would, apart from this subsection, regulate, hinder or prevent the doing of a thing authorised by section 23.

(2) The regulations must not prescribe any of the following laws, or any provision of the following laws:

(a) the *Australian Radiation Protection and Nuclear Safety Act 1998*;

(b) the *Environment Protection and Biodiversity Conservation Act 1999*;

(c) the *Nuclear Non-Proliferation (Safeguards) Act 1987*.

Part 6 – Granting of rights and interests in land to original owners

26 Application of Part

- Declaration under subsection 14(2)

(1) This Part applies if:

(a) immediately before a declaration under subsection 14(2) took effect, land that was the subject of the declaration was Aboriginal land (the ***relevant land***); and

(b) as a result of the declaration, the Commonwealth acquired, under section 19, an estate in fee simple in the relevant land; and

(c) a facility on the relevant land has been abandoned in accordance with the *Australian Radiation Protection and Nuclear Safety Act 1998*; and

(d) the Commonwealth holds an estate in fee simple in the relevant land.

- Declaration under subsection 14(4)

(2) This Part also applies if:

(a) immediately before a declaration under subsection 14(4) took effect, all or part of the land that was the subject of the declaration was Aboriginal land (the whole, or that part, of the land being ***relevant land***); and

(b) as a result of the declaration, the Commonwealth acquired, under section 19, rights or interests in the relevant land; and

(c) the facility mentioned in paragraph (1)(c) has been abandoned in accordance with the *Australian Radiation Protection and Nuclear Safety Act 1998*; and

(d) the Commonwealth holds all or some of those rights or interests in the relevant land.

- Part does not apply to nominations under section 7

(3) However, this Part does not apply to a declaration referred to in subsection (1) or (2) if the declaration relates to land nominated under section 7.

27 Declaration of intention to grant rights and interests in land to original owners

(1) The Minister may, in his or her absolute discretion, declare in writing that the land that was the subject of the declaration under subsection 14(2) is no longer required for the facility mentioned in paragraph 26(1)(c).

(2) The declaration must:

(a) specify all the relevant land; and

(b) state that the Minister intends to make a declaration under section 28 granting the rights and interests specified in section 29 in specified land to a specified Land Trust.

(3) Land specified under paragraph (2)(b) may be all or part of the relevant land, but all of the specified land must, in total, be all of the relevant land.

(4) A Land Trust may be specified under paragraph (2)(b) in relation to specified land only if:

(a) the Land Trust held title to the specified land immediately before the declaration under subsection 14(2) or (4) (as the case may be) took effect; or

(b) the Land Trust has succeeded to the functions of a Land Trust mentioned in paragraph (a) of this subsection.

(5) Within 7 days of the declaration being made, the Minister must:

(a) publish a copy of the declaration in the *Gazette*; and

(b) notify a specified Land Trust in writing that the Minister intends to make a declaration under section 28.

(6) A declaration is not valid unless:

(a) it specifies and states the matters mentioned in subsection (2); and

(b) the Minister complies with subsection (5).

(7) A Land Trust specified in a declaration may consent in writing to the granting of the rights and interests specified in section 29 in the specified land.

(8) A declaration is not a legislative instrument.

28 Declaration granting rights and interests in land to original owners

(1) The Minister must make a declaration in writing that an estate in fee simple is granted in specified land to a specified Land Trust if:

(a) the Commonwealth holds an estate in fee simple in the specified land; and

(b) the specified Land Trust has, under subsection 27(7), consented to the granting of an estate in fee simple in the specified land within:

(i) 12 months of the day on which the declaration under section 27 was published in the *Gazette*; or

(ii) such longer period as is prescribed in the regulations.

(2) The Minister must make a declaration in writing that the rights and interests specified in subsection 29(3) are granted in specified land to a specified Land Trust if:

(a) the Commonwealth holds rights or interests (other than an estate in fee simple) in the specified land; and

(b) the specified Land Trust has, under subsection 27(7), consented to the granting of the rights and interests specified in subsection 29(3) in the specified land within:

(i) 12 months of the day on which the declaration under section 27 was published in the *Gazette*; or

(ii) such longer period as is prescribed in the regulations.

(3) A declaration takes effect at the time specified in the declaration, which must not be earlier than the time the declaration is made.

(4) A declaration is not a legislative instrument.

(5) The Minister may include one or more declarations under subsections (1) and (2) in the same document.

29 Grant of rights and interests in land to original owners

- Grant of estate in fee simple

(1) If the Minister makes a declaration under subsection 28(1), then at the time the declaration takes effect:

(a) an estate in fee simple is granted, by force of this subsection, in the specified land to the specified Land Trust; and

(b) the land is taken, for all purposes, to be Aboriginal land.

(2) The estate in fee simple is subject to the reservations that:

(a) the right to any minerals existing in their natural condition, or in a deposit of waste material obtained from any underground or surface working, on or below the surface of the land, being minerals all interests in which are vested in the Commonwealth, remains with the Commonwealth; and

(b) rights to explore for minerals, and leases or licences to mine for minerals, on or below the surface of the land may be granted under section 124 of the *Lands Acquisition Act 1989*.

- Grant of other rights and interests

(3) If the Minister makes a declaration under subsection 28(2), then at the time the declaration takes effect, any rights and interests:

(a) that are held by the Commonwealth in the specified land; and

(b) that were acquired by the Commonwealth, under section 19, in the specified land from the specified Land Trust or another Land Trust;

are granted, by force of this subsection, in the specified land to the specified Land Trust.

- Validity of earlier rights, interests and actions

(4) The granting of rights and interests in land under subsection (1) or (3) does not affect:

(a) the validity of any rights or interests acquired, created or granted (whether under this Act or otherwise) in relation to the land; or

(b) the validity of the construction, operation, maintenance, decommissioning or abandoning of a facility on the land, or the doing of any other thing in relation to the land;

before the declaration under section 28 takes effect.

30 No earlier rights and interests granted

To avoid doubt, the making of a declaration under section 28 does not create or grant any rights or interests in land before the declaration takes effect.

31 Application of Commonwealth, State and Territory laws

Section 29 has effect despite any other law of the Commonwealth, a State or a Territory (whether written or unwritten).

32 Notice to Registrar-General

(1) The Secretary of the Department may lodge with the Registrar-General for the Northern Territory (or other appropriate officer) a copy of a Minister's declaration under section 28, certified by writing signed by the Secretary.

(2) The officer with whom the copy is lodged may deal with and give effect to it as if it were a grant, conveyance, memorandum or instrument of transfer of relevant rights and interests done under the laws of the Northern Territory.

33 Indemnity by Commonwealth

(1) The Commonwealth must indemnify each Land Trust specified in a declaration under section 28, and keep the Land Trust indemnified, against any action, claim or demand brought or made against the Land Trust in respect of any liability arising from, or damage caused by, ionising radiation from any act done or omitted to be

done by or on behalf of the Commonwealth in relation to the transport of controlled material to or from, or the management of controlled material at, a facility on the land specified in the declaration.

(2) The amount of the indemnity is reduced to the extent to which any fault on the part of the Land Trust, or its employees, agents or contractors, contributed to the liability or damage.

(3) Subsection (1) does not apply in relation to an action, claim or demand unless:

(a) the Land Trust notifies the Commonwealth, in writing, of the action, claim or demand as soon as practicable; and

(b) the Land Trust follows any directions of the Commonwealth in relation to the action, claim or demand.

34 Regulations

The regulations may prescribe any modifications of this Act that are necessary or convenient to deal with transitional matters arising from the making of a declaration under section 27 or 28.

Part 6A – National Repository Capital Contribution Fund

34A Application of Part

This Part applies if:

(a) the Minister has made a declaration under subsection 14(2) that a site in a State or Territory (the ***relevant State or Territory***) is selected as the site for a facility; and

(b) a facility has been constructed at the site.

34B National Repository Capital Contribution Fee

(1) An entity wishing to use the facility, other than the following entities:

(a) the Commonwealth;

(b) the relevant State or Territory;

(c) an authority of the Commonwealth or the relevant State or Territory;

must pay such fee (the ***Capital Contribution Fee***) as is prescribed by the regulations as a capital contribution towards the cost of the facility before being eligible **to have radioactive waste accepted by the facility for storage, management or any other purpose**.

(2) The Capital Contribution Fee is to be determined in the manner prescribed by the regulations.

(3) In this section:

authority of the Commonwealth means:

(a) a body corporate established for a purpose of the Commonwealth by or under a law of the Commonwealth or a law of a Territory; or

(b) an incorporated company in which the Commonwealth, or a body corporate referred to in paragraph (a), has a controlling interest.

Authority of the relevant State or Territory means:

(a) a body corporate established for a purpose of the relevant State or Territory by or under a law of the relevant State or Territory; or

(b) an incorporated company in which the relevant State or Territory, or a body corporate referred to in paragraph (a), has a controlling interest.

34C National Repository Capital Contribution Fund

(1) The National Repository Capital Contribution Fund (the ***Fund***) is established by this subsection.

(2) The Fund is a Special Account for the purposes of the *Financial Management and Accountability Act 1997*.

(3) The Fund is taken to be established immediately after a facility licence that authorises a person to operate the facility is issued under the *Australian Radiation Protection and Nuclear Safety Act 1998*.

34D Credits of amounts to the Fund

(1) There must be credited to the Fund:

(a) all money appropriated by the Parliament for the purposes of the Fund; and

(b) amounts in excess of the first $10 000 000 received by the Commonwealth as Capital Contribution Fees.

Note: An Appropriation Act provides for amounts to be credited to a Special Account if any of the purposes of the Account is a purpose that is covered by an item in the Appropriation Act.

(2) Amounts standing to the credit of the Fund may be debited for the purposes of providing enhanced public services and/or infrastructure in the relevant State or Territory.

Note: See section 21 of the *Financial Management and Accountability Act 1997* (debits from Special Accounts).

34E Conditions attaching to the initial use of facility

(1) A radioactive waste management facility established on a site selected under this Act must not commence accepting any radioactive waste for storage, management or any other purpose, unless:

(a) the requirements specified in subsection (2) of this section have been met; and

(b) the Minister has given to the person managing the facility a notice certifying that each of those requirements has been met.

(2) The requirements to be met for the purposes of subsection (1) are:

(a) that the Fund stands in credit to the value of at least $10 000 000; and

(b) either:

(i) the Commonwealth has entered into an agreement with the relevant State or Territory for the administration of the Fund, which provides that the Fund be administered by the Minister, on the advice of a committee chaired by the Premier or Chief Minister of the relevant State or Territory and comprising 3 other persons resident in that State or Territory with expertise in education, infrastructure and health respectively; or

(ii) failing such agreement—the Commonwealth has established a committee comprising 3 persons with expertise in education, infrastructure and health

resident in the relevant State or Territory, whose function is to advise the Minister on the administration of the Fund by the Minister.

34F Commonwealth acceptance of waste destined for facility

The Commonwealth must not accept radioactive waste from any entity in a manner that avoids the payment of the Capital Contribution Fee mentioned in section 34B.

Part 7 – Miscellaneous

35 Compensation

(1) If rights or interests are acquired, extinguished or otherwise affected under section 19, the Commonwealth is liable to pay a reasonable amount of compensation to a person whose right or interest has been acquired, extinguished or otherwise affected.

(2) If the Commonwealth and the person do not agree on the amount of the compensation, the person may institute proceedings in the Federal Court of Australia for the recovery from the Commonwealth of such reasonable amount of compensation as the court determines.

36 Compensation for acquisition of property

(1) If the operation of this Act would result in an acquisition of property from a person otherwise than on just terms, the Commonwealth is liable to pay a reasonable amount of compensation to the person.

(2) If the Commonwealth and the person do not agree on the amount of the compensation, the person may institute proceedings in the Federal Court of Australia for the recovery from the Commonwealth of such reasonable amount of compensation as the court determines.

(3) In this section:

acquisition of property has the same meaning as in paragraph 51(xxxi) of the Constitution.

just terms has the same meaning as in paragraph 51(xxxi) of the Constitution.

37 Indemnity by Commonwealth and management of Northern Territory controlled material for section 5 nominations

(1) This section applies if the selected site was nominated under section 5.

- Indemnity by Commonwealth

(2) The Commonwealth must indemnify the Northern Territory, and keep the Northern Territory indemnified, against any action, claim or demand brought or made against the Northern Territory in respect of any liability arising from, or damage caused by, ionising radiation from any act done or omitted to be done by or on behalf of the Commonwealth in relation to the transport of controlled material to or from, or the management of controlled material at, a facility on the selected site.

(3) The amount of the indemnity is reduced to the extent to which any fault on the part of the Northern Territory, or its employees, agents or contractors, contributed to the liability or damage.

(4) Subsection (2) does not apply in relation to an action, claim or demand unless:

(a) the Northern Territory notifies the Commonwealth, in writing, of the action, claim or demand as soon as practicable; and

(b) the Northern Territory follows any directions of the Commonwealth in relation to the action, claim or demand.

- Management of Northern Territory controlled material

(5) If controlled material that is generated by activities in the Northern Territory is managed at a facility on the selected site, the Commonwealth must not charge the Northern Territory for the management.

38 Severability – additional effect of Act

Without limiting its effect apart from this section, this Act also has the effect it would have if:

(a) each reference to a facility were expressly limited to a facility within a Territory; and

(b) each reference to the doing of things, or things done, on or in relation to land were expressly limited to a reference to the doing of things, or things done, on or in relation to land within a Territory.

39 Regulations

The Governor-General may make regulations prescribing matters:

(a) required or permitted by this Act to be prescribed; or

(b) necessary or convenient to be prescribed for carrying out or giving effect to this Act.

40 Schedule(s)

Each Act that is specified in a Schedule to this Act is amended or repealed as set out in the applicable items in the Schedule concerned, and any other item in a Schedule to this Act has effect according to its terms.

Schedule 1 – Repeal and consequential amendments

Part 1 – Repeal of the Commonwealth Radioactive Waste Management Act 2005

1 The whole of the Act

Repeal the Act.

Part 2 – Consequential amendment

Administrative Decisions (Judicial Review) Act 1977

2 Paragraph (zc) of Schedule 1

Repeal the paragraph.

Schedule 2 – Transitional provisions

1 Saving – nominations and approvals

(1) Despite the repeal of Part 1A of the *Commonwealth Radioactive Waste Management Act 2005* by item 1 of Schedule 1, a nomination under section 3A of the old radioactive waste law continues in force, after the commencement time, as if it had been made under section 5 of the new radioactive waste law.

(2) Despite the repeal of Part 1A of the *Commonwealth Radioactive Waste Management Act 2005* by item 1 of Schedule 1, an approval under section 3C of the old radioactive waste law continues in force, after the commencement time, as if it had been made under section 9 of the new radioactive waste law.

(3) Section 3D of the old radioactive waste law, and the old ADJR Act, continue to apply, after the commencement time, in relation to a nomination or an approval continued in force by this item.

(4) Section 10 of the new radioactive waste law, and the new ADJR Act, do not apply in relation to a nomination or an approval continued in force by this item.

(5) To avoid doubt, section 18 of the new radioactive waste law, and the new ADJR Act, apply in relation to a declaration under section 14 of the new radioactive waste law that relates to an approval continued in force by this item.

(6) In this item:

commencement time means the time at which item 1 of Schedule 1 commences.

new ADJR Act means the *Administrative Decisions (Judicial Review) Act 1977* as in force immediately after the commencement time.

new radioactive waste law means the *National Radioactive Waste Management Act 2012* as in force immediately after the commencement time.

old ADJR Act means the *Administrative Decisions (Judicial Review) Act 1977* as in force immediately before the commencement time.

old radioactive waste law means the *Commonwealth Radioactive Waste Management Act 2005* as in force immediately before the commencement time.

[Minister's second reading speech made in—
House of Representatives on 21 October 2010
Senate on 28 February 2011]
(252/10)

Germany

Act on the Peaceful Utilisation of Atomic Energy and the Protection against its Hazards (Atomic Energy Act)[1]

of 23 December 1959, as amended and promulgated on 15 July 1985, last amendment by the Act of 8 November 2011

Chapter 1 – General

§ 1 Purpose of the Act

The purpose of this Act is

1. to phase out the use of nuclear energy for the commercial generation of electricity in controlled manner, and to ensure orderly operation up until the date of termination,

2. to protect life, health and real assets against the hazards of nuclear energy and the harmful effects of ionising radiation and to provide compensation for damage and injuries caused by nuclear energy or ionising radiation,

3. to prevent danger to the internal or external security of the Federal Republic of Germany from the application or release of nuclear energy or ionising radiation,

4. to enable the Federal Republic of Germany to meet its international obligations in the field of nuclear energy and radiation protection.

§ 2 Definitions

(1) Within the meaning of this Act the term "radioactive material" (nuclear fuel and other radioactive substances) refers to all material containing one or more radionuclides and whose activity or specific activity in conjunction with nuclear energy or radiation protection cannot be disregarded under the provisions of this Act or a statutory ordinance promulgated on the basis of this Act. The term "nuclear fuel" refers to special fissionable material in the form of

1. plutonium 239 and plutonium 241,

2. uranium enriched in isotopes 235 or 233,

3. any material containing one or more of the substances cited under nos. 1 and 2,

4. substances which permit a self-sustaining chain reaction to be maintained in a suitable installation and which are defined in a statutory ordinance.

1. The German original of this translation was published in *Bundesgesetzblatt* (*Federal Law Gazette, BGBl.*) *I 1985*, No. 26, its last Amendment in *Bundesgesetzblatt I 2011*, No. 57. In case of discrepancies the German text shall prevail.

The term “uranium enriched in isotopes 235 or 233” means uranium containing the isotopes 235 or 233 or both in such quantities that the sum total of the amounts of these two isotopes is greater than the amount of isotope 238 multiplied by the naturally occurring ratio of isotope 235 in relation to isotope 238.

(2) The activity or specific activity of a substance may be disregarded pursuant to para. (1), sentence 1 above provided that, pursuant to a statutory ordinance promulgated on the basis of this Act,

1. it falls below specified exemption levels,

2. if the substance concerned is incurred within the context of a licensable activity under the provisions of this Act or a statutory ordinance promulgated on the basis of this Act, it falls below specified clearance levels and clearance has been given,

3. the substance concerned is of natural origin which is not used because of its radioactivity, as a nuclear fuel or to generate nuclear fuel, and is not subject to monitoring under the provisions of this Act or a statutory ordinance promulgated on the basis of this Act .

Notwithstanding sentence 1 above, a statutory ordinance promulgated on the basis of this Act concerning the use of substances on humans or the appropriated addition of substances to the production of pharmaceuticals, medical products, pesticides, insecticides, substances listed in § 1, subparas. 1 to 5 of the Fertilizer Act or consumer goods or the activation thereof, may stipulate certain cases in which the activity or specific activity of a substance must not be disregarded.

(3) For the application of licensing provisions pursuant to this Act or any statutory ordinances promulgated on the basis of this Act, substances in which the proportion of isotopes uranium 233, uranium 235, plutonium 239 and plutonium 241 does not exceed 15 grams in total or the concentration of the isotopes listed does not exceed 15 grams per 100 kilograms are classified as “other radioactive material”. Sentence 1 above shall not apply to solidified high-level fission product solutions derived from the reprocessing of nuclear fuel.

(3a) Furthermore within the meaning of this Act:

1. the term “nuclear installation” refers to

a) stationary installations for the production or for the treatment or processing or for the fission of nuclear fuels or for the reprocessing of irradiated nuclear fuels according to § 7, para. (1),

b) storage of irradiated nuclear fuels according to § 6 para. (1) or (3),

c) interim storage facilities for radioactive waste, if the interim storage facilities are directly connected to the particular nuclear installation pursuant to character a or b and are located at the site of the installations;

2. the term “nuclear safety” refers to

the achievement and maintaining of normal operating conditions, the prevention of accidents and the attenuation of results of an accident, so that life, health and real assets are protected against the hazards of nuclear energy and the harmful effects of ionising radiation.

(4) For the application of the provisions relating to liability and financial security, the terms “nuclear incident”, “nuclear installation”, “operator of a nuclear installation”, “nuclear substances” and “Special Drawing Rights” shall have the meanings defined in Appendix 1 hereto.

(5) The term “Paris Convention” shall mean the Convention on Third-Party Liability in the Field of Nuclear Energy, dated 29 July 1960, as amended and promulgated on

5 February 1976 (BGBl.II 1976, pp. 310, 311), in conjunction with the Protocol of 16 November 1982 (BGBl.II 1985, p. 690).

(6) The term "Brussels Supplementary Convention" shall mean the Convention Supplementary to the Paris Convention of 29 July 1960, dated 31 January 1963, as amended and promulgated on 5 February 1976 (BGBl.II 1976, pp. 310, 318), in conjunction with the Protocol of 16 November 1982 (BGBl.II 1985, p. 690).

(7) The term "Joint Protocol" shall mean the Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention, dated 21 September 1988 (Federal Law Gazette (BGBl. II 2001, pp. 202, 203).

(8) The term "Vienna Convention" shall mean the Vienna Convention on Civil Liability for Nuclear Damage, dated 21 May 1963 (BGBl. II 2001, pp. 202, 207), in the respective valid versions for the Contracting Parties.

§ 2a Environmental impact assessment

(1) If, under the provisions of the Act on the Environmental Impact Assessment, there is an obligation to carry out an environmental impact assessment for projects which are subject to a licensing or a plan approval procedure under the provisions of this Act or a statutory ordinance promulgated on the basis thereof (projects subject to compulsory EIA), the environmental impact assessment shall constitute an integral part of the licensing or plan approval procedures stipulated by this Act or a statutory ordinance promulgated on the basis thereof. The environmental impact assessment shall be carried out in accordance with the provisions outlined in § 7, para. (4), sentences 1 and 2 and the statutory ordinance pursuant to § 7, para. (4), sentence 3 on the subject of the environmental impact assessment, the application documents, the announcement of the project and the date for the public hearing, the public disclosure of application documents, the raising of objections, the involvement of the authorities, the holding of the public hearing, the content of the licensing permit, and the service and public announcement of the decision; in the case of projects according to § 7 and § 9b, subject to compulsory EIA other than the installations listed in Appendix 1 of the Act on the Assessment of Environmental Impacts, no public hearing shall take place if the project is liable to licensing under the valid provisions for other radioactive substances. § 2, para. (1), sentence 4 and § 14 of the Act on the Assessment of Environmental Impacts and § 9b, paras. (2) and (5), subpara. 1 shall remain unaffected by this.

(2) Before filing a complaint to the administrative court concerning an administrative act promulgated subsequent to an environmental impact assessment, the requirement for verification by way of pretrial review will be waived.

§ 2b Electronic communication

(1) The provisions of the Administrative Procedures Act relating to electronic communication shall apply unless otherwise provided for by legal provisions of this Act or by statutory ordinance decreed on the basis of this Act.

(2) Electronic administrative acts according to this act or according to a statutory ordinance decreed on the basis of this act shall be provided with a permanently checkable, qualified electronic signature according to § 37, para. (4) Administrative Procedures Act.

(3) If the application is filed electronically the competent authority can also demand several versions and the transfer of documents to be attached to the application in writing.

Chapter 2 – Supervision

§ 3 Imports and exports

(1) Any person who imports or exports nuclear fuel shall require a licence.

(2) An import licence shall be granted provided that

1. there are no known facts giving rise to doubts as to the reliability of the importer, and

2. it is assured that the nuclear fuel to be imported will be used in conformity with the provisions hereof, the statutory ordinances issued hereunder and the international obligations of the Federal Republic of Germany in the field of nuclear energy.

(3) An export licence shall be granted provided that

1. there are no known facts giving rise to doubts as to the reliability of the exporter, and

2. it is assured that the nuclear fuel to be exported will not be used in such a way as to jeopardise the international obligations of the Federal Republic of Germany in the field of nuclear energy or the internal or external security of the Federal Republic of Germany.

(4) Nothing herein contained shall affect any other legal provision relating to imports or exports.

(5) Any other conveyance into or out of the territorial scope of this Act shall be deemed to be imports or exports as defined herein.

§ 4 Carriage of nuclear fuel

(1) The carriage of nuclear fuel outside an enclosed site where nuclear fuel is kept in government custody or where practices licensed pursuant to §§ 6, 7 and 9 hereof are pursued, shall require a licence. Such licence shall be granted to the consignor or the person attending to the consignment or carriage of the nuclear fuel.

(2) A licence shall be granted provided that

1. there are no known facts giving rise to doubts as to the reliability of the applicant, the carrier and the persons actually effecting the carriage,

2. it is assured that the carriage will be effected by persons who possess the necessary knowledge of the possible radiation hazards and the protective measures to be applied to the intended carriage of nuclear fuel,

3. it is assured that the nuclear fuel will be carried in conformity with such legal provisions on the carriage of dangerous goods as are applicable to the respective carrier or, in the absence of such provisions, that such other precautions have been taken as are necessary in the light of the state-of-the-art-of science and technology in order to prevent damage resulting from the carriage of nuclear fuel,

4. the necessary financial security has been provided for covering the legal liability to pay compensation for damage,

5. the necessary protection has been provided against disruptive action or other interference by third parties,

6. the choice of the mode, time and route of carriage will not conflict with overriding public interests,

7. with reference to the carriage of irradiated fuel elements from installations for the fission of nuclear fuel for the commercial generation of electricity to central interim storage facilities pursuant to § 6, para. (1), evidence is showing that there is no

possibility of storage at the local interim storage facilities to be constructed in accordance with § 9a, para. (2), sentence 3.

(3) The financial security required pursuant to para. (2), subpara. 4, in order to cover the legal liability for damages need not be provided for the carriage of the nuclear fuel referred to in Appendix 2 hereto.

(4) The licence shall be granted for each individual carriage; a general licence may be granted to an applicant for a period not exceeding three years provided that this is not contrary to the purposes referred to in § 1, subparas. 2 to 4.

(5) A duplicate or certified copy of the licensing notice shall be available during carriage. Furthermore, the carrier shall have available a certificate in conformity with the requirements of Article 4, para. (c) of the Paris Convention unless the particular carriage concerned does not require, pursuant to para. (3) above, any provision of financial security covering the legal liability to pay compensation for damage. The licensing notice and the certificate shall be presented to the competent authority and its duly authorised agents on request.

(6) Para. (5), sentence 1, shall not apply to carriage by rail attended to by a railroad operator. In all other respects, nothing contained herein shall affect any legal provision applicable to carriers and relating to the carriage of dangerous goods.

§ 4a Financial security for international carriage

(1) Subject to paras. (3) and (4), the financial security required pursuant to § 4, para. (2), subpara. 4, to cover the legal liability for damages in the international carriage of nuclear fuel is deemed to have been provided if the certificate of financial security required under Article 4, para. (c) of the Paris Convention relates to the operator of a nuclear installation located in one of the Contracting States of the Paris Convention.

(2) Insurer as defined in Article 4, para. (c) of the Paris Convention shall be

1. an insurance company licensed to operate a third-party liability insurance business within the Federal Republic of Germany, or

2. an insurance company from another country as per the definition of § 105, para. (1) of the Act on the Supervision of Insurance Companies which is licensed to operate a third-party liability insurance business within its country of domicile, provided that the obligations of a third-party liability insurer are not only assumed by it but also by an insurer or pool of insurers licensed to do so in accordance with the provisions of subpara. 1.

Other financial security in lieu of insurance may be permitted if it is assured that the party obliged to provide security will be in a position to meet its legal liability to pay compensation for damage within the scope of the requirements of financial security as long as claims against such party have to be anticipated.

(3) If the Brussels Supplementary Convention has not yet come into force in a Contracting State of the Paris Convention, the granting of a licence pursuant to § 4 for the transit of nuclear fuel may be made subject to the condition that the maximum liability of the operator of the nuclear installation provided for in such Contracting State may be increased with respect to nuclear incidents occurring during carriage within Germany to the extent necessary in view of the amount and nature of the nuclear fuel and the safety measures taken. The operator of the nuclear installation shall furnish proof of the provision of financial security for such increased maximum liability by submitting a certificate issued by the responsible authority of such Contracting State.

(4) For imports or exports of nuclear fuel from or to any other Contracting State of the Paris Convention in which the Brussels Supplementary Convention has not yet come into force, the granting of a licence pursuant to § 4 may be made subject to the condition that the operator of the nuclear installation located within Germany, to or from which the nuclear fuel shall be carried, assumes liability in accordance with the provisions hereof for nuclear incidents occurring during such carriage within Germany if the maximum liability provided in such other Contracting State of the Paris Convention is not adequate in view of the amount and nature of the nuclear fuel and the safety measures taken.

§ 4b Carriage of nuclear substances in special cases

(1) Any person carrying nuclear substances without requiring a licence pursuant to § 4 shall furnish proof to the responsible authority, before commencement of such carriage, that the necessary financial security for covering the legal liability for damages has been provided. If the financial security offered is insufficient the authority shall determine the necessary financial security according to the principles of § 13, para. (2), subpara. 1. § 4, para. (5), sentences 2 and 3, and § 4a shall be applied.

(2) Para. (1) above shall not be applied to the carriage of the nuclear substances referred to in Appendix 2 hereto.

§ 5 Authorised possession of nuclear fuel; government custody

(1) Anyone shall be authorised to possess nuclear fuel who handles nuclear fuel on the basis of a licence issued under the provisions of this Act or a statutory ordinance promulgated on the basis thereof, particularly anyone who

1. carries nuclear fuel as authorised under § 4,

2. stores nuclear fuel on the basis of a licence pursuant to § 6,

3. treats, processes or otherwise utilises nuclear fuel in an installation licensed under § 7 or on the basis of a licence pursuant to § 9,

4. temporarily stores nuclear fuel in a state collecting facility on the basis of § 9a to § 9c, or who stores or disposes of nuclear fuel in a plant for the safekeeping or disposal of radioactive waste.

An order to store nuclear fuel pursuant to § 19, para. (3), sentence 2 no. 2 shall likewise authorise the possession of nuclear fuel.

(2) In the interests of protecting the general public, whoever is in direct possession of nuclear fuel without being duly authorised to do so pursuant to para. (1), sentence 1 is obliged to ensure that the nuclear fuel is surrendered to the custody of a party who is authorised to possess nuclear fuel in accordance with para. (1), sentence 1. Sentence 1 shall not apply to persons who find and pick up nuclear fuel, acquire the actual control of nuclear fuel without intending to do so, or who acquire actual control of nuclear fuel without being aware of what it is.

(3) In the case of para. (2), sentence 1, if storage with the direct holder on the basis of a licence pursuant to § 6 or other ownership pursuant to para. (1), sentence 1 proves impossible, the nuclear fuel shall be surrendered to government custody by delivering it to the authority responsible for custody without delay, until such time as authorised possession is established, unless an order pursuant to § 19, para. (3), sentence 2 no. 2 contains or permits provisions to the contrary. In the interests of protecting the general public, whoever has surrendered nuclear fuel pursuant to sentence 1 shall ensure authorised possession pursuant to para. (1), sentence 1 in conjunction with para. (2), sentence 1. Sentence 2 shall apply accordingly to the owners of utilization and consumption rights to nuclear fuel held in government

custody, and to anyone who is required to accept or accept the return of nuclear fuel from a third party without being duly authorised to possess the nuclear fuel in accordance with para. (1), sentence 1.

(4) Any nuclear fuel whose authorised owner in accordance with para. (1) cannot be ascertained or cannot be called upon, shall be placed in government custody.

(5) In the case of government custody, the necessary precautions in the light of the state-of-the-art of science and technology to prevent damage resulting from the storage of nuclear fuel shall be taken, and necessary protection shall be provided against disruptive action or other interference by third parties.

(6) The removal of nuclear fuel from government custody or the surrender of nuclear fuel shall only be admissible to a designated party who is authorised to possess such nuclear fuel in accordance with para. (1), sentence 1.

(7) In order to enforce the obligations pursuant to para. (2), sentence 1 and para. (3), sentences 2 and 3, the authority responsible for custody may issue orders against the persons cited in these paragraphs for the nuclear fuel to remain with the obligated party or for it to be surrendered to a party with authorised possession. Notwithstanding § 11, para. (3) of the Administrative Enforcement Act, the maximum amount of the administrative fine shall be EUR 500 000. The powers of the supervisory authorities pursuant to § 19, para. (3) shall remain unaffected.

(8) Paras. (1) to (7) shall not apply to nuclear fuel contained in radioactive waste.

§ 6 Licence for the storage of nuclear fuel

(1) Any storage of nuclear fuel outside government custody shall require a licence. Furthermore, anyone essentially modifying a licensed storage shall require a licence to do so.

(2) A licence shall be granted if there is a need for such storage and if

1. there are no known facts giving rise to doubts as to the reliability of the applicant and of the persons responsible for the management and supervision of such storage, and the persons responsible for such management and supervision have the requisite qualification,

2. the necessary precautions have been taken in the light of the state-of-the-art of science and technology to prevent damage resulting from the storage of nuclear fuel,

3. the necessary financial security has been provided for covering the legal liability to pay compensation for damage,

4. the necessary protection has been provided against disruptive action or other interference by third parties.

(3) Whoever stores irradiated nuclear fuel in shipping and storage containers in a separate storage building within the enclosed site of an installation for the fission of nuclear fuel for the commercial generation of electricity in order to comply with the obligations under § 9a, para. (2), sentence 3 until such time as it is surrendered to a facility for the disposal of radioactive waste, shall require a licence pursuant to para. (1). The licence requirements of subparas. 1 to 4 in para. (2) shall apply accordingly.

(4) A licence for the temporary storage of nuclear fuel in the form of irradiated fuel elements within an enclosed site on which a licensed activity pursuant to § 7 is practised shall be granted to anyone who has applied for the requisite storage licence based on the obligation pursuant to § 9a, para. (2), sentence 3. The licence shall be limited until the date when the licence required under § 9a, para. (2), sentence 3 can be utilised, or until the storage application has been revoked or

effectively rejected, but no longer than five years; the period of validity of the licence may be extended by one year upon application. The licence pursuant to sentences 1 and 2 must only be issued subject to the submission of evidence of an alternative facility for proper storage once this time limit has expired. Such evidence must be re-submitted annually. A decision regarding the licence application should be reached within nine months of receipt of the application and submission of full application documents. The responsible authority may extend this period by three months if necessary due to the complexity of the investigations or for reasons attributable to the applicant; justification for the extension of this limit must be given to the applicant. Otherwise, para. (2) shall apply accordingly.

§ 7 Licensing of installations

(1) Whoever erects, operates or otherwise holds a stationary installation for the production, treatment, processing or fission of nuclear fuel or the reprocessing of irradiated nuclear fuel or essentially modifies such installation or its operation, shall require a licence. No further licences will be issued for the construction and operation of installations for the fission of nuclear fuel for the commercial generation of electricity or of facilities for the reprocessing of irradiated nuclear fuel. This shall not apply to essential modifications of installations or the operation thereof.

(1a) The authorisation to operate an installation for the fission of nuclear fuel for the commercial generation of electricity shall expire once the electricity volume for that installation as listed in Appendix 3, column 2 or the additional electricity volume derived from transfers pursuant to para. (1b) has been produced, however not later than the end of

1. 6 August 2011 for the nuclear power plants Biblis A, Neckarwestheim 1, Biblis B, Brunsbüttel, Isar 1, Unterweser, Philippsburg 1 and Krümmel,

2. 31 December 2015 for the nuclear power plant Grafenrheinfeld,

3. 31 December 2017 for the nuclear power plant Gundremmingen B,

4. 31 December 2019 for the nuclear power plant Philippsburg 2,

5. 31 December 2021 for the nuclear power plants Grohnde, Gundremmingen C and Brokdorf,

6. 31 December 2022 for the nuclear power plants Isar 2, Emsland and Neckarwestheim 2.

Production of the electricity volumes listed in Appendix 3, column 2 shall be measured by means of a measuring device. The measuring device pursuant to sentence 2 must be approved and calibrated. Any measuring device which is not approved and calibrated must not be used. Anyone who uses a measuring device pursuant to sentence 2 must install and connect the measuring device without delay, and must handle and maintain it in such a way that the accuracy of the measurement and the reliable reading of the indicators is guaranteed. The provisions of the Calibration Act and the Calibration Ordinance promulgated on the basis of this Act shall apply. The licensee shall have the proper status of the calibrated measuring device checked and certified each calendar year by an expert organization, and shall also have the volume of electricity generated each calendar year checked and certified by a certified public accountant or accounting company within a one-month period.

(1b) The electricity volumes pursuant to Appendix 3, column 2 may be wholly or partially transferred to another installation; provided the receiving installation commenced commercial power operation later than the donating installation.

Notwithstanding sentence 1, electricity volumes may also be transferred from an installation which began commercial power operation later than the receiving installation, subject to the approval of the transfer by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety by agreement with the Federal Chancellery and the Federal Ministry of Economics and Technology. Approval pursuant to sentence 2 is not necessary if the donating installation is to permanently discontinue power operation and an application for decommissioning of the plant pursuant to para. (3), sentence 1 has been submitted. Electricity volumes according to Appendix 3, column 2 can be transferred pursuant to sentences 1 to 3 from installations mentioned in paragraph (1a), first sentence, nos. 1 to 6 also after their authorisation for power operation has expired

(1c) The licensee must

1. notify the responsible authority, on a monthly basis, of the volumes of electricity generated in the previous month as per the definition of para. (1a) in conjunction with Appendix 3, column 2,

2. submit to the responsible authority the results of the checks and certificates pursuant to para. (1a), sentence 3 within one month of receipt,

3. notify the responsible authority of any transfers implemented between installations pursuant to para. (1b) within one week of determining the transfer.

In the first monthly notification of the electricity volume generated pursuant to sentence 1, no. 1, the licensee must submit notification of the electricity volume generated between 1 January 2000 and the last day of April 2002, which must have been checked and certified by a certified public accountant or accounting company. The period of the first monthly notification shall commence as of 1 May 2002. The information submitted pursuant to sentence 1, numbers 1 to 3 and specification of the residual electricity volume remaining will be published by the responsible authority in the *Bundesanzeiger* (Federal Gazette); the volumes of electricity generated pursuant to sentence 1, no. 1 shall be published annually in the Federal Gazette as an annual total for a given calendar year, with monthly publication in cases where the anticipated residual operating period is less than six months.

(1d) For the nuclear power station Mülheim-Kärlich, para. (1a), sentence 1, para. (1b), sentences 1 to 3 and para. (1c), sentence 1, no. 3 shall apply subject to the provision that the electricity volume listed in Appendix 3, column 2 may only be produced by the nuclear power stations listed therein after transferring to them.

(1e) In order to prevent risks or failure of the safety or reliability of the system of electricity supply in terms of § 13 of the Energy Industry Law of 7 July 2005 (BGBl. I, pp. 1970, 3621) last amended by Article 4 of the Law of 7 March 2011 (BGBl. I, p. 338) or in order to prevent a risk or failure of the energy supply for the essential need in terms of the Law on Energy Assurance of 20 December 1974 (BGBl. I, p. 3681) last amended by Article 164 of the Ordinance of 31 October 2006 (BGBl. I, p. 2407) the responsible authority may determine not later than 1 September 2011 that one of the installations mentioned in paragraph (1a), first sentence, no. 1, which is suitable regarding site and power grid connection shall be kept in an operable status for the production of electricity (back-up operation) until 31 March 2013. If the back-up operation according to sentence 1 is ordered, the authorization for power operation is renewed as authorization for back-up operation for this installation. Paragraph (1a), sentences 2 to 7, paragraphs (1b) to (1d) and Appendix 3 shall not be applicable to back-up operation.

(2) A licence may only be granted if

1. there are no known facts giving rise to doubts as to the reliability of the applicant and of the persons responsible for the erection and management of the installation

and the supervision of its operation, and the persons responsible for the erection and management of the installation and the supervision of its operation have the requisite qualification,

2. it is assured that the persons who are otherwise engaged in the operation of the installation have the necessary knowledge concerning the safe operation of the installation, the possible hazards and the protective measures to be taken,

3. the necessary precautions have been taken in the light of the state-of-the-art of science and technology to prevent damage resulting from the erection and operation of the installation,

4. the necessary financial security has been provided to comply with the legal liability to pay compensation for damage,

5. the necessary protection has been provided against disruptive action or other interference by third parties,

6. the choice of the site of the installation does not conflict with overriding public interests, in particular in view of its environmental impacts.

(3) The decommissioning of an installation as defined in para. (1), sentence 1, as well as the safe enclosure of an installation definitively decommissioned, or the dismantling of an installation or of parts thereof shall require a licence. Para. (2) shall apply accordingly. A licence pursuant to the first sentence shall not be required to the extent the scheduled measures have already been the subject of a licence pursuant to para. (1), sentence 1 or of an order pursuant to § 19, para. (3).

(4) All federal, *Länder*, local and other regional authorities whose jurisdiction is involved shall take part in the licensing procedure. In the case of differences of opinion between the licensing authority and a federal authority taking part in the procedure, the licensing authority shall obtain instructions from the Federal Ministry in charge of nuclear safety and radiation protection. In all other respects, the licensing procedure shall be governed by a statutory ordinance in accordance with the principles laid down in § 8, § 10, paras. (1) to (4) and (6) to (8), (10), second sentence, and § 18 of the Federal Pollution Control Act; this may stipulate that when assessing the environmental impacts of the overall measures planned with regard to the decommissioning, safe enclosure or the dismantling of installations for the fission of nuclear fuel or parts thereof, the requirement for a public hearing may be waived.

(5) Paras. (1), (2) and (4) shall apply accordingly to non-stationary installations. However, the statutory ordinance referred to in para. (4), sentence 3, may provide that a project need not be publicly announced and the documents need not be disclosed for public inspection and that in such a case objections will not be discussed at a hearing.

(6) § 14 of the Federal Pollution Control Act shall apply accordingly to the impacts of a licenced installation on other premises.

§ 7a Advance notice

(1) Upon application, an advance notice may be issued with respect to individual aspects on which the granting of the licence for an installation pursuant to § 7 depends, in particular with respect to the choice of the site of the installation. The advance notice shall become invalid if the applicant does not apply for the licence within two years from the date on which such notice has become final; upon application, this term may be extended for up to a further two years.

(2) § 7, paras. (4) to (5) as well as §§ 17 and 18 shall apply accordingly.

§ 7b Objections by third parties in the case of a partial licence or advance notice

To the extent that an application has been decided upon by the grant of a partial licence or an advance notice pursuant to §§ 7 or 7a, and to the extent that such decision has become final, third parties shall not be entitled, in any subsequent procedure for the licensing of the installation, to raise objections on the basis of facts which had already been presented or which such third parties might have presented in view of the documents or the notice which had been disclosed for public inspection.

§ 7c Obligations of the licensee

(1) The responsibility for nuclear safety shall fall to the holder of the licence of the nuclear installation. This responsibility cannot be delegated.

(2) The licensee pursuant to para. (1) shall be obliged

1. to install a management system admitting due priority to nuclear safety,

2. to schedule and keep ready permanent appropriate financial and personnel instruments to fulfil his obligations concerning the nuclear safety of the particular nuclear installation,

3. to provide education and further training of his personnel who are entrusted with duties concerning nuclear safety of nuclear installations in order to keep and expand their knowledge and competence of nuclear safety.

§ 7d Further precaution against risks

The holder of a licence to operate an installation for the fission of nuclear fuel for commercial electricity production shall provide the realisation of safety measures according to the ongoing state-of-the-art of science and technology which are developed, suitable and adequate for providing not only an insignificant contribution to further precaution against risks for the public, in addition to the requirements according to § 7, para. (2), subpara. 3.

§ 8 Relation of this Act to the Federal Pollution Control Act and the Act on the Safety of Devices and Products

(1) The provisions of the Federal Pollution Control Act relating to installations requiring a licence and to the prohibition of the further utilisation of such installations shall not apply to installations requiring a licence pursuant to § 7, insofar as the protection against the hazards of nuclear energy or the detrimental effects of ionising radiation are concerned.

(2) If an installation requiring a licence pursuant to § 4 of the Federal Pollution Control Act requires a licence pursuant to § 7 hereof, the latter shall include the licence pursuant to § 4 of the Federal Pollution Control Act. The nuclear licensing authority shall make its decision in agreement with the *Länder* authority in charge of pollution control and in compliance with the provisions of the Federal Pollution Control Act and the statutory ordinances issued thereunder.

(3) With respect to installations which require supervision pursuant to § 2, subpara. 30 of the Act on the Safety of Products and are used as parts of installations requiring a licence pursuant to § 7 hereof, the licensing authority may, on a case-to-case basis, grant exemptions from the applicable legal provisions relating to the erection and operation of installations requiring supervision, to the extent that such exemption is due to the special technical nature of the installations pursuant to § 7.

§ 9 Treatment, processing and other utilisation of nuclear fuel outside installations requiring a licence

(1) Whoever treats, processes or otherwise utilises nuclear fuel outside installations of the kind referred to in § 7 shall require a licence. Furthermore, a licence shall be required by any person who applies a method of treating, processing or otherwise utilising nuclear fuel that is materially different from the method specified in the licensing instrument or who materially alters the operating establishment or its location as specified in the licensing instrument.

(2) A licence may only be granted if

1. there are no known facts giving rise to doubts as to the reliability of the applicant or of the persons responsible for the management and supervision of the utilisation of the nuclear fuel and provided the persons responsible for the management and supervision of the nuclear fuel have the qualification required for this purpose,

2. it is assured that the persons who are otherwise engaged in connection with the intended use of the nuclear fuel have the necessary knowledge of the possible hazards and the protective measures to be taken,

3. the necessary precautions have been taken in the light of the state-of-the-art of science and technology to prevent damage resulting from the utilisation of the nuclear fuel,

4. the necessary financial security has been provided for covering the legal liability to pay compensation for damage,

5. the necessary protection has been provided against disruptive action or other interference by third parties,

6. the choice of the location where the nuclear fuel is to be utilised does not conflict with overriding public interests, in particular in view of the non-contamination of water, air and soil.

§ 9a Utilisation of residual radioactive material and disposal of radioactive waste

(1) Whoever erects, operates, otherwise holds, essentially modifies, decommissions or disposes installations in which nuclear fuel is handled, or handles radioactive material outside such installations, or operates installations for the generation of ionising radiation, shall make provisions to assure that residual radioactive material as well as disassembled or dismantled radioactive components are utilised without detrimental effects in conformity with the purposes referred to in § 1, subparas. 2 to 4, or are disposed of as radioactive waste (direct disposal) in controlled manner. The delivery of irradiated nuclear fuel originating from the operation of installations for the fission of nuclear fuel for the commercial generation of electricity to an installation for the reprocessing of irradiated nuclear fuel for the purposes of non-detrimental utilisation shall become unlawful as of 1 July 2005.

(1a) The operators of installations for the fission of nuclear fuel for the commercial generation of electricity are required to furnish proof that they have taken adequate precautions in order to comply with their obligations pursuant to para. (1) for the irradiated fuel incurred and the irradiated fuel yet to be incurred during the course of the operational period envisaged in accordance with § 7, paras. (1a) and (1b), including any radioactive waste to be returned in the case of reprocessing of irradiated nuclear fuel (proof of disposal precautions). This proof must be updated annually as per 31 December of each year and submitted by 31 March of the following year at the latest. Any significant changes in the requirements on which the disposal precautions are based must be notified to the responsible authority without delay.

(1b) For the purposes of controlled disposal, proof must be furnished showing that the safe storage in interim storage facilities of both irradiated nuclear fuel and returned radioactive waste from the reprocessing of irradiated nuclear fuel is guaranteed until such time as it is surrendered to a facility for disposal. Proof regarding the disposal of irradiated nuclear fuel is provided in the form of realistic projections showing the availability of adequate interim storage facilities to meet requirements. Regarding the interim storage requirements for irradiated nuclear fuel over the next two years on the basis of realistic projections, proof must be furnished that interim storage facilities are both legally and technically available, either by the party responsible for management or a third party. Proof concerning the disposal of returned radioactive waste from the reprocessing of irradiated nuclear fuel must be furnished in the form of realistic projections showing the availability of adequate interim storage facilities as per the date of the bindingly agreed return of such radioactive waste. Notwithstanding para. (1a), sentence 1, proof of the controlled disposal of returned radioactive waste may be furnished by a third party if they are responsible for interim storage of the returned radioactive waste on behalf of the party responsible for management. In addition to realistic projections pursuant to sentence 4, the third party is also required to prove that the interim storage requirements of the party responsible for management will be contractually assured according to requirements. In cases where several parties responsible for management have transferred the responsibility for furnishing proof to one and the same third party, the latter may provide joint proof (collective proof). The collective proof shall consist of realistic projections pursuant to sentence 4 for the total interim storage requirements of the parties, together with evidence that this will be contractually assured according to requirements.

(1c) Insofar as the permissible non-detrimental utilisation of irradiated nuclear fuel pursuant to para. (1), sentence 2 is envisaged, proof must be furnished showing the guaranteed reuse of plutonium extracted from reprocessing as well as any future plutonium to be extracted in installations for the fission of nuclear fuel for the commercial generation of electricity; this shall not apply to plutonium which has already been reused by 31 August 2000, or to plutonium which has already been extracted and for which the utilisation and consumption rights have already been transferred to third parties by the above date. In the case of reuse in installations for the fission of nuclear fuel for the commercial generation of electricity within the scope of validity of this Act, this proof shall be deemed to have been furnished, provided realistic projections are available for the reprocessing of irradiated nuclear fuel, for the production of fuel elements with the plutonium generated from reprocessing and the plutonium yet to be incurred, and for the use of said fuel elements, and provided the measures required to implement these projections within the next two years are verified via the submission of contracts or excerpts of contracts or via corresponding confirmations from third parties having suitable facilities for such purposes, or in cases where the fuel elements are to be used in suitable installations belonging to the party responsible for management, via submission of the plans for such use. Proof of reuse in other installations operating within the European Union or Switzerland for the commercial generation of electricity shall be deemed to have been furnished, provided binding confirmations are submitted showing the transfer of utilisation and consumption rights regarding the reuse of plutonium generated from reprocessing.

(1d) With reference to the uranium extracted from the reprocessing of irradiated nuclear fuel, the parties responsible for management are required to furnish proof of safe storage in the form of realistic projections showing the availability of adequate interim storage facilities according to requirements. Para. (1b), sentence 3 shall apply accordingly. As soon as the temporarily stored uranium is due to be removed from interim storage, this fact must be notified to the responsible authority, including the

planned waste management channel, in order to comply with the obligations under para. (1).

(1e) Para. (1a) shall apply accordingly to the operators of installations for the fission of nuclear fuel for research purposes.

(2) Whoever holds radioactive waste shall surrender such waste to an installation pursuant to para. (3) below. This shall not apply to the extent that anything to the contrary has been provided for pursuant to sentence 3 or by an ordinance issued hereunder or has been ordered or approved pursuant to this Act or such ordinance. The operator of a plant for the fission of nuclear fuel for the commercial generation of electricity is required to ensure that an interim storage facility pursuant to § 6, paras. (1) and (3) is constructed within the enclosed site, or pursuant to § 6, para. (1), in the vicinity of the installation (a local interim storage facility), and that the irradiated nuclear fuel incurred is stored there until such time as it is surrendered to a facility for the disposal of radioactive waste; the option of the delivery of irradiated nuclear fuel for reprocessing pursuant to para. (1), sentence 2 shall remain unaffected by this. Upon application, the responsible authority will concede exemptions from the precautionary obligation pursuant to sentence 3, provided the operator of the installation has submitted an application for decommissioning and has given a binding declaration of a date prior to 1 July 2005 by which operation of the installation for the fission of nuclear fuel for the commercial generation of electricity will be permanently discontinued. If the responsible authority grants an exemption from the precautionary obligation pursuant to sentence 3, the licence to operate the plant for the fission of nuclear fuel for the commercial generation of electricity shall expire as per the date cited by the operator in his application.

(3) The *Länder* shall establish state collecting facilities for the interim storage of the radioactive waste originating in their territories, and the Federation shall establish installations for the safekeeping and disposal of radioactive waste. To fulfil their obligations, both the *Länder* and the Federation may avail themselves of the services of third parties. In order to fulfil its obligation, the Federation may wholly or partially assign the performance of its duties, together with the necessary jurisdictional powers, to third parties, provided they are able to offer a guarantee for the proper fulfilment of the assigned tasks; the third party will be subject to supervision from the Federation. The third party pursuant to sentence 3 may receive a fee for the use of installations for safekeeping and disposal, instead of costs. Insofar as the performance of duties pursuant to sentence 3 has been assigned, the contributions levied pursuant to § 21b, the advance payments levied on the basis of the statutory ordinance promulgated pursuant to § 21b, para. (3), and the amounts levied by the state collecting facilities pursuant to § 21a, para. (2), sentence 9 shall be deemed payments made to the third party. The Federation shall bear no responsibility for breaches of official duties in place of the third party pursuant to sentence 3; the third party must obtain adequate liability insurance coverage for any such damages resulting from breaches of official duties. § 25 shall remain unaffected by this. Insofar as the performance of duties is assigned to third parties by the Federation pursuant to sentence 3, the Federation shall exempt the former from compensation liabilities under § 25 up to a maximum amount of EUR 2.5 billion. Any contraventions of administrative acts adopted by the third party pursuant to sentence 3 shall be decided by the supervisory authority.

§ 9b Plan approval procedure

(1) The erection and operation of the federal installations referred to in § 9a, para. (3) as well as any major alteration of such installations or their operation shall be subject to a plan approval procedure. § 74, para. (6) of the Administrative Procedures Act shall apply to the extent that the competent authority may grant on application

or ex officio a planning licence instead of a plan approval only, if the major alteration of the installations mentioned in sentence 1 or of their operation is applied for, and if this alteration has no material adverse effects on the objects to be protected according to § 2, para. (2), sentence 2 of the Act on the Assessment of Environmental Impacts. § 76 of the Administrative Procedures Act shall not apply.

(2) During the plan approval procedure, the environmental impacts of the installation shall be assessed. The assessment of the environmental impacts shall be part of the examination pursuant to para.(4).

(3) To achieve the purposes referred to in § 1 hereof, the plan approval notice may contain restrictions and obligations. To the extent necessary for the achievement of the purposes referred to in § 1, subparas. 2 to 4, obligations may also be imposed subsequently.

(4) The plan approval notice may only be issued if the requirements referred to in § 7, para. (2), subparas. 1 to 3 and 5 have been complied with. It may not be issued if

1. the erection or operation of the proposed installation suggest that the common welfare will be impaired and that such impairment cannot be prevented by restrictions and obligations, or

2. the erection or operation of the installation conflicts with other provisions of public law, in particular with respect to the environmental impact of the installation.

(5) §§ 72 to 75, 77 and 78 of the Administrative Procedures Act shall apply to the plan approval procedure subject to the following conditions:

1. The announcement of the project and of the date of the hearing, the disclosure of the plan for public inspection, the raising of objections, the performance of the hearing and the service of the decisions shall be provided for by the statutory ordinance issued pursuant to § 7, para. (4), sentence 3. As far as nuclear safety and radiation protection are concerned, the provisions contained in this statutory ordinance shall apply accordingly to the form, contents, kind and scope of the plan to be submitted.

2. In case a decision has been withheld pending the submission of further documents, the announcement of such documents and their disclosure for public inspection may be waived if such announcement and disclosure would not reveal any additional facts which may be material to third party interests.

3. The plan approval procedure shall not cover the acceptability of the project under the provisions of the mining and deep storage law. This question shall be decided upon by the authority otherwise in charge.

§ 9c State collecting facilities

The valid licensing provisions in this Act and in statutory ordinances promulgated on the basis of this Act governing the handling of radioactive material shall apply to the storage and processing of radioactive waste at state collecting facilities referred to in § 9a, para. (3), sentence 1, clause 1.

§ 9d Expropriation

(1) Expropriation shall be permissible for purposes of erection and operation of installations for the disposal of radioactive waste as well for purposes of carrying out essential modifications of such installations or their operation insofar as the expropriation is necessary to conduct a plan approved or licensed pursuant to § 9b.

(2) In addition, the expropriation shall be permissible for purposes of preparing the exploration of sites for installations for the disposal of radioactive waste insofar as

this is necessary to perform exploration measures based on the regulations of the Federal Mining Act. The expropriation is especially necessary to perform exploration measures if the suitability of certain geological formations as disposal site for radioactive waste could not or not to the necessary extent be investigated or if the investigation for suitability would be significantly impaired, delayed or otherwise be complicated. The special regulations of the Federal Mining Act concerning the re-allocation and the assignment of land as well as concerning other restrictions of rights of third parties for mining purposes shall remain unaffected.

§ 9e Object and legitimacy of expropriation, compensation

(1) By expropriation pursuant to § 9d

1. the ownership or other rights of land and rights equal to rights of land may be withdrawn or burdened,

2. rights and authorisation may be withdrawn which are authorising for acquisition, holding or for using of land or right equal to rights of land or which are restricting the obligated party concerning the usability of lands or rights equal to rights of land,

3. authorisation of mining as well as old rights sustained according to Federal Mining Act may be withdrawn or burdened,

4. legal positions may be justified which offer rights as mentioned in no. 2.

Parts of land shall be equal to land according to sentence 1.

(2) Expropriation shall only be permissible if it is required for the public good - especially to secure the disposal of radioactive waste according to § 9a - and if the purpose of expropriation cannot be reached in another reasonable way with regard to the particular location. In case of § 9d, para. (1) the approved or licensed plan shall be the basis for the expropriation procedure and shall be obligatory for the expropriation authority. The expropriation assumes that the applicant tried seriously to buy free-hand the rights or authorisation according to para. (1) or to reach an agreement for using in reasonable terms and conditions but without success. Rights and authorisations may only be expropriated to the extent necessary to realise the purpose of expropriation. If land or landholding which is regionally or economically connected shall be expropriated only in parts, the owner may request that the expropriation include the remaining land or the remaining ownership as the remaining land or the remaining ownership could not be used anymore to an acceptable extent for structural or economic purposes.

(3) The applicant shall give compensation for the expropriation. § 21b shall be unaffected. The compensation shall be granted for the loss of rights as well as for other financial losses due to expropriation. The compensation for the loss of rights shall be defined according to the commercial value of the rights or authorisations to be expropriated according to para. (1). If one of the persons involved has complied in written form with the transfer, the burden or other restriction of rights or authorisation according to para. (1), the expropriation procedure may be performed directly.

(4) Otherwise, the §§ 93 to 103 and 106 to 122 of the Town and Country Planning Code shall apply accordingly to expropriation and compensation. In case of expropriation of mining authorisations and rights in terms of § 9e, para. (1), sentence 1, no. 3, § 116 of the Town and Country Planning Code shall apply provided that the exercise of the rights mentioned above are withdrawn temporarily from the authorised person and can be assigned to the applicant preliminarily as far as this is necessary for the purposes mentioned in § 9d, paras. (1) and (2).

(5) For legal remedies against decisions of the expropriation authority §§ 217 to 231 of the Town and Country Planning Code shall apply. Legal remedies against

decisions pursuant at § 116 of the Town and Country Planning Code shall not have suspensive effect. The application for suspensive effect pursuant to § 80, para. (5), sentence 1 of the Rules of the Administrative Courts may only be filed and justified within one month after delivery of the decision. This shall be mentioned in the instruction on right to appeal.

§ 9f Preliminary work on land

(1) Owners or other holders of rights of use shall tolerate that land is entered and passed as well as surveys of land, investigations of ground and ground water and other similar preliminary work limited in time are performed by the competent persons in order to prepare the plan approval procedure pursuant to § 9b as well as to perform the site investigation at the surface for installations for the disposal of radioactive waste. The intention to enter land and to perform such work shall be announced to the owner or other holders of rights of use.

(2) After finishing preliminary work the former status of the land shall be re-established. The competent authority may order that devices erected during preliminary work shall remain on site.

(3) If one of the measures mentioned in para. (1) or an order pursuant to para. (2), sentence 2 leads to direct financial losses of the owner or other holder of the rights of use, an adequate monetary compensation shall be paid. § 21 b shall remain unaffected.

§ 9g Preservation order

(1) To secure projects pursuant to § 9b or to secure or continue a site investigation for facilities intended for disposal of radioactive waste, a statutory ordinance can specify a planning area for a maximum of ten years, on the area or in the subsurface of which essentially value-increasing changes, or changes which substantially impede the project pursuant to § 9b or the site investigation are prohibited. The specification may be extended by statutory ordinance two times by a maximum of ten years in each case, provided that the conditions under sentence 1 continue to exist. Prior to such a specification pursuant to sentences 1 and 2, consultations must be held with the municipalities and districts which are affected by the specification. The preservation order pursuant to sentences 1 and 2 shall be revoked before expiry of the periods indicated, if the conditions for a specification cease to apply. The specification pursuant to sentences 1 and 2 becomes ineffective on the commencement of publication of the plan within the framework of the plan approval procedure pursuant to § 9b of this Act, or pursuant to § 57a of the Federal Mining Act.

(2) From the commencement of publication of the plan within the framework of the plan approval procedure pursuant to § 9b, essentially value-increasing changes or changes which substantially impede the project may not be undertaken on the areas affected by the plan or in the area of the subsurface covered by the plan, until the planned use is made. Changes commenced previously in a lawful way, maintenance work and the continuation of a prior lawful use remain unaffected.

(3) Para. (2) shall apply mutatis mutandis in the case of projects on underground preparatory site investigation for facilities intended for disposal of radioactive wastes based on the provisions of the Federal Mining Act; publication of the plan within the framework of the plan approval procedure pursuant to § 9b of this Act shall be replaced by publication of the plan within the framework of the plan approval procedure pursuant to § 57a of the Federal Mining Act.

(4) Upon application, the competent authority shall allow exemptions from the preservation order pursuant to paras. (1) to (3), provided such exemptions do not

conflict with overriding public interests and if upholding the preservation order would result in clearly unintended hardship in a particular case.

(5) If the preservation order pursuant to paras. (1) to (3) is of more than five years duration, the owners and other persons entitled to use may demand a reasonable monetary compensation for the resulting financial loss. The compensation shall be paid by the party responsible for the project. § 21b shall remain unaffected.

§ 10 [Exemptions]

Exemptions from the provisions of §§ 3 to 7 and 9 may be granted by statutory ordinance to the extent that the amount or nature of the nuclear fuel or certain protective measures or devices suggest that damage resulting from a self-sustaining chain reaction or the effects of ionising radiation will not occur, and to the extent such exemptions are not contrary to the purposes referred to in § 1, subparas. 3 to 4. Exemptions for radioactive waste from the provisions pursuant to § 3 may be granted by statutory ordinances as detailed in § 11, para. (1), subpara. 6.

§ 11 Enabling provisions (licence, notification, general approval)

(1) Unless special provision has been made by this Act for nuclear fuel and installations as defined in § 7, it may be provided by statutory ordinance that, in order to achieve the purposes referred to in § 1,

1. the prospecting for and handling of radioactive material (extraction, production, storage, treatment, processing, other utilisation or disposal), transactions in radioactive material (acquisition or delivery to others), the carriage as well as imports and exports of such material shall require a licence or notification, stating the prerequisites and ancillary provisions under which and the procedures via which the release of radioactive material may be exempt from monitoring under this Act or a statutory ordinance promulgated on the basis of this Act, or radioactive material of natural origin may be exempt from monitoring under said provisions.

2. the erection and operation of installations for the generation of ionising radiation shall require a licence or notification,

3. a general approval may be issued for installations, equipment and devices containing radioactive material or generating ionising radiation, provided their design has been approved by an authority to be specified in such statutory ordinance; such ordinance shall also specify the notifications to be made by the operators of such installations, equipment and devices,

4. safety-related components whose manufacture is to be started before the application is filed or the licence granted, may only be installed in installations pursuant to § 7, para. (1), sentence 1 if there is a justified interest in such prior manufacture and if a test procedure demonstrates that material, design, erection and manufacture meet the requirements referred to in § 7, para. (2), subpara. 3; the ordinance shall further provide which authority shall be in charge of the procedure, which documents shall be submitted and which legal effects will ensue from such approval of prior manufacture,

5. radioactive material may not be utilised in certain ways or for certain purposes, or may only be disposed of in certain ways, or may not be circulated or shipped across national borders, to the extent that such prohibition is necessary for the protection of life and health of the population against the hazards of radioactive material or for the enforcement of resolutions of the international organisations of which the Federal Republic of Germany is a member,

6. in order to implement legal instruments of the European Communities, the import, export and transit (international carriage) of radioactive material shall require a licence or permit, and the filing of notifications and reports, and the holding of documentation. Furthermore, it may also stipulate that permits may be furnished with collateral clauses,

7. any work to protect against ionising radiation of natural origin shall require a licence or notification; further details of such work shall be given,

8. the appropriated addition of radioactive material to the manufacture of pharmaceuticals, medical products, pesticides, insecticides, substances listed in § 1, subparas. 1 to 5 of the Fertilizer Act or consumer goods, or the activation thereof, together with the international carriage of such products, shall require a licence or notification.

(2) The statutory ordinance may provide that licences, permits pursuant to para. (1), subpara. 6 and general approvals within the purposes of this Act will be granted subject to certain personal and objective conditions and may determine the procedure for granting such licences, permits pursuant to para. (1), subpara. 6 and general approvals.

(3) Provided that a release of radioactive substances or an exemption of radioactive substances of natural origin according to a statutory ordinance decreed on the basis of para. (1), subpara. 1 provides for removal according to the provisions of the Act for Promoting Closed Substance Cycle Waste Management and Ensuring Environmentally Compatible Waste Disposal or the legal provisions decreed on the basis of that act, these substances must not be reused or reutilised.

§ 12 Enabling provisions (protective measures)

(1) To achieve the purposes referred to in § 1, it may be provided by statutory ordinance

1. which precautions and supervisory measures, including the justification required under Article 6, paras. (1) and (2) of Council Directive 96/29/EURATOM of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionising radiation (Official Journal of the EC No. L 159, page 1) and Article 3 of Council Directive 97/43/EURATOM of 30 June 1997 on health protection of individuals against the dangers of ionising radiation in relation to medical exposure and repealing Directive 84/466/EURATOM (Official Journal of the EC No. L 180, page 22), must be taken in order to protect individuals and the general public with regard to the handling of and transactions in radioactive material, the erection, operation and possession of installations of the kind referred to in §§ 7 and 11, para. (1), subpara. 2, as well as the handling of and transactions in installations, equipment and devices of the kind referred to in § 11, para. (1), subpara. 3, and also with regard to the appropriated addition or activation of material, against ionising radiation of natural origin when carrying out such work.

2. which precautions have to be taken to prevent that certain radiation doses and certain concentrations of radioactive material in air and water are exceeded,

3. that the employment of persons in areas involving radiation exposure is only admissible after submission of a certificate issued by a specially authorised physician and that the supervisory authority, after consultation with authorised medical experts, will decide in the case of medical doubts concerning such employment,

3a. that, and in which way, an ethics commission should be involved in assessing projects for the use of radioactive material or ionising radiation on human beings in the interests of medical research, which requirements should be imposed on such an ethics commission in terms of its independence and expertise, and under which conditions its registration may be implemented or revoked, and how this will be publicised,

3b. that, and in which way, diagnostic reference figures are obtained, prepared and published in conjunction with the practice of medicine or dentistry for the use of radioactive material or ionising radiation on human beings; the radiation exposure of individuals for medical purposes is ascertained; and surveys in this respect are carried out,

3c. that the responsible authorities shall determine and designate medical and dental practices; that, and in which way, these medical and dental practices are required to carry out tests in order to ensure that the requirements of medical science are observed when using radioactive material or ionising radiation in medicine; and that the procedures and equipment used comply with the respective required quality standards in order to ensure the minimum possible radiation exposure of patients; and that, and in which way, the results of such tests are notified to the responsible authorities,

4. that, and to which extent, persons who stay or have been staying in areas involving radiation exposure or who carry out or have carried out work pursuant to § 11, para. (1), subpara. 7 are obliged to tolerate measurements of the radiation doses of their body and to undergo medical examinations and, to the extent necessary for the protection of other persons or of the general public, medical treatment, and that such examination or treatment is carried out by specially authorised physicians, and that, and in which way, the radiation exposure of individuals due to cosmic radiation when operating aircraft is ascertained, recorded and transmitted to offices to be outlined in greater detail or defined in a statutory ordinance promulgated on the basis of this Act, and that these offices forward such notifications to the radiation protection register,

4a. that measurement offices are defined by the responsible authorities in order to ascertain radiation exposure,

5. that, and in which way, records shall be kept of and reports submitted on the production, extraction, acquisition, possession, delivery and other whereabouts of radioactive material and measurements of doses and dose rates of ionising radiation,

6. that, and in which way, the operator of an installation in which radioactive material are or are to be handled is obliged to report to the supervisory authority whether, and if so which, deviations have occurred from the statements in the licensing application, including the accompanying documents, or from the licence,

7. that safety-related deviations from specified normal operation, in particular accidents and other events causing damage during the handling of radioactive material, the erection and operation of installations in which radioactive material are handled and during the handling of installations, equipment and devices of the kind referred to in § 11, para. (1), subpara. 3, shall be reported to the supervisory authority; it may further be provided under which conditions and in which way the experience gained, with the exception of individual data concerning personal and factual circumstances, may be published for the purpose of improving the safety precautions by the agencies referred to in such ordinance,

7a. that, and in which way, the general public should be notified of any safety-related deviations from specified normal operation, particularly accidents; the valid rules of conduct and health protection measures which must be taken in the event of a radiological emergency; and that, and in which way, individuals who are deployed or may be deployed in rescue operations in the event of a radiological emergency are informed about the possible health risks and precautionary measures,

8. which radioactive waste shall be surrendered to the state collecting facilities and to the federal installations pursuant to § 9a, para. (3) and that, in view of the extent of the hazards involved, some other method of interim storage or other exceptions from the system of compulsory surrender will be acceptable or may be directed or approved,

9. which requirements must be met with regard to the non-detrimental utilisation and controlled disposal of residual radioactive materials and disassembled or dismantled radioactive components; that, and with what content, information is to be submitted and updated in order to meet the obligations pursuant to § 9a, paras. (1) to (1e); that, and in which way, radioactive waste, prior to its surrender to the state collecting facilities and the federal installations, must be treated and kept in interim storage; and that, and in which way, proof of the quantity and nature of such waste must be furnished with respect to its treatment and interim storage as well as with respect to its carriage; how its surrender shall be effected; how the material must be kept and stored at the state collecting facilities and the federal installations; under which conditions and how it is to be transported from the state collecting facilities to the federal installations; and how installations pursuant to § 9a, para. (3) must be supervised,

9a. that, and in which way, residues and other materials resulting from the types of work outlined in § 11, para. (1), subpara. 7 are to be utilised or disposed of, particularly that, and in which way, radioactive contamination resulting from such residues or other materials is to be eliminated,

10. in which way the protection of radioactive material and of installations as defined in § 7 and § 11, para. (1), subpara 2, and of federal installations pursuant to § 9a, para. (3), shall be assured against disruptive action and other interference by third parties,

10a. that the responsible authorities may officially designate individuals and organisations as authorised experts,

11. which requirements shall be established with regard to the training, professional knowledge and skills, particularly in terms of vocational experience, suitability, instruction in expert duties, extent of testing activities and other requirements and obligations, as well as the reliability and independence, of the authorised experts referred to in § 20 hereof and also of those individuals employed as officially appointed authorised experts under a statutory ordinance promulgated on the basis of this Act, and which conditions, in view of their technical equipment and the co-operation of employees specialised in different lines, shall be met by organisations which are to be called in as authorised experts as defined in § 20,

12. which requirements are to be established with regard to the requisite technical qualifications or knowledge of the persons involved in the handling or carriage of radioactive material or in the erection and operation of installations pursuant to § 7 and § 9a, para. (3), sentence 1, second clause and § 11, para. (1), subpara. 2 or in the decommissioning or dismantling of installations or parts thereof pursuant to § 7, para. (3), or in safe enclosure or associated activities; the proof of such qualification or knowledge which must be furnished; and in which way the responsible licensing; and in which way the responsible licensing and supervisory authorities pursuant to § 23 and § 24 hereof shall verify the existence of the requisite qualifications or knowledge; which requirements shall be imposed with regard to the recognition of training courses when furnishing proof of technical qualifications; and to what extent such individuals are required to attend a recognised training course at specified intervals,

13. that the supervisory authority may issue directions for the implementation of the legal provisions made under subparas. 1-10 above.

Sentence 1 no. 1 and 7 shall apply correspondingly to the carriage of radioactive substances provided that the purposes mentioned in § 1 subparas. 1, 3 and 4 are to be achieved and regulations concerning compulsory cover are concerned.

(2) The fundamental right to physical inviolability (Article 2, para. (2), first sentence of the Basic Law) shall be restricted as provided for in para. (1), first sentence, subpara. 4 above.

§ 12a Enabling provision (decision of the Steering Committee)

The Federal Government is authorised to put into force by statutory ordinance, with the consent of the *Bundesrat* (Upper House of the Federal Parliament), decisions of the Steering Committee of the European Nuclear Energy Agency, or its successor, under Article 1, para. (a), subparas. (ii)-(iii) and under Article 1, para. (b) of the Paris Convention, and, insofar, to amend or repeal Appendix 1, para. (1), subparas. 2 and 3, and Appendix 2 hereto, provided this is necessary in order to accomplish the purposes referred to in § 1.

§ 12b Verification of reliability of persons as a protection against misappropriation or release of radioactive material

(1) As a protection against unauthorised acts which may lead to misappropriation or release of radioactive material, the licensing and supervisory authorities responsible pursuant to § 23, para: (1), nos. 1 to 5 and § 24 shall verify the reliability of following persons:

1. applicant or licensee and other persons nominated to be responsible in licensing, plan approval and supervision procedures which apply to installations or practices according to §§ 4, 6, 7, 9, 9a, para. (3) or § 11, para. (1), subpara. 2,

2. persons engaged in the erection or operation of installations as defined in § 7 and § 11, para. (1), subpara. 2 or of federal installations pursuant to § 9a, para. (3),

3. persons engaged in the handling or carriage of radioactive material, as well as

4. authorised experts (§ 20).

Public servants of the licensing or supervisory authority responsible as described in sentence 1 as well as public servants of other authorities with legal right of access to the particular facilities or installations shall be excluded from the verification of reliability.

(2) The verification of reliability shall be performed with previous written consent obtained from the person to be checked (person concerned).

(3) When carrying out reliability checks, the responsible authorities may

1. check the identity of the person concerned,

2. enquire for any findings which may be significant to an assessment of reliability at enforcement authorities of police and protection of the constitution of the Federation and the *Länder*, as well as at the Military Counter-Intelligence Service, the Federal Intelligence Service and the Central Office of the German Customs Investigation Service if in individual cases necessary,

3. enquire at the federal commissioner for documents from the State Security Service of the former German Democratic Republic in order to ascertain the individual's possible official or unofficial employment by the State Security Service if the person concerned was born before 1 January 1970 and there is reason to suspect that this might be so,

4. request unrestricted information from the Federal Central Criminal Register, or a certificate of good conduct for authorities pursuant to § 30, para. (5) of the Federal Central Criminal Register Act,

5. ask for data transfer from the Central Register of Foreigners and request for any findings which may be significant to an assessment of reliability to the Foreigners

Authority if it deemed necessary in individual cases when a foreign person is concerned.

Measures pursuant to the first sentence shall be graded proportionally to the nature of the facility or installation, particularly the kind and quantity of the radioactive material available therein, the kind of activity, the extent of the right of access and the responsibility of the person concerned, and additionally with reference to carriage of radioactive material, with due regard for the packaging and mode of transport.

(4) If there is any factual evidence to doubt the reliability of the person concerned due to the knowledge gained pursuant to para. (3), the responsible authority may additionally

1. request information of the law enforcement authorities and criminal courts including the taxation authorities responsible for penal proceedings for tax fraud and other tax offences as well as ask for access records if doubts prevail,

2. ask at the authorities which are responsible for conducting the Act to Control Military Weapons, the Act on the Transportation of Dangerous Goods, the Law on Arms, the Law on Firing, the Explosives Act or Ordinances enacted due to these acts, as well as ask for access to the records about the person concerned which are performed at the responsible authority if doubts prevail,

3. obtain information from the Central Register of Traffic Offenders in case of licensing the carriage of radioactive material.

(5) The competent authority shall give the persons concerned the opportunity to comment if the information obtained gives rise to doubts concerning the reliability.

(6) The personal data obtained within the context of this verification process may only be processed and used by the competent authority provided that this is necessary for the verification.

(7) The authorities of the Federation and *Länder* responsible for protection of the constitution, the Military Counter Intelligence Service, the Federal Intelligence Service, the Federal Criminal Police Office, the Central Office of the German Customs investigation Service and the responsible foreigners authority shall notify immediately the competent authorities on information emerged after answering a request pursuant to para. (3), first sentence, no. 2 or 5 and which is significant to assess the reliability (follow-up report). For this purpose personal data of the person concerned (sex; surname, birth name, all first names, all previous names; date and place of birth, country of birth; place of domicile; citizenship, as well as previous and dual citizenships) as well as the source in the records may be stored after the request was answered. The authority for protection of the constitution of the Federation and *Länder* may store data mentioned in the second sentence and the source in the records in addition to the common data files pursuant to § 6 of the Federal Constitution Protection Law.

(8) The competent authority shall delete the personal data stored for the verification of reliability not later than five years and six months after issuing the decision. The competent authority shall communicate the refusal and the cancellation or withdrawal of a decision to the authorities obliged to provide the follow-up report. These authorities shall then delete immediately the request pursuant to para. (3), first sentence, no. 2 or 5, the answering of the request and all other personal data stored according to para. (7), second sentence. In all other cases the authorities obliged for the follow-up report shall delete the personal data mentioned in the second sentence not later than five years and six months after answering the request.

(9) A statutory ordinance regulates the details of the verification process, the legitimacy of measures and the destination of verification categories according to

para. (3), the main criteria to assess the reliability, the determination of the period of time during which the verification shall be repeated, and other exceptions of the verification.

§ 12c Radiation protection register

(1) The data relating to the radiation exposure of occupationally exposed persons and collected on the basis of an ordinance promulgated pursuant to § 12, para. (1), sentence 1, no. 4, shall be recorded in a register set up at the *Bundesamt für Strahlenschutz* (Federal Office for Radiation Protection), for the purpose of monitoring dose limits and observing the radiation protection principles. The person concerned shall be advised of the storage of the data.

(2) For the above purposes, the register may be used to furnish information, to the extent required, to the supervisory authorities in charge pursuant to § 24 as well as to the agencies and persons responsible for precautions and monitoring measures for the protection of occupationally exposed persons.

(3) For the purpose of scientific research in the field of radiation protection, personal data may be transmitted to third parties with the consent of the person concerned. Without the consent of the person concerned, the data may be transmitted if the transmission or the proposed use of the data does not conflict with protectable interests of the person concerned or if the public interest in the research project by far outweighs the interest of the person concerned in secrecy. A transmission of personal data for purposes of scientific research shall be excluded if the purpose of the scientific research can be achieved with reasonable effort by using depersonalised data. Wider provisions concerning data protection and relating to the processing and use of personal data for scientific research shall remain unaffected.

(4) The recipient of personal data may only use the data for the purpose for which they were lawfully transmitted. The details with respect to the prerequisites and the procedure for the supply of information and the transmission of personal data shall be provided for by a statutory ordinance.

§ 12d Register of high-activity radioactive sources

(1) The data on high-activity radioactive sources collected on the basis of an ordinance promulgated pursuant to § 12, para. (1), sentence 1, no. 5 shall be compiled for the purposes mentioned in § 1, subparas. 2 to 4 in a register established at the Federal Office for Radiation Protection.

(2) In particular the following details on the high-activity radioactive sources, their control and on licences granted according to this act or an ordinance promulgated pursuant to § 11, para. (1), subpara. 1 or 6 shall be entered into the register according to para. 1:

1. Licensee, date of issue, limitation of the license,

2. Identification number of the high-activity radioactive source,

3. Characteristics, controls and use of the high-activity radioactive source,

4. Place of handling or storage of the high-activity radioactive source,

5. Achieving or giving up control of the high-activity radioactive source,

6. Loss, theft or finding of the high-activity radioactive source.

(3) Access to read the register shall have the authorities competent according to § 22, para. (1) and (3), §§ 23 and 24, the federal ministry competent for nuclear safety and radiation protection, the Federal Office for the Protection of the Population and

Emergency Aid, the Federal Office of Criminal Investigation, the *Länder* Offices of Criminal Investigation, the proper authority of the Federal Police pursuant to § 58, para. (1) of the Act on the Federal Police, the Federal Office of Customs Criminal Investigation and the Federal and *Länder* Offices for the Protection of the Constitution.

(4) Information from the register may be given to the other *Länder* police authorities, the customs authorities, the Military Counter-Intelligence Service, if this is required for the performance of the respective tasks. Sentence 1 shall be applied towards authorities of other countries with comparable tasks and towards international organisations, to the extent that this is provided for in binding decisions of the European Union or that this is demanded on the basis of other international agreements.

(5) After the last update of the details on a high-activity radioactive source, the data recorded in the register shall be stored for 30 years.

(6) By statutory ordinance, details on

1. content and form of the data collection and the recording, on access rights and the procedure of providing information, and

2. data transfer, correction, disabling and cancellation of data

can be determined.

§ 13 Financial security for covering the legal liability to pay compensation for damage

(1) In the licensing procedure, the administrative authority shall determine the type, terms and amount of the financial security to be provided by the applicant to meet the legal liability to pay compensation for damage. Such determination shall be renewed every two years and in the event of a material change in circumstances; in such a case, the administrative authority shall direct that the party obliged to provide financial security shall furnish proof within an adequate period of time that such security has indeed been provided.

(2) The financial security provided pursuant to para. (1) above shall,

1. in the case of installations and practices possibly involving liability under the Paris Convention in conjunction with § 25, paras. (1) to (4) hereof, pursuant to § 25a or pursuant to any of the international treaties referred to in § 25a, para. (2), be adequate as compared with the hazards of the installation or practice,

2. in the case of other practices requiring a licence hereunder or under a statutory ordinance issued hereunder, assure fulfilment of the legal liability to pay compensation for damage to the extent appropriate to the circumstances.

(3) Within the limits laid down in para. (2) above, and to achieve the purposes referred to in § 1, a statutory ordinance may be issued containing more detailed provisions as to the measures required for covering the legal liability to pay compensation for damage. The amount of the financial security shall be fixed subject to a maximum of EUR 2.5 billion; the maximum and the amounts of financial security shall be reviewed every five years with a view to maintaining the real value of the financial security.

(4) The Federation and the *Länder* shall not be obliged to provide financial security. To the extent a *Land* may be held liable under the Paris Convention in conjunction with § 25, paras. (1) to (4), under § 25a or under any of the international treaties referred to in § 25a, para. (2), the licensing authority shall apply paras. (1), (2) as well as the statutory ordinance issued under para. (3) accordingly in order to determine

the extent and amount to which the *Land* shall guarantee fulfilment of the uncovered legal liability to pay compensation for damage by means of the indemnification pursuant to § 34. For the purposes of this Act, such guarantee shall be the equivalent of financial security. Sentences 2 and 3 shall not apply to the Federation.

(5) For the purposes of this Act, legal liability to pay compensation for damage shall mean the liability to pay compensation based on statutory legal liability provisions of private law. Such legal liability to pay compensation for damage shall not include obligations arising under § 110 and § 111 of Volume Seven of the German Social Code and shall include obligations for indemnification arising under § 7, para. (6) hereof in conjunction with § 14 of the Federal Pollution Control Act, as well as similar obligations for indemnification or compensation only to the extent that the damage or impairment has been caused by an accident.

§ 14 *Third party liability insurance and other forms of financial security*

(1) If, for installations and practices involving liability under the Paris Convention in conjunction with § 25, paras. (1) to (4), under § 25a, under any of the international treaties referred to in § 25a, para. (2), or pursuant to § 26, para. (1) in conjunction with para. (1a), financial security is provided in the form of third party liability insurance without accounting a direct claim in terms of § 115 of the Insurance Contracts Act, §§ 117 and 119 to 122 of the Insurance Contracts Act shall apply accordingly to such insurance except that the term referred to in § 117, para. (2) of the Insurance Contracts Act shall be two months and that such term, in the case of liability for the carriage of nuclear substances and radioactive material considered equivalent thereto in accordance with § 26, para. (1a), shall be suspended for the duration of such carriage; if § 117, para. (3) sentence 3 of the Insurance Contracts Act is applied the indemnification under § 34 shall not be taken into account. § 109 of the Insurance Contracts Act shall not be applied.

(2) If the financial security is not provided by third party liability insurance but by some other form of financial security, para. (1) shall apply accordingly.

§ 15 *Priority of claims to be satisfied out of the financial security provided*

(1) If an operator of a nuclear installation obliged to provide financial security and a claimant are, at the time of a nuclear incident, subsidiaries of one and the same corporation as defined in § 18 of the Stock Corporation Act, the financial security may only be used for the fulfilment of the legal liability for damages of such claimant if this will not prejudice the satisfaction of the claims of other claimants. The term nuclear installations as used in the first sentence shall include reactors which are part of a means of transport.

(2) If damage is caused to an industrial facility in the vicinity of the nuclear installation, para. (1), first sentence, shall apply accordingly if the site had been chosen because the energy generated at the nuclear installation was to be used for production processes.

(3) Subordinate claims pursuant to paras. (1) and (2) shall be of equal priority in relation to each other.

§ 16 (Repealed)

§ 17 Restrictions, obligations imposed, revocations, designation as operator of a nuclear installation

(1) Licences and general approvals granted hereunder or under a statutory ordinance issued hereunder shall be in writing, but not in electronic form; deviant hereto a statutory ordinance pursuant to this act may provide that licenses and general approvals can be granted in electronic form with a permanent testable signature according to § 37, para. (4) of the Administrative Procedures Act. To achieve the purposes referred to in § 1, they may contain restrictions and many be subject to certain obligations. To the extent necessary to achieve the purposes referred to in § 1, subparas 2 and 3, obligations may be imposed subsequently. Licences, other than those granted pursuant to § 7, as well as general approvals may be granted for a fixed period of time.

(2) Licences and general approvals may be withdrawn if any of their preconditions had not been fulfilled at the time such licences or approvals were granted.

(3) Licences and general approvals may be revoked if

1. they have not been used within two years unless otherwise provided for in such licence or general approval,

2. any of their preconditions has ceased to be fulfilled at a later time and no remedial action has been taken within a reasonable period of time, or

3. the provisions hereof or of a statutory ordinance issued hereunder, orders or directions issued hereunder by the supervisory authorities, or the provisions of the notice relating to the licence or general approval have been violated materially or repeatedly, or if a subsequently imposed obligation has not been complied with and no remedial action has been taken within a reasonable period of time.

4. even after setting an appropriate period of grace, proper proof pursuant to § 9a, paras. (1a) to (1e) has not been furnished, or even after setting an appropriate period of grace, no results from the safety review to be conducted in accordance with § 19a, para. (1) have been submitted.

(4) Licences shall be revoked if the financial security provided does not comply with the determination under § 13, para. (1) and the party obliged to provide financial security does not furnish proof of such provision in accordance with the determination within a reasonable period of time to be fixed by the administrative authority.

(5) Licences or general approvals shall also be revoked if such revocation is necessary to avoid substantial hazards to the personnel, third parties or the general public and if subsequently imposed obligations cannot remedy the situation within a reasonable period of time.

(6) When a licence is granted for practices authorising the operation of a nuclear installation, the licensee shall be expressly designated as operator of a nuclear installation in the licensing notice.

§ 18 Compensation

(1) If a licence or general approval granted hereunder or under a statutory ordinance issued hereunder is withdrawn or revoked, adequate financial compensation shall be paid to the licensee. If the withdrawal or revocation is pronounced by a federal authority, the Federation shall be liable for the compensation, and if the withdrawal or revocation is pronounced by a *Länder* authority, the *Länder* whose authority

pronounced the withdrawal or revocation shall be liable for the compensation. The amount of the compensation shall be fixed with due regard to the interests of the general public and of the party concerned as well as the reasons which have led to such withdrawal or revocation. The compensation shall be limited to the amount of the expenses incurred by the party concerned and, in the case of an installation, by the current market value of such installation. As to the amount of compensation, legal proceedings may be instituted before a court of general jurisdiction.

(2) The authority shall not be obliged to pay a compensation if

1. the holder of a licence or general approval has obtained such licence or approval as a result of substantially incorrect or incomplete statements,

2. the holder of a licence or general approval, or persons actively engaged thereunder on behalf of such holder, have caused the revocation of the licence or general approval by their conduct, in particular by material or repeated violations of the provisions hereof or of statutory ordinances issued hereunder or of orders and directions issued by the supervisory authorities, or of the terms and conditions of the notice granting the licence or general approval, or by non-compliance with subsequently imposed obligations,

3. the revocation had to be pronounced because the licensed installation or practice subsequently caused material hazards to the personnel, third parties or the general public.

(3) Paras. (1) and (2) shall apply accordingly to subsequently imposed obligations pursuant to § 17, para. (1), sentence 3.

(4) If a *Land* is liable for compensation, the Federation or another *Land* shall be obliged to contribute to such compensation in accordance with their overall interest in the withdrawal or revocation. The same shall apply if the Federation is liable for compensation.

§ 19 Government supervision

(1) The handling of and dealing in radioactive material, the erection, operation and possession of installations of the kind referred to in § 7 and § 11, para. (1), subpara. 2, the handling of or dealing in installations, equipment and devices of the kind referred to in § 11, para. (1), subpara. 3, the carriage of such material, installations, equipment and devices, the appropriated addition of radioactive material and the activation thereof, where requirements in this respect exist under this Act or on the basis of a statutory ordinance pursuant hereto, as well as work of the type defined in §11, para. (1), subpara. 7, shall be subject to Government supervision. The supervisory authorities shall in particular assure compliance with the provisions hereof and of the statutory ordinances issued hereunder, with the orders and directions issued hereunder and thereunder by the supervisory authorities, and with the terms and conditions of the notice granting the licence or general approval, as well as with subsequently imposed obligations. The provisions of § 139b of the Trade and Industry Code shall apply accordingly to the powers and duties of the supervisory authorities. The Federal Ministry responsible for nuclear safety and radiation protection may communicate to the Federal Ministry of the Interior the information communicated by the authorities responsible pursuant to §§ 22 to 24, indicating violations of import and export provisions of this Act, or of statutory ordinances issued hereunder, or of orders and directives issued hereunder by the supervisory authorities, or of the terms and conditions of the notice granting the licence, to the extent this is necessary for the Federal Criminal Police Office to fulfil its duties in the prosecution of criminal offenses in foreign trade transactions; unless anything to the contrary is provided for by law, the information so communicated may only be used for the purpose for which it is communicated.

(2) Any person commissioned by the supervisory authority, and the authorised experts called in by such authority pursuant to § 20 hereof, as well as any person commissioned by other authorities which have been called in, shall at all times have access to places where radioactive material, installations of the kind referred to in § 7 and § 11, para. (1), subpara. 2, or installations, equipment and devices of the kind referred to in §11, para. (1), subpara. 3, are located, or where there are effects of radiation originating therefrom, or to places where there is reason to believe that such conditions prevail, and such persons shall be authorised to carry out all examinations at such places which are necessary for the performance of their duties. In this connection, they may request the persons in charge or actively employed to provide them with the information they require. In all other respects, § 36 of the Act on the Safety of Products shall apply accordingly. The fundamental right to inviolability of the home as laid down in Article 13 of the Basic Law shall be restricted to the extent it conflicts with the powers granted hereby.

(3) The supervisory authority may order that a situation be discontinued which is contrary to the provisions hereof or of the statutory ordinances issued hereunder, or to the terms and conditions of the notice granting the licence or general approval, or to any subsequently imposed obligation, or which may constitute a hazard to life, health or property because of the effects of ionising radiation. In particular, the supervisory authority may order that

1. certain protective measures shall be taken,

2. radioactive material shall be stored or kept in custody at a place designated by it,

3. the handling of radioactive material, the erection and operation of installations of the kind referred to in § 7 and § 11, para. (1), subpara. 2, as well as the handling of installations, equipment and devices of the kind referred to in § 11, para. (1), subpara. 3, shall be suspended or, if a requisite licence is not granted or is definitely revoked, discontinued.

(4) Nothing herein contained shall affect the supervisory powers under other legal provisions and the general powers resulting from *Länder* legislation.

(5) Paras. (1) to (4) shall apply accordingly installations set up by third parties pursuant to § 9a, para. (3), third sentence.

§ 19a Verification, evaluation and continuous improvement of the installation

(1) Anyone who operates an installation for the fission of nuclear fuel for the commercial generation of electricity is required to conduct and to evaluate a safety review of the installation and to improve on this basis the nuclear safety of the installation continuously. The results of the safety review and evaluation shall be submitted to the supervisory authority by the date specified in Appendix 4 of this Act, provided this date is later than 27 April 2002. Every ten years after the date cited in Appendix 4, the results of a renewed safety review and evaluation shall be submitted.

(2) The obligation to submit the results of a safety review and evaluation shall not apply if the licensee gives a binding declaration to the supervisory authority and the licensing authority stating that operation of the installation will be permanently discontinued no later than three years after the dates specified in Appendix 4. The authorisation to operate the installation shall expire as per the date cited in the owner's statement pursuant to sentence 1. Sentences 1 and 2 shall apply accordingly in the event of para. (1), sentence 3.

(3) Anyone who operates any nuclear installation pursuant to § 2, para. (3a), subpara. 1 shall perform a verification and evaluation of the nuclear safety of the respective installation every ten years and shall improve nuclear safety of the

installation continuously. The results of the verification and evaluation shall be submitted to the supervisory authority.

(4) The evaluation according to para. (1) or (3) shall encompass the verification that measures are taken to prevent accidents and to attenuate the effects of accidents including the verification of the physical barriers as well as of the administrative preventions of the licensee which would have to fail before life, health and material assets are damaged by the effect of ionising radiation. The competent supervisory authority can issue orders concerning the extent of the verification and evaluation by the licensee.

§ 20 Authorised experts

In the licensing and supervisory procedures hereunder or under the statutory ordinances issued hereunder, the authorities in charge may consult authorised experts. § 36 of the Act on the Safety of Products shall apply accordingly.

§ 21 Costs

(1) Costs (fees and expenses) shall be charged

1. for decisions with respect to applications filed pursuant to §§ 4, 6, 7, 7a, 9, 9a and 9b;

2. for determinations pursuant to § 4b, para. (1), second sentence, and § 13, para. (1), second sentence; for decisions pursuant to § 9b, para. (3), second sentence; for decisions pursuant to § 17, para. (1), third sentence, and paras. (2), (3), (4) and (5), insofar as §18, para. (2) provides that there is no obligation to pay a compensation; and for decisions pursuant to § 19, para. (3);

3. for government custody of nuclear fuel pursuant to § 5, para. (1);

4. for other official acts including tests and examinations carried out by the Federal Office for Radiation Protection to the extent it is responsible pursuant to § 23 and by the Federal Aviation Office to the extent it is responsible pursuant to § 23b;

4a. for decisions pursuant to §§ 9d to 9g;

5. for the other supervisory measures pursuant to § 19 which have to be defined in the statutory ordinance referred to in para. (3) below;

6. for verification of the results of the safety review and evaluation pursuant to § 19a, para. (1) as well as for the assessment of the results of the verification and evaluation pursuant to § 19a, para. (3).

(1a) Costs will be levied in the following instances:

1. The revocation or withdrawal of an official act defined in para. (1), where this is the responsibility of the affected party and costs have not already been levied under para. (1)

2. The rejection of an application for performance of an official act defined in para. (1) for reasons other than the authority's lack of jurisdiction

3. The withdrawal of an application for performance of an official act defined in para. (1) after processing has begun but prior to its completion

4. The complete or partial dismissal or withdrawal of an objection to

   a) an official act defined in para. (1), or

   b) a fixed order for payment of costs pursuant to para. (1) in conjunction with the statutory ordinance promulgated in accordance with para. (3).

In the cases outlined in sentence 1, subparas. 1, 2 and 4, letter a, fees may be set at up to the amount of the fee specified for the official act, in the cases outlined in sentence 1, subpara. 3 up to the amount of three-quarters of the fee specified for the official act, and in the cases outlined in sentence 1, subpara. 4, character b, up to the amount of 10 percent of the disputed contribution.

(2) Authorised experts' fees shall be reimbursed as expenses to the extent they are limited to amounts constituting an adequate consideration for the authorised expert's services in view of the requisite technical knowledge and the particular difficulties of appraisal, testing and examination.

(3) Further details shall be determined by statutory ordinance in accordance with the principles of the Administrative Costs Act. Such statutory ordinance shall define the facts and circumstances which are subject to a fee, and the fees shall be determined in the form of fixed rates or skeleton rates or in accordance with the value of the matter concerned. The rates shall be assessed so as to cover the personnel and non-personnel expenses involved in the official acts, tests or examinations; in the case of a supporting official act, the importance, economic value or other benefit to or for the person liable to pay the fee may also be taken into reasonable consideration. Said ordinance may contain provisions deviating from § 8 of the Administrative Costs Act as far as the cost exemption of the Federal Office for Radiation Protection and the obligation to pay fees for the official acts of certain authorities are concerned. Notwithstanding § 20 of the Administrative Costs Act, the period of prescription for the costs owed may be extended. It may be provided that the ordinance shall also be applicable to the administrative procedures pending at the time it takes effect, insofar as the costs concerned have not yet been assessed.

(4) Expenditures for protective measures and medical examinations carried out under this Act or under a statutory ordinance issued hereunder shall be borne by the party which, under this Act or under a statutory ordinance to be issued hereunder, requires a licence or is obliged to notify the practice necessitating such protective measure or medical examination.

(5) In all other respects, and except as otherwise provided in para. (2) above, the relevant cost provisions under *Länder* law shall apply to the implementation by *Länder* authorities of this Act and of statutory ordinances issued pursuant to § 7, para. (4), third sentence, and para. (5) as well as § 7a, para. (2) and §§ 10 to 12.

§ 21a Costs (fees and expenses) or consideration for the use of installations pursuant to § 9a, para. (3)

(1) For the use of installations pursuant to § 9a, para. (3), the parties obliged to surrender material shall be charged with costs (fees and expenses). Fees pursuant to § 21, para. (2) and expenditures pursuant to § 21, para. (4) may also be charged as expenses. The general principles of the law of fees relating to the origination of a fee, the parties entitled to receive and obliged to pay a fee, the definite assessment of a fee, advance payments, provision of security, due date, delay penalty, respite, abatement, remission, prescription, refund and legal remedies shall be applied in compliance with §§ 11, 12 and 13, para. (2), §§ 14 and 16 to 22 of the Administrative Costs Act, except as otherwise provided for in the statutory ordinance referred to in para. (2) below.

(2) The facts and circumstances which are subject to a fee pursuant to para. (1) above may be defined in a statutory ordinance providing for fixed rates or skeleton rates. The rates shall be assessed so as to cover the costs of the current management and maintenance of the installations pursuant to § 9a, para. (3) to the extent these costs can be charged in accordance with the principles of business administration. Said costs shall also include interest on and depreciation of the capital invested. The

depreciation shall be calculated on a uniform basis in accordance with the anticipated useful life and the kind of use. The capital share originating from contributions pursuant to § 21b as well as from services and grants by third parties shall not be taken into account when calculating the amount of interest. In addition, both the extent and the kind of the use concerned shall be taken into consideration when assessing the fee. A basic fee may be charged for the use of state collecting facilities in order to cover the relevant capital expenditure. When assessing the costs or considerations charged for the surrender of material to a state collecting facility, expenses incurred in the subsequent delivery to federal installations as well as advance payments under § 21b, para. (2) below may be included. These shall be paid over to the Federation.

(3) The state collecting facilities may charge a consideration for use, in lieu of costs, in accordance with a set of rules for such use. When calculating the consideration the principles of assessment contained in para. (2) above shall be taken into account.

§ 21b Contributions

(1) To cover the necessary expenses for planning, the acquisition of real estate and rights, facility-related research and development, investigation, the maintenance of land and facilities as well as the erection, extension and renewal of federal installations pursuant to § 9a, para. (3), contributions shall be levied from any party which stands to benefit from the opportunity of utilising these installations for the controlled disposal of radioactive waste pursuant to § 9a, para. (1), sentence 1. Said necessary expenses shall also include the value, at the time of their availability, of the items and rights that are made available out of the assets of the operator of the installation.

(2) Advance payments against said contributions may be required to be made by those who have filed an application for the grant of a licence pursuant to §§ 6, 7 or 9, or under a statutory ordinance issued hereunder, for the handling of radioactive material or for the generation of ionising radiation or to whom such a licence has been granted, provided implementation of a measure pursuant to para. (1), sentence 1 has already begun.

(3) Further details concerning imposition, exemption, respite, abatement and refund with respect to contributions and advance payments may be laid down in a statutory ordinance. Said statutory ordinance may determine the parties entitled to receive or obliged to pay the contribution and the time at which the obligation to pay the contribution is incurred. The contributions shall be assessed in such a way that they cover the expenses incurred pursuant to para. (1) above which can be charged in accordance with the principles of business administration. The contributions shall be reasonable in relation to the benefits which the party obliged to pay the contributions derives from the installation. Advance payments against contributions shall be refunded, including adequate interest, to the extent they exceed the contributions determined on the basis of the expenses actually incurred.

(4) Any contributions or advance payments already levied, insofar as these have been levied in order to cover the expenses incurred, will not be refunded if a federal installation pursuant to § 9a, para. (3) is ultimately not erected or operated, or if the party liable to pay the contribution or advance payment fails to take advantage of the opportunities outlined in para. (1), sentence 1.

Chapter 3 – Administrative authorities

§ 22 Responsibility for international carriage and its supervision

(1) The Federal Office for Trade and Export Control (BAFA) shall decide on applications for licences pursuant to § 3 and on the withdrawal or revocation of licences already granted. The same shall apply insofar as the statutory ordinances issued under § 11 require licences and approvals as well as the assessment of announcements for international carriage.

(2) The supervision of international carriage shall be the responsibility of the Federal Ministry of Finance or of the customs authorities appointed by said Ministry.

(3) To the extent that the Federal Office for Trade and Export Control (BAFA) makes decisions under para. (1) above, it shall be bound by the technical instructions issued by the Federal Ministry in charge of nuclear safety and radiation protection, notwithstanding its subordination to the Federal Ministry of Economics and Technology and his powers to issue instructions under other legal provisions.

§ 23 Responsibility of the Federal Office for Radiation Protection

(1) The *Bundesamt für Strahlenschutz* (Federal Office for Radiation Protection) shall be responsible for

1. the government custody of nuclear fuel, including the promulgation of decisions pursuant to § 5, para. (7), sentence 1,

2. the erection and operation of federal installations for the safekeeping and disposal of radioactive waste as well as for the Asse II pit, the transfer of duties by the Federation to third parties pursuant to § 9a, para. (3), sentence 3 and supervision pursuant to § 19, para. (5),

3. the licensing of the carriage of nuclear fuel and large sources,

4. the licensing of the storage of nuclear fuel outside government custody to the extent such storage is not preliminary to or part of a practice requiring a licence pursuant to § 7 or § 9,

5. the withdrawal or revocation of licences pursuant to subparas. 3 and 4 above,

6. the setting-up and maintenance of a register of the radiation exposures of occupationally exposed persons,

7. the creation and maintenance of an ethics commission register as defined in § 12, para. (1), sentence 1, subpara. 3a, its registration and the revocation thereof,

8. the investigation, preparation and publication of diagnostic reference figures, determination of the radiation exposure of individuals for medical reasons, and the related surveys required in this respect on the basis of an ordinance pursuant to § 12, para. (1), sentence 1, subpara. 3b,

9. the acceptance and publication of information pursuant to § 7, para. (1c),

10. decisions pursuant to § 9a, para. (2), sentence 4

11. the setting up and maintenance of a register of high-activity radioactive sources according to § 12d.

(2) Large sources as referred to in para. (1), subpara. 3 above shall be radioactive material whose activity per package to be carried or shipped exceeds 1 000 terabequerels.

(3) A statutory ordinance may stipulate that the Federal Office for Radiation Protection is responsible for

1. approval of the use of radioactive material or ionising radiation on human beings within the context of medical research,

2. licensing of the designs of installations, equipment and other devices of the type defined in § 11, para. (1), subpara. 3,

3. administration and allocation of identification numbers for high-activity radioactive sources.

§ 23a Responsibility of the Federal Administrative Office

The *Bundesverwaltungsamt* (Federal Administrative Office) is responsible for decisions pursuant to §§ 9d to 9g.

§ 23b Responsibility of the Federal Aviation Office

The *Luftfahrt-Bundesamt* (Federal Aviation Office) is responsible for monitoring compliance with the requirements concerning the protection of individuals from radiation exposure caused by cosmic radiation during the operation of aircraft as specified in a statutory ordinance promulgated on the basis of this act. Notwithstanding sentence 1, in the case of aircraft operated within the scope of the Federal Ministry of Defence, responsibility for monitoring shall lie with said Ministry or the offices appointed by it.

§ 23c Responsibility of the Federal Network Agency

The Federal Network Agency shall be responsible for decisions according to § 7, paragraph (1e), sentence 1.

§ 24 Responsibility of Länder *authorities*

(1) All other administrative functions under Chapter 2 and the statutory ordinances issued thereunder shall be discharged by the *Länder* on behalf of the Federation. The *Eisenbahn-Bundesamt* (Federal Railroads Office) shall be responsible for the supervision of the carriage of radioactive material by rail and ship or on maglev train effected by the federal railroads; this shall not apply to the carriage of radioactive material by private railroad companies if the carriage is exclusively effected on rails owned by those companies. The second sentence shall also apply to the licensing of such carriages unless the corresponding responsibility is as referred to in § 23.

(2) The supreme *Länder* authorities designated by the *Länder* Governments shall be responsible for the granting of licences pursuant to §§ 7, 7a and 9 and the withdrawal and revocation of such licences as well as the plan approval procedure pursuant to § 9b and the cancellation of the plan approval notice. These authorities shall supervise the installations pursuant to § 7 and the use of nuclear fuel outside such installations. In particular cases, they may delegate their functions to subordinate authorities. Complaints against orders of these subordinate authorities shall be decided upon by the supreme *Länder* authority. To the extent that provisions other than those laid down herein confer supervisory powers to other authorities, such responsibilities shall not be affected.

(3) In matters relating to the official duties of the Federal Ministry of Defence, the responsibilities outlined in paras. (1) and (2) above will be carried out by said Ministry or the offices appointed by it, in agreement with the Federal Ministry in charge of nuclear safety and radiation protection. The same shall apply to civilian

employees in the case of troops and their civilian retinues who are stationed in the Federal Republic of Germany on the basis of international agreements.

§ 24a Transmission of information

The Federal Ministry responsible for nuclear safety and radiation protection may transmit information contained in nuclear licences granted by authorities in charge pursuant to §§ 22 to 24 (licensee, statutory bases, essentials of contents) to the supreme federal authorities responsible for foreign trade transactions to assist in the fulfilment of their duties with respect to the grant of licences or the supervision of foreign trade transactions. If, in individual cases, this information is insufficient, further information contained in the nuclear licence may be transmitted. Unless anything to the contrary is provided for by law, the information transmitted may be used by the recipient only for the purpose for which it was transmitted.

§ 24b Self-assessment and international verification

In order to improve nuclear safety continuously

1. the ministry responsible for nuclear safety and radiation protection shall perform a self assessment of the scopes of law, execution and organisation for the nuclear safety of nuclear installations and the action of the authority in this regard,

2. the ministry responsible for nuclear safety and radiation protection shall invite international experts to verify adequate segments of the scopes of law, execution and organisation for the nuclear safety of nuclear installation and the respective competent authorities involved. The results of this verification shall be reported to the member states of the European Union and to the European Commission by the ministry responsible for nuclear safety and radiation protection as soon as these results are available.

The measures pursuant to sentence 1 shall be performed at least every ten years.

Chapter 4 – Liability

§ 25 Liability for nuclear installations

(1) If damage is caused by a nuclear incident originating from a nuclear installation, the provisions of this Act, in addition to the provisions of the Paris Convention, shall apply to the liability of the operator of such nuclear installation. Irrespective of its binding character under international law, the Paris Convention and the Joint Protocol shall apply as national law in the Federal Republic of Germany, unless its provisions depend on reciprocity as effected by the entry into force of the Convention.

(2) If, in the case of a carriage of nuclear substances, including the storage incidental to such carriage, the carrier enters into a contract for the assumption of liability from the operator of a nuclear installation located within the territorial scope of this Act, such carrier shall be considered operator of the nuclear installation from the time of its assumption of liability. Said contract shall be in writing. The assumption of liability shall only be valid if it has been approved, upon application of the carrier, by the authority responsible for the licensing of carriage, prior to the commencement of the carriage of nuclear substances or any storage incidental thereto. Such licence may only be granted if the carrier is licensed to do business within the territorial scope of this Act, or if the carrier has its principal place of business as a forwarding agent within the territorial scope of this Act and the operator of the nuclear installation has declared its consent to the authority.

(3) The provisions of Article 9 of the Paris Convention relating to the exclusion of liability for damage caused by nuclear incidents which are a direct consequence of acts in an armed conflict, hostilities, civil war, insurrection or a grave natural disaster of an exceptional character, shall not be applicable. If the damage occurs in another country, the first sentence shall only apply insofar as such other country, at the time of the nuclear incident, has provided for a system of compensation in relation to the Federal Republic of Germany which is equivalent as to nature, terms and amount.

(4) The operator of a nuclear installation shall be liable, irrespective of the location of damage occurrence. Article 2 of the Paris Convention shall not apply.

(5) The operator of a nuclear installation shall not be liable under the Paris Convention if the damage was caused by a nuclear incident which is due to the nuclear substances referred to in Appendix 2 hereto.

§ 25a Liability for nuclear ships

(1) The provisions of this Chapter shall apply accordingly to the liability of the operator of a nuclear ship, including the following modifications:

1. The provisions of the Paris Convention shall be replaced by the corresponding provisions of the Brussels Convention on the Liability of Operators of Nuclear Ships (BGBl. 1975 II, p. 977). Irrespective of its binding character under international law, the latter shall apply as national law in the Federal Republic of Germany, unless its provisions depend on reciprocity as affected by its entry into force.

2. If the damage occurs in another country, § 31, para. (1) shall apply, with regard to the amount exceeding the maximum amount under the Brussels Convention on the Liability of Operators of Nuclear Ships, only to the extent that the laws of such other country, at the time of the nuclear incident, provided for a settlement of the liability of operators of nuclear ships in relation to the Federal Republic of Germany which is equivalent as to nature, terms and amount. § 31, para. (2), § 36, § 38, para. (1) and § 40 shall not apply.

3. § 34 shall only apply to nuclear ships authorised to sail under the flag of the Federal Republic of Germany. If, within the territorial scope of this Act, a nuclear ship is built or equipped with a reactor for another country or persons of another country, § 34 shall apply until such time as the nuclear ship is registered in such other country or acquires the right to sail under the flag of another country. 75 percent of the indemnification pursuant to § 34 shall be borne by the Federation and the remaining percentage by the *Land* in charge of licensing the nuclear ship pursuant to § 7.

4. In the case of nuclear ships which are not entitled to sail under the flag of the Federal Republic of Germany, this Chapter shall only apply if nuclear damage caused by the nuclear ship has occurred within the territorial scope of this Act.

5. Claims for damages shall be decided by the courts of the country under whose flag the nuclear ship is entitled to sail; in the cases referred to in subpara. 4 above, the court of the place within the territorial scope of this Act where the nuclear damage has occurred shall also have jurisdiction.

(2) To the extent international treaties on the liability for nuclear ships contain mandatory provisions deviating from those of this Act, such provisions shall take precedence over the provisions of this Act.

§ 26 Liability in other cases

(1) If, in cases other than those referred to in the Paris Convention in conjunction with § 25, paras. (1) to (4), loss of life, personal injury, deterioration of health or damage to property is caused by the effects of a nuclear fission process or the radiation of radioactive material or the effects of ionising radiation emanating from an installation for the generation of ionising radiation, the holder of the material subjected to nuclear fission, of the radioactive material or of the installation for the generation of ionising radiation shall be liable for damages pursuant to §§ 27 to 30, § 31, para. (2), § 32, paras. (1), (4) and (5) and § 33. There shall be no liability to pay compensation if the damage was caused by an incident which neither the holder nor the persons acting on behalf of the holder in connection with such holding could have avoided by taking every reasonable precaution and which is neither due to a defective condition of the protective devices nor to a failure in their function.

(1a) Para. (1), sentence 2 shall not apply to damages caused by radioactive material which would fall under the definition of nuclear fuel or radioactive products and waste under application of the Paris Convention, the Brussels Convention on the Liability of Operators of Nuclear Ships or the Vienna Convention in conjunction with the Joint Protocol.

(2) Para. (1) above shall apply accordingly in cases where a damage of the kind referred to in para. (1) is caused by the effects of nuclear fusion.

(3) Any person who has lost possession of the material without having delivered it to a person entitled to such possession under this Act or under a statutory ordinance issued hereunder, shall be liable as if he were the holder.

(4) The provisions of paras. (1) through (3) above shall not apply if

1. the radioactive material or installation for the generation of ionising radiation have been applied to the injured person by a physician or dentist, or under the supervision of a physician or dentist, in the course of medical treatment and the material or installations for the generation of ionising radiation used, as well as the necessary measuring equipment, have complied with the valid requirements of the Medical Products Act under the provisions of a statutory ordinance, or where this is absent, with the state-of-the-art of science and technology, and the injury is not due to the fact that the material, installations for the generation of ionising radiation or measuring equipment have not, or not sufficiently, been maintained,

2. there is a legal relationship between the holder and the injured person under which the latter has accepted the risk associated with the material or installation for the generation of ionising radiation.

(5) Para. (1), sentence 2, and para. (4) subpara. 2, shall not apply to the application of radioactive material or ionising radiation on humans in the course of medical research. If the holder of the radioactive material or installation for the generation of ionising radiation denies the causal relation between the application of the radioactive material or ionising radiation and an injury that has occurred, he shall furnish proof that according to the state-of-the-art in medicine there is no sufficient probability that such a causal relation exists.

(6) Whoever carries the material on behalf of a third party shall not be liable for damages under the provisions of paras. (1) to (3) above. Unless and until the consignee has taken possession of the material the consignor shall be liable for damages irrespective of whether or not the consignor is the holder of such material.

(7) Within the scope of application of para. (1), sentence 1, all legal provisions shall remain unaffected under which the holder referred to in para. (1) and any persons considered as holders under para. (3), are liable to a greater extent than under the provisions hereof or under which a third party is liable for the damage.

§ 27 Contributory fault of the injured person

If a fault of the person sustaining an injury has contributed to the damage sustained, § 254 of the Civil Code shall apply; in the event of damage to property, the fault of the person in actual control thereof shall be deemed to be equivalent to that of the injured person.

§ 28 Extent of compensation in the case of death

(1) In the event of death, compensation shall be paid in the form of a reimbursement of the costs of an unsuccessful treatment as well as a compensation for the financial loss sustained by the deceased because of a loss or reduction of the earning capacity, an increase in needs or a handicap to the career of the deceased during his or her illness. In addition, the person liable to pay compensation shall refund the funeral costs to the person obliged to bear such costs.

(2) If the deceased, at the time he or she suffered the injury, had been or might have come under a legal obligation to provide maintenance to a third party who loses such maintenance as a result of the death, the person liable shall pay compensation to such third party to the extent of the maintenance which the deceased would have been obliged to pay during his or her life expectancy. Such liability shall also exist if the third party had been conceived but not yet born at the time the injury was afflicted.

§ 29 Extent of compensation for personal injury

(1) In the event of a personal injury or a deterioration of health, compensation shall be paid in the form of a reimbursement of the costs of treatment as well as a compensation for the financial loss sustained by the person injured because of a temporary or permanent loss or reduction of his or her earning capacity, an increase in needs or a handicap to the career during his or her illness.

(2) For a damage not being a pecuniary loss a reasonable monetary compensation may be claimed as well.

§ 30 Annuity

(1) Damages for a loss or reduction of earning capacity, an increase in needs or a handicap to the career of the person injured as well as compensation to be paid to a third party pursuant to § 28, para. (2) shall be paid in the form of an annuity.

(2) The provisions of § 843, paras. (2) to (4) of the Civil Code shall apply accordingly.

(3) Although the court awarding an annuity may not have required security to be provided by the party liable, the party entitled to such annuity may nevertheless demand security if the financial situation of the party liable has deteriorated materially; similarly, in such a case, the party entitled to an annuity may also demand an increase in the amount of a security ordered by the court.

§ 31 Maximum amounts of liability

(1) The liability of the operator of a nuclear installation under the Paris Convention in conjunction with § 25, paras. (1), (2) and (4), and also under the Paris Convention and the Joint Protocol in conjunction with § 25, paras. (1), (2) and (4), shall be unlimited. In the cases provided for in § 25, para. (3) the liability of an operator shall be limited to the maximum amount of the Governmental indemnification.

(2) If the damage occurs in another State, para. (1) shall only apply insofar as, at the time of the nuclear incident, said other State has made provisions with the Federal Republic of Germany pursuant to para. (1) which are equivalent in terms of nature,

terms and amount. Otherwise, if the damage occurs in another State, the liability of an operator of a nuclear installation for the compensation of damages caused by nuclear incidents, including any additional compensation on the basis of international conventions, shall be limited to the amount envisaged by the other State in relation to the Federal Republic of Germany at the time of the nuclear incident. In relation to States whose sovereign territory does not contain any nuclear installations, the liability of an operator of a nuclear installation is limited to the maximum amount as specified in the Brussels Supplementary Convention.

(2a) Para. (2) shall also apply to the liability of a holder of radioactive material in the instances outlined in § 26, para. (1a).

(3) The party liable under the Paris Convention in conjunction with § 25, paras. (1) to (4) and under the Paris Convention and the Joint Protocol in conjunction with § 25, paras. (1), (2) and (4), or under § 26, shall only be liable, in the event of damage to property, up to the amount of the fair market value of such damaged property and the costs of protection against the radiation hazards originating from such property. In the case of liability under the Paris Convention in conjunction with § 25, paras. (1) and (2) to (4), compensation for damage to the means of transport on which the nuclear substances had been at the time of the nuclear incident shall only be paid if the satisfaction of other claims has been secured from the maximum amount of the Governmental indemnification in cases under para. (1) or from the maximum amount of liability in cases under para. (2).

§ 32 Limitation of actions

(1) Claims for compensation under this Part shall be barred after three years from the date when the claimant became, or ought to have become, aware of the damage and of the identity of the person liable, or irrespective thereof, after thirty years starting from the date of the incident causing the damage.

(2) In the cases referred to in Article 8, para. (b) of the Paris Convention, the limitation period of thirty years under para. (1) above shall be replaced by a twenty years period starting from the date of theft, loss, jettison or abandonment.

(3) Claims for compensation because of death or personal injury under the Paris Convention which are brought before a court against the operator of a nuclear installation within ten years after the nuclear incident shall take precedence over claims lodged after the expiration of such periods.

(4) Where negotiations concerning compensation are pending between the person liable for compensation and the claimant, the run of the limitation period shall be suspended until such time as either party refuses to continue such negotiations.

(5) Otherwise, the provisions of the Civil Code concerning limitation of action shall apply.

§ 33 Several parties liable

(1) If several parties are legally liable to pay compensation to a third party for damage caused by a nuclear incident or otherwise by the effects of nuclear fission or radiation emitted by radioactive material or the effects of ionising radiation emitted by an accelerator, they shall be jointly and severally liable to such third party except as otherwise provided for in Article 5 para. (d) of the Paris Convention.

(2) In the cases of para. (1) above, the amount of compensation due from each of the parties liable shall be prorated among them according to the circumstances and in particular the extent to which the damage was predominantly caused by the one or the other party, except as otherwise provided for in Article 5, para. (d) of the Paris

Convention. However, the operator of a nuclear installation shall not be obliged to pay compensation exceeding the maximum amounts of liability pursuant to § 31, paras. (1) and (2).

§ 34 Indemnification

(1) If, as a result of the effects of a nuclear incident, the operator of a nuclear installation located within the territorial scope of this Act has become legally liable to pay compensation for damage under the provisions of the Paris Convention in conjunction with § 25, paras. (1) to (4) and the Paris Convention and the Joint Protocol in conjunction with § 25, paras. (1) to (4) or under foreign laws applicable to the incident or in the cases outlined in § 26, para. (1a), the federation shall indemnify the operator of the nuclear installation or the owner of radioactive material from any liability to pay compensation for damage to the extent such liability is not covered by or cannot be satisfied out of the financial security provided. The maximum amount of indemnification shall be EUR 2.5 billion. The obligation to indemnify the operator shall be restricted to this maximum amount minus the amount which is covered by and can be met out of the financial security provided.

(2) If, after the occurrence of a nuclear incident, recourse to such indemnification has to be anticipated, the operator of the nuclear installation or holder of radioactive material shall be obliged to

1. notify the Federal Ministry designated by the Federal Government without delay of such anticipation,

2. inform the responsible Federal Ministry without delay of any claims for compensation which have been raised or preliminary investigations which have been instituted, and provide, upon request, all information which is necessary to examine the circumstance and appreciate the merits of the case,

3. comply with the instructions of the federal ministry responsible for nuclear safety and radiation protection with regard to negotiations, in and out of court, concerning the claims for compensation which have been raised,

4. refrain from acknowledging or satisfying any claim for compensation without the consent of the federal ministry responsible for nuclear safety and radiation protection unless such acknowledgment or satisfaction cannot be refused without obvious inequity.

(3) In all other respects, §§ 83 and 87 and the provisions of Part 2 Section 1 of the Insurance Contracts Act, with the exception of §§ 103 and 118, shall apply accordingly to the indemnification hereunder without constituting a direct claim in terms of § 115 of the Insurance Contract Act to the person obliged to indemnification.

§ 35 Apportionment

(1) Where legal liabilities to pay compensation for damage resulting from an incident are expected to exceed the amount available to satisfy such liabilities, their apportionment and the procedure to be observed in this context shall be governed by an act or, pending such act, by statutory ordinance.

(2) The statutory ordinance referred to in para. (1) above may only make such provision for the apportionment of the sums available to cover the legal liability to pay compensation for damage as is necessary to avert hardships. Such statutory ordinance shall ensure that satisfaction of the claims of the injured persons as a whole shall not be unduly prejudiced by the satisfaction of individual claims.

§ 36 (repealed)

§ 37 Recourse in the case of indemnification

(1) If the operator of a nuclear installation or holder of radioactive material pursuant to § 34 has been indemnified of the liability to pay compensation for damage, recourse may be taken against such an operator of a nuclear installation or against such a holder of radioactive material to the extent of the indemnities paid if

1. the operator has violated the obligations pursuant to § 34, para. (2) or (3); however, recourse shall be excluded to the extent that such violation has not affected the ascertainment of the damage nor the ascertainment or extent of the indemnities paid;

2. the operator or, in the event of a legal entity, its legal representatives, in the discharge of the functions incumbent on them, caused the damage willfully or by gross negligence;

3. the indemnities have been paid because the extent and amount of the financial security provided did not correspond to the extent and amount as determined by the authority in charge.

(2) Recourse may be taken against the operator of a nuclear installation or holder of radioactive material without the existence of the requirements cited in para. (1) if said individual is not a German citizen and his domicile, residence, or place of permanent abode is in a state which is neither a Party to the Treaties of the European Communities, nor to the Paris Convention in conjunction with the Joint Protocol, nor to any other convention with the Federal Republic of Germany concerning liability for nuclear damages which is in force at the time of the nuclear incident.

§ 38 Compensation from the Federation

(1) If a party which suffered from the effects of a nuclear incident within the territorial scope of this Act cannot claim compensation pursuant to the laws of another Contracting State of the Paris Convention or the Vienna Convention in conjunction with the Joint Protocol which apply to such incident because

1. the nuclear incident occurred in the territory of a Non-Contracting State of the Paris Convention or the Vienna Convention in conjunction with the Joint Protocol,

2. the damage was caused by a nuclear incident which is a direct consequence of acts in an armed conflict, hostilities, civil war, insurrection or a grave natural disaster of an exceptional kind,

3. the applicable laws do not provide for any liability for damage to the means of transport upon which the nuclear substances were located at the time of the nuclear incident,

4. the applicable laws do not provide for any liability of the operator if the damage is caused by ionising radiation emitted by another radiation source located in the nuclear installation,

5. the applicable laws provides a shorter limitation period or term of preclusion than is provided for herein, or

6. the total amount available for compensation is lower than the maximum amount of the Governmental indemnification,

the Federation shall grant a compensation up to the maximum amount of the Governmental indemnification.

(2) The Federation shall further grant compensation up to the maximum amount of the Governmental indemnification if the foreign laws applicable to damage suffered

within the territorial scope of this Act, or the provisions of an international treaty, provide for such compensation to be paid to the injured person as, with regard to nature, terms and amount, is far lower than the compensation which the injured person would have been awarded had this Act been applied, or if prosecution in the state in whose territory the harmful event originated has no prospect of success.

(3) Paras. (1) and (2) above shall not apply to injured persons who are not Germans as defined in Article 116 para. (1) of the Basic Law and who do not have their habitual residence within the territorial scope of this Act, unless their mother country had provided, at the time of the nuclear incident, for an arrangement which, in relation to the Federal Republic of Germany, is equivalent as to nature, terms and amount.

(4) Claims under paras. (1) and (2) above shall be lodged with the Federal Office of Administration. Such claims shall lapse three years after the time at which the decision on compensation rendered under foreign or international law has become unappealable, or it becomes apparent that prosecution pursuant to para. (2) has no prospect of success.

§ 39 Exemptions from the indemnities to be paid by the Federation

(1) For purposes of the indemnification pursuant to § 34 and the compensation pursuant to § 38, claims for compensation without precedence pursuant to § 15, paras. (1) to (2) shall not be taken into consideration.

(2) Compensation pursuant to § 29, para. (2) shall only be included in the indemnification pursuant to § 34 and the compensation pursuant to § 38 if the award of a compensation is necessary to avoid grave inequity in view of the particular severity of the injury.

§ 40 Actions against the operator of a nuclear installation located in another Contracting State

(1) If, under the provisions of the Paris Convention, a court within the territorial scope of this Act has jurisdiction over actions for compensation against the operator of a nuclear installation located in another Contracting State of the Paris Convention, the liability of such operator shall be governed by the provisions of this Act.

(2) In derogation of para. (1) the following aspects shall be governed by the laws of the Contracting State in which the nuclear installation is located:

1. the person to be considered as operator,

2. whether the operator's liability will also cover nuclear damage suffered in a Non-Contracting State of the Paris Convention,

3. whether the operator's liability will cover nuclear damage caused by the radiation of another radiation source located in a nuclear installation,

4. whether and to what extent the operator's liability will cover damage to the means of transport upon which the nuclear substances were located at the time of the nuclear incident,

5. up to which maximum amount the operator will be liable,

6. after which period of time the claim against the operator will prescribe or be precluded,

7. whether and to what extent nuclear damage will be compensated in the cases referred to in Article 9 of the Paris Convention.

Chapter 5 – Administrative fines

§§ 41 to 45 *(Repealed)*

§ 46 *Administrative offences*

(1) An administrative offence is committed by any person who wilfully or negligently

1. carries nuclear substances without having furnished proof of the financial security required pursuant to § 4b, para. (1), first or second sentences,

2. erects an installation for the production, treatment, processing or fission of nuclear fuel or for the reprocessing of irradiated nuclear fuel without having the licence required pursuant to § 7, para. (1) sentence 1, also in conjunction with para. (5), sentence 1,

2a. uses a measuring device contrary to the provisions of § 7, para. (1a), sentence 4

2b. fails to install, or to install correctly or promptly, fails to connect, or to connect correctly or promptly, fails to handle, or to handle correctly, or fails to maintain, or to maintain correctly, a measuring device, contrary to the provisions of § 7, para. (1a), sentence 5

2c. fails to have checked, or to promptly have checked, or fails to have certified, or to promptly have certified, the status of the measuring device or the volume of electricity generated, contrary to the provisions of § 7, para. (1a), sentence 7.

2d. fails to give notification, or fails to give accurate or complete or prompt notification, fails to transmit this, or fails to transmit it correctly, completely or promptly, or fails to submit, or to promptly submit, a result or a test certificate, contrary to the provisions of § 7, para. (1c), sentence 1, subparas. 1 or 2 or sentence 2.

2e. fails to give notification, or fails to give correct or complete or prompt notification, contrary to the provisions of § 7, para. (1c), sentence 1, subpara. 3.

3. contravenes a determination pursuant to § 13 para. (1), an enforceable obligation imposed pursuant to § 17, para. (1), second or third sentence, or an enforceable order pursuant to § 19, para. (3),

4. contravenes a statutory ordinance issued under § 11, para. (1) or § 12, para. (1), first sentence, subparas. 1 to 7a, 9 to 11 or 12, or § 12d, para. (6), subpara. 2, or an enforceable order under a statutory ordinance issued under § 12, para. (1), first sentence, subpara. 13, to the extent that, in such statutory ordinance, reference is made to the administrative fines to be imposed under this Section with respect to certain facts or circumstances,

5. fails to carry along the licensing notice in contravention of § 4, para. (5), first sentence, or the certificate referred to in § 4, para. (5), second sentence, or fails to produce upon request such notice or certificate in contravention of § 4, para. (5), third sentence.

(2) Offenders shall be liable to an administrative fine of up to EUR 50 000 in the cases referred to in para. (1), subparas 1, 2, 2a, 2b, 2c, 2e, 3 and 4 and up to EUR 500 in the case referred to in para. (1), subparas. 2d and 5.

(3) The administrative authority as defined in § 36, para. (1), subpara. 1 of the Administrative Offences Act shall be:

1. the Federal Export Office in the cases outlined in para. (1), subpara. 4 insofar as far as the offences in question are contraventions of the compulsory licensing,

notifications or other actions required in relation to the international carriage of radioactive material or a contravention of another associated provision

2. the Federal Office for Radiation Protection in the cases outlined in para. (1), subparas. 2a to 2e.

§§ 47 and 48 (Repealed)

§ 49 Confiscation

If a wilful administrative offense is committed as referred to in § 46, para. (1) subparas. 1, 2, 3 or 4, any object

1. to which the administrative offense relates, or

2. which was used or intended to be used to commit or prepare the offense

may be confiscated.

§§ 50 to 52 (Repealed)

Chapter 6 – Final provisions

§ 53 Registration of damage due to unknown causes

Damage which, in the light of the state-of-the-art of science, has been caused by the effects of radiation emitted by radioactive material, but cannot be traced to any originator, shall be registered with and investigated by the Federal Ministry responsible for nuclear safety and radiation protection.

§ 54 Promulgation of statutory ordinances

(1) Statutory ordinances under §§ 2, 9g, 11, 12, 12b, 12c, 12d, 13, § 21, para. (3), § 21a, para. (2), § 21b, para. (3) and § 23, para. (3) shall be promulgated by the Federal Government. The same shall apply to statutory ordinances under § 10 to the extent exemptions are granted from the requirement of a licence pursuant to § 7. The remaining statutory ordinances provided for herein shall be promulgated by the Federal Ministry responsible for nuclear safety and radiation protection.

(2) The statutory ordinances shall require the consent of the *Bundesrat*. This shall not apply to statutory ordinances whose only purpose it is to replace by other limits the physical, engineering and radiation-biological limits specified in statutory ordinances promulgated under §§ 11 and 12.

(3) The Federal Government may, by statutory ordinance, delegate all or part of the powers referred to in §§ 11 and 12 to the Federal Ministry responsible for nuclear safety and radiation protection.

§ 55 (Repealed)

§ 56 Licences granted under Länder *law*

(1) Any licence, exemption or consent granted under *Länder* law for the erection and operation of installations as defined in § 7 shall continue to be effective. They shall be equivalent to licences granted pursuant to § 7, and the associated obligations shall be equivalent to the obligations imposed pursuant to § 17, para. (1). To the extent a licence issued under *Länder* law is associated with stipulations relating to

the provision, by the operator of the installation, of financial security covering the legal liability for compensations, such stipulations shall constitute, subject to the provisions of para. (2) below, determinations as defined in § 13, para. (1).

(2) The financial security to be provided by the operator of an installation shall be determined by the administrative authority (§ 24, para. (2)) within three months after this Act has taken effect; § 13, para. (1), second sentence, second part of the sentence, shall apply accordingly. If a guarantee is fixed under § 13, para. (4), such guarantee shall have retroactive effect as of the date this Act has come into effect.

§ 57 Limitations

The Explosives Act and the statutory provisions promulgated on the basis of this Act, together with any provisions of *Länder* law in the field of explosives, shall not apply to the handling of nuclear fuel.

§ 57a Transitional provision on the occasion of the unification of Germany

(1) For licences, permits and approvals granted until 30 June 1990, in the area referred to in Article 3 of the Unification Treaty, the following shall apply:

1. Licences and permits for nuclear power plants shall become invalid upon the expiration of 30 June 1995, those for the carriage of radioactive material upon the expiration of 30 June 1992, and all other licences, permits and approvals, except the licences, permits and approvals pursuant to subpara. 4, upon the expiration of 30 June 2005, unless these licences, permits and approvals provide for shorter time limits; the licences, permits and approvals which are subject to the above time limits are deemed to be licences granted under the corresponding provisions of this Act and of the statutory ordinances promulgated hereunder. A licence for a major alteration of an installation or its operation as defined in § 7, para. (1) shall leave a licence granted pursuant to the first sentence unaffected insofar as the licence refers to parts of the installation which are not affected by the alteration.

2. § 18 shall not apply to licences which continue to be valid for a certain period of time as provided for in subpara. 1 above if the licensee is a legal entity which is subject to the Act for the Privatisation and Reorganisation of State-Owned Property (Trusteeship Act) of the German Democratic Republic of 17 June 1990 (GBl. I, No. 33, p. 300).

3. In the case of a conversion of legal entities on the basis of the Trusteeship Act of the German Democratic Republic, the licences, permits and approvals granted shall continue to be valid for the periods of time pursuant to subpara. 1, insofar as an order for such continued validity has not yet been issued at the time the accession becomes effective; the responsible authority shall examine within a reasonable period of time whether the new operator guarantees the continuation of the erection and operation of the installation or of the practice by means of administrative measures and the provision of equipment and personnel. § 18 shall not apply.

4. The consents contained in licences, permits and approvals for the acceptance of further radioactive waste or for the storage thereof for the purpose of disposal, or for the acceptance of further nuclear fuel or other radioactive material for the purposes of storage

a) for the acceptance of further radioactive waste or for the storage thereof for the purposes of disposal or

b) for the acceptance of further nuclear fuel or other radioactive material for the purpose of storage

shall become ineffective as per 27 April 2002; otherwise, these licences, permits and approvals shall continue to exist in accordance with the provisions of this Act. The

licences continuing to exist in accordance with sentence 1 may be amended in line with the provisions of this Act, or directives may be added thereto.

(2) On and after 1 July 1992, carriages of radioactive material which have so far not required any licence in the area referred to in Article 3 of the Unification Treaty shall be subject to the licensing provisions of this Act and the statutory ordinances promulgated hereunder.

§ 57b Operation and closure of the Asse II pit

(1) For the operation and the closure of the Asse II pit the provisions applicable for installations of the Federation pursuant to § 9a, para. (3) shall apply. The installation must be closed without delay. No plan approval according to § 9b shall be required for the operation until the closure. Until the effective date of the plan approval notice for closure the handling of radioactive material shall require a license according to the provisions of this Act or statutory ordinances promulgated on the basis of this Act; insofar § 19 in conjunction with § 24 is not applicable.

(2) The granting of licenses for the acceptance of radioactive waste and for the storage thereof for the purpose of disposal shall be unlawful until the plan approval notice for the closure of the Asse II pit is enacted.

§ 58 Transitional provision

(1) § 4, para. (2), subpara. 7, § 9a, para. (2), sentences 3 to 5 and § 19a shall not apply to installations which are no longer in operation as per 27 April 2002. § 9a, para. (2), sentence 3 shall not apply to installations having adequate interim storage facilities at the site, which have been approved in accordance with § 6 or § 7, as per 27 April 2002.

(2) § 5, paras. (2) and (3) shall not apply to nuclear fuel which is already in government custody as of 27 April 2002, whose surrender to the responsible authority by recognised non-profit-making research institutions has been notified in writing prior to 1 May 2001, or whose transfer has been contractually agreed prior to 1 May 2001. With effect from 1 January 2003, § 5, paras. (2) and (3) shall apply to nuclear fuel from recognised non-profit-making research institutions.

(3) § 7c and § 23, para. (1), subpara. 4a in the valid version up until 26 April 2002 shall continue to apply to any administrative proceedings pending up until that date.

(4) § 21, para. (1a) shall also apply to any administrative proceedings pending as per 11 May 2000, where the costs have not yet been fixed by that date.

(5) § 12b in the valid version up until 31 December 2009 shall continue to apply to any administrative proceedings pending up until that date.

§ 58a Transitional provision relating to the environmental impact assessment

§ 2a shall only apply to projects to which the Act on the Assessment of Environmental Impacts in the version which entered into force on 3 August 2001 is applicable.

§ 59 (Effective date)

Appendix 1

Definitions pursuant to § 2, para. (4)

(1) The terms set forth below shall have the following meanings:

1. “nuclear incident”: any occurrence or succession of occurrences having the same origin which causes damage, provided that such occurrence or succession of occurrences, or any of the damage caused, arises out of or results either from the radioactive properties, or a combination of the radioactive properties with toxic, explosive or other hazardous properties of nuclear fuel or radioactive products or waste, or from ionising radiation emitted by any source of radiation inside a nuclear installation;

2. “nuclear installation”: reactors other than those comprised in any means of transport; factories for the manufacture or processing of nuclear substances, factories for the separation of isotopes of nuclear fuel, factories for the reprocessing of irradiated nuclear fuel; facilities for the disposal of nuclear substances; facilities for the storage of nuclear substances other than storage incidental to the carriage of such substances; two or more nuclear installations of one operator which are located on the same site shall, together with any other premises on that site where radioactive material is held, be treated as a single nuclear installation;

3. “nuclear fuel”: fissionable material in the form of uranium metal, alloy, or chemical compound (including natural uranium), and plutonium metal, alloy, or chemical compound;

4. “radioactive products or waste”: radioactive material produced in or made radioactive by exposure to the radiation incidental to the process of producing or utilising nuclear fuel, but does not include

a) nuclear fuel,

b) radioisotopes outside a nuclear installation which have reached the final stage of fabrication so as to be usable for any industrial, commercial, agricultural, medical, scientific or educational purpose;

5. “nuclear substances”: nuclear fuel (other than natural and depleted uranium) and radioactive products and waste;

6. “operator of a nuclear installation”: the person designated or recognised by the competent authority as the operator of that installation.

(2) The term Special Drawing Rights as used herein shall mean the Special Drawing Rights of the International Monetary Fund (BGBl.II 1978, p. 13) as used by it for its own operations and transactions.

[Note of translator: The definitions in Appendix 1 follow to a large extent the wording of the Paris Convention on Third Party Liability in the Field of Nuclear Energy (1960).]

Appendix 2

Allowances for legal liability and financial security

§ 4, para. (3), § 4b, para. (2) and § 25, para. (5) shall apply to nuclear fuel or nuclear substances the activity or quantity of which

1. in a single consignment or package, or

2. at a single business or independent branch or, in the case of persons not engaged in business, at the place of the applicant’s practice,

does not exceed 10^5 times the allowance and which, in the case of enriched uranium, does not contain more than 350 grams of uranium 235. The allowance shall be the activity or quantity up to which the handling of such nuclear fuel or

material does not require a licence or notification hereunder or under a statutory ordinance issued hereunder.

Appendix 3 (to § 7, para. (1a))

Electricity volumes pursuant to § 7, para. (1a)

Installation	Electricity volumes as of 1 January 2000 (TWh net)	Start of commercial operation
Obrigheim	8.70	1 April 1969
Stade	23.18	19 May1972
Biblis A	62.00	26 February 1975
Neckarwestheim 1	57.35	1 December 1976
Biblis B	81.46	31 January 1977
Brunsbüttel	47.67	9 February 1977
Isar 1	78.35	21 March 1979
Unterweser	117.98	6 September 1979
Philippsburg 1	87.14	26 March 1980
Grafenrheinfeld	150.03	17 June 1982
Krümmel	158.22	28 March 1984
Gundremmingen B	160.92	19 July 1984
Philippsburg 2	198.61	18 April 1985
Grohnde	200.90	1 February 1985
Gundremmingen C	168.35	18 January 1985
Brokdorf	217.88	22 December 1986
Isar 2	231.21	9 April 1988
Emsland	230.07	20 June 1988
Neckarwestheim 2	236.04	15 April 1989
sum	2516.06	
Mülheim-Kärlich *)	107.25	
Total	2623.31	

*) The electricity volume of 107.25 TWh for the installation Kernkraftwerk Mülheim-Kärlich may be transferred to the installations Emsland, Neckarwestheim 2, Isar 2, Brokdorf and Gundremmingen B and C.

Appendix 4

Safety Review pursuant to § 19a, para. (1)

Installation	Date		
Obrigheim	31 December 1998	Grafenrheinfeld	31 October 2008
Stade	31 December 2000	Krümmel	30 June 2008
Biblis A	31 December 2001	Gundremmingen B/C	31 December 2007
Biblis B	31 December 2000	Grohnde	31 December 2000
Neckarwestheim 1	31 December 2007	Philippsburg 2	31 October 2008
Brunsbüttel	30 June 2001	Brokdorf	31 October 2006
Isar 1	31 December 2004	Isar 2	31 December 2009
Unterweser	31 December 2001	Emsland	31 December 2009
Philippsburg	31 August 2005	Neckarwestheim 2	31 December 2009

Sweden

The Swedish Radiation Safety Authority's regulations concerning clearance of materials, rooms, buildings and land in practices involving ionising radiation

This is an unofficial translation. In the event of any discrepancy between this English version and the Swedish original, the latter will take precedence.

Swedish Radiation Safety Authority Regulatory Code

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On the basis of Sections 4, 7 and 8 of the Radiation Protection Ordinance (1988:293) and on the basis of Section 15a of the Nuclear Activities Ordinance (1984:14), the Swedish Radiation Safety Authority hereby issues[1] the following regulations.

Introductory provisions

Section 1

The purpose of these regulations is to, in a satisfactory way from the perspective of radiation protection, enable the rational management and use of materials, rooms, buildings and land that may have been contaminated by radioactive substances in practices involving ionising radiation.

Section 2

In these regulations, "clearance" means that the Radiation Protection Act (1988:220) and the Act on Nuclear Activities (1984:3) shall no longer be applied to materials, rooms, buildings or land.

Terms and expressions used in these regulations have the same meanings as in the Radiation Protection Act (1988:220), the Act on Nuclear Activities (1984:3) and the Waste Ordinance (2011:927).

1. Notification has been made in accordance with Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations.

Area of application

Section 3

These regulations apply to materials (including waste), rooms, buildings and land that may have been contaminated by radioactive substances during practices involving ionising radiation that are or were previously carried out under a licence in accordance with the Radiation Protection Act (1988:220) or the Act on Nuclear Activities (1984:3).

Section 4

The regulations are not applicable to:

1. releases of radioactive substances into air or water,

2. naturally occurring radioactive substances that are not covered by the licence for the relevant practice involving ionising radiation,

3. practices that only involve naturally occurring radioactive substances and that are carried out without intended use of the radioactive, fissile or fertile properties of these radioactive substances, nor

4. radioactive substances from patients owing to examination or treatment in nuclear medicine.

Clearance

Section 5

Materials that have been checked in accordance with Sections 7 to 9 and whose content of radioactive substances is lower than the clearance levels stipulated in Sections 11 to 14 are cleared.

Waste that has been cleared is covered by the provisions of the Environmental Code and the Waste Ordinance (2011:927).

Certain materials that have been cleared are covered by the requirements of the Act on Transport of Dangerous Goods (2006:263) or Commission Regulation (Euratom) No 302/2005 of 8 February 2005 on the application of Euratom safeguards.[2]

Section 6

When a licensed practice involving ionising radiation is decommissioned or moved, the licensee shall take all measures that are needed for the clearance of rooms, buildings and land.

Decisions on the clearance of rooms, buildings and land are taken by the Swedish Radiation Safety Authority on application by the licensee.

Rooms and buildings that have been checked in accordance with Sections 7 to 9 and whose content of radioactive substances is lower than the clearance levels stipulated in Section 15 may, without any decision on clearance, be used by the licensee for purposes other than practices involving ionising radiation. However, an application for clearance must be submitted to the Swedish Radiation Safety

2. OJ L 54, 28.2.2005, p. 1 (Celex 32005R0302).

Authority when the licensee intends to cease its use of the room or building in question, provided that the Swedish Radiation Safety Authority does not require such application to be submitted earlier.

Measures for clearance

Section 7

Materials, rooms, buildings and land shall be checked for radioactive substances before clearance. Such checks shall consist of measurements or calculations that have been verified by measurements.

Materials subject to clearance in accordance with Section 12 or Section 13 shall be measured based on the entire quantity of materials or on a representative sample thereof.

The methods for and extent of checks shall be adapted to the assessed presence of radioactive contamination and to the characteristics of the material, room, building or soil. The methods shall meet Swedish or international standards, or guidelines issued by the Swedish Radiation Safety Authority.

Section 8

A control programme in writing is to have been drawn up before a check is conducted in accordance with Section 7. The control programme shall:

1. specify the methods for checks and their extent,

2. state the party authorised to conduct the checks, and

3. contain information about quality assurance, self-assessment and documentation of results.

A control programme for clearance of more than 100 tonnes of materials per calendar year from an individual licence holder or for clearance of rooms, buildings or land contaminated by radioactive substances shall be submitted to the Swedish Radiation Safety Authority before the checks are conducted.

Section 9

A check and its results must be documented. The documents shall be retained until clearance has been completed and for ten years thereafter, or during the period of time indicated by the Swedish Radiation Safety Authority in a specific decision on clearance.

The provisions of the first paragraph are not applicable to materials that have been cleared in accordance with Section 14.

Section 10

It is prohibited to dilute radioactively contaminated materials for the purpose of achieving clearance. Liquids shall be purified of radioactive particles as far as is practical before clearance.

Clearance levels

Section 11

The clearance level for radioactive contamination on the surface of a material amounts to 40 kilobecquerel per square metre for the beta- and gamma-emitting radionuclides that are the most common in the practice, calculated as a mean value over a maximum area of 0.03 square metres. The clearance level for alpha-emitting radionuclides in the practice amounts to 4 kilobecquerel per square metre, calculated as a mean value over a maximum area of 0.03 square metres. For clearance of objects smaller than 0.03 square metres, 0.03 square metres may be used as the total area for calculation of the mean value of surface contamination.

The clearance levels stated in the first paragraph are not applicable to liquids, finely dispersed materials nor other materials lacking a surface that can be checked.

Section 12

As far as concerns materials other than those covered by Sections 13 and 14, the clearance levels stated in Section 11 for radioactive contamination on surfaces shall be applied to the extent that these levels are applicable. Beyond this, the clearance levels provided in Appendix 1 shall be applied as shown in Appendix 4 for the concentration of radioactive substances.

Section 13

For used oil sent for incineration and hazardous waste sent for incineration or disposal, the clearance levels of Section 11 for radioactive contamination on surfaces shall be applied to the extent that these levels are applicable. Beyond this, the clearance levels provided in Appendix 2 shall be applied as shown in Appendix 4 for the concentration of radioactive substances.

Section 14

The clearance levels as stated for radioactive contamination on surfaces under Section 11 apply to tools and equipment used temporarily in the practice involving ionising radiation and which, after their clearance, are intended to be used in another practice provided that:

1. the objects may only have been contaminated on the surfaces accessible for checks for contamination, and

2. the total contamination by radioactive substances does not exceed the exemption levels for total activity in accordance with Section 2, first paragraph, item 1 of the Radiation Protection Ordinance (1988:293).

Section 15

As far as concerns rooms and buildings, the clearance levels provided in Appendix 3 shall be applied as shown in Appendix 4.

Section 16

Clearance levels for land are decided by the Swedish Radiation Safety Authority on a case-by-case basis.

Competence

Section 17

Personnel performing checks and applying these regulations are to have sufficient competence for the purpose of these regulations. The personnel are to have good knowledge about the radioactive substances occurring in the practice and the extent to which they may occur in the form of contamination. The personnel shall, as a minimum, have undergone training covering:

1. harmful effects and risks related to ionising radiation,

2. rules and routines for clearance, and

3. methods for sampling and measurement, including kinds of uncertainty and limitations of the methods.

Personnel training programmes are to be documented.

Reporting

Section 18

Licence holders that during a calendar year have cleared more than 1 000 kilograms of materials in accordance with Section 12 or Section 13 shall by 31 March of the following year submit a written report to the Swedish Radiation Safety Authority. Such report shall specify the following for the cleared materials:

1. quantities and types of materials,

2. nuclide-specific concentration of radioactive substances, and

3. recipients of cleared used oil and hazardous waste.

Other clearance options and exemptions

Section 19

The Swedish Radiation Safety Authority may, on a case-by-case basis, decide on clearance levels other than those specified in these regulations.

Section 20

If there are particular grounds, the Swedish Radiation Safety Authority may grant exemptions from these regulations if this can be done without circumventing the aim of the regulations.

These regulations enter into force on 1 January 2012, when the Swedish Radiation Safety Authority's regulations (SSMFS 2008:39) concerning the discharging of goods and oil from controlled areas at nuclear facilities shall cease to apply.

Swedish Radiation Safety Authority

Ann-Louise Eksborg

Henrik Efraimsson

Appendix 1. Clearance levels for materials

Nuclide		Clearance level (Bq/g)
H-3		100
Be-7		10
C-14		10
Na-22		0.1
P-32		100
P-33		100
S-35		100
Cl-36		1
K-40		1
Ca-45		100
Ca-47		1
Sc-46		0.1
Sc-47		10
Sc-48		0.1
V-48		0.1
Cr-51		10
Mn-52		0.1
Mn-53		1000
Mn-54		0.1
Fe-55		100
Fe-59		0.1
Co-56		0.1
Co-57		1
Co-58		0.1
Co-60		0.1
Ni-59		100
Ni-63		100
Zn-65		1
Ge-71		10000
As-73		100
As-74		1
As-76		1
As-77		100
Se-75		1
Br-82		0.1
Rb-86		10
Sr-85		1
Sr-89		10
Sr-90+		1
Y-90		100
Y-91		10
Zr-93		10
Zr-95+		0.1
Nb-93m		100
Nb-94		0.1
Nb-95		1
Mo-93		10
Mo-99+		1

Nuclide		Clearance level (Bq/g)
Tc-96		0.1
Tc-97		10
Tc-97m		10
Tc-99		1
Ru-97		1
Ru-103+		1
Ru-106+		1
Rh-105		10
Pd-103+		1000
Ag-105		1
Ag-108m+		0.1
Ag-110m+		0.1
Ag-111		10
Cd-109+		10
Cd-115+		1
Cd-115m+		10
In-111		1
In-114m+		1
Sn-113+		1
Sn-125		1
Sb-122		1
Sb-124		0.1
Sb-125+		1
Te-123m		1
Te-125m		100
Te-127m+		10
Te-129m+		10
Te-131m+		1
Te-132+		0.1
I-125		1
I-126		1
I-129		0.1
I-131+		1
Cs-129		1
Cs-131		1000
Cs-132		1
Cs-134		0.1
Cs-135		10
Cs-136		0.1
Cs-137+		1
Ba-131		1
Ba-140		0.1
La-140		0.1
Ce-139		1
Ce-141		10
Ce-143		1
Ce-144+		10
Pr-143		100

Nuclide		Clearance level (Bq/g)
Nd-147		10
Pm-147		100
Pm-149		100
Sm-151		100
Sm-153		10
Eu-152		0.1
Eu-154		0.1
Eu-155		10
Gd-153		10
Tb-160		0.1
Dy-166		10
Ho-166		10
Er-169		100
Tm-170		10
Tm-171		100
Yb-175		10
Lu-177		10
Hf-181		1
Ta-182		0.1
W-181		10
W-185		100
Re-186		100
Os-185		1
Os-191		10
Os-193		10
Ir-190		0.1
Ir-192		0.1
Pt-191		1
Pt-193m		100
Au-198		1
Au-199		10
Hg-197		10
Hg-203		1
Tl-200		1
Tl-201		10
Tl-202		1
Tl-204		10
Pb-203		1
Pb-210+		0.01
Bi-206		0.1
Bi-207		0.1
Bi-210		10
Po-210		0.01
Ra-223+		1
Ra-224+		1
Ra-225		1
Ra-226+		0.01
Ra-228+		0.01
Ac-227+		0.01
Th-227		1

Nuclide		Clearance level (Bq/g)
Th-228+		0.1
Th-229+		0.1
Th-230		0.1
Th-231		100
Th-232+		0.01
Th-234+		10
Pa-230		1
Pa-231		0.01
Pa-233		1
U-230+		1
U-231		10
U-232+		0.1
U-233		1
U-234		1
U-235+		1
U-236		1
U-237		10
U-238+		1
Np-237+		0.1
Np-239		10
Pu-236		0.1
Pu-237		10
Pu-238		0.1
Pu-239		0.1
Pu-240		0.1
Pu-241		1
Pu-242		0.1
Pu-244+		0.1
Am-241		0.1
Am-242m+		0.1
Am-243+		0.1
Cm-242		1
Cm-243		0.1
Cm-244		0.1
Cm-245		0.1
Cm-246		0.1
Cm-247+		0.1
Cm-248		0.1
Bk-249		10
Cf-246		10
Cf-248		1
Cf-249		0.1
Cf-250		0.1
Cf-251		0.1
Cf-252		0.1
Cf-253+		1
Cf-254		0.1
Es-253		1
Es-254+		0.1
Es-254m+		1

Appendix 2. Clearance levels for used oil and hazardous waste

Nuclide		Clearance level (Bq/g)
H-3		1000
Be-7		100
C-14		100
Na-22		1
P-32		1000
P-33		1000
S-35		1000
Cl-36		10
K-40		10
Ca-45		1000
Ca-47		10
Sc-46		1
Sc-47		100
Sc-48		1
V-48		1
Cr-51		100
Mn-52		1
Mn-53		10000
Mn-54		1
Fe-55		1000
Fe-59		1
Co-56		1
Co-57		10
Co-58		1
Co-60		1
Ni-59		1000
Ni-63		1000
Zn-65		10
Ge-71		10000
As-73		1000
As-74		10
As-76		10
As-77		1000
Se-75		10
Br-82		1
Rb-86		100
Sr-85		10
Sr-89		100
Sr-90+		10
Y-90		1000
Y-91		100
Zr-93		100
Zr-95+		1
Nb-93m		1000
Nb-94		1
Nb-95		10
Mo-93		100
Mo-99+		10
Tc-96		1

Nuclide		Clearance level (Bq/g)
Tc-97		100
Tc-97m		100
Tc-99		10
Ru-97		10
Ru-103+		10
Ru-106+		10
Rh-105		100
Pd-103+		1000
Ag-105		10
Ag-108m+		1
Ag-110m+		1
Ag-111		100
Cd-109+		100
Cd-115+		10
Cd-115m+		100
In-111		10
In-114m+		10
Sn-113+		10
Sn-125		10
Sb-122		10
Sb-124		1
Sb-125+		10
Te-123m		10
Te-125m		1000
Te-127m+		100
Te-129m+		100
Te-131m+		10
Te-132+		1
I-125		10
I-126		10
I-129		1
I-131+		10
Cs-129		10
Cs-131		1000
Cs-132		10
Cs-134		1
Cs-135		100
Cs-136		1
Cs-137+		10
Ba-131		10
Ba-140		1
La-140		1
Ce-139		10
Ce-141		100
Ce-143		10
Ce-144+		100
Pr-143		1000
Nd-147		100
Pm-147		1000

Nuclide		Clearance level (Bq/g)
Pm-149		1000
Sm-151		1000
Sm-153		100
Eu-152		1
Eu-154		1
Eu-155		100
Gd-153		100
Tb-160		1
Dy-166		100
Ho-166		100
Er-169		1000
Tm-170		100
Tm-171		1000
Yb-175		100
Lu-177		100
Hf-181		10
Ta-182		1
W-181		100
W-185		1000
Re-186		1000
Os-185		10
Os-191		100
Os-193		100
Ir-190		1
Ir-192		1
Pt-191		10
Pt-193m		1000
Au-198		10
Au-199		100
Hg-197		100
Hg-203		10
Tl-200		10
Tl-201		100
Tl-202		10
Tl-204		100
Pb-203		10
Pb-210+		0.1
Bi-206		1
Bi-207		1
Bi-210		100
Po-210		0.1
Ra-223+		10
Ra-224+		10
Ra-225		10
Ra-226+		0.1
Ra-228+		0.1
Ac-227+		0.1
Th-227		10
Th-228+		1

Nuclide		Clearance level (Bq/g)
Th-229+		1
Th-230		1
Th-231		1000
Th-232+		0.1
Th-234+		100
Pa-230		10
Pa-231		0.1
Pa-233		10
U-230+		10
U-231		100
U-232+		1
U-233		10
U-234		10
U-235+		10
U-236		10
U-237		100
U-238+		10
Np-237+		1
Np-239		100
Pu-236		1
Pu-237		100
Pu-238		1
Pu-239		1
Pu-240		1
Pu-241		10
Pu-242		1
Pu-244+		1
Am-241		1
Am-242m+		1
Am-243+		1
Cm-242		10
Cm-243		1
Cm-244		1
Cm-245		1
Cm-246		1
Cm-247+		1
Cm-248		1
Bk-249		100
Cf-246		100
Cf-248		10
Cf-249		1
Cf-250		1
Cf-251		1
Cf-252		1
Cf-253+		10
Cf-254		1
Es-253		10
Es-254+		1
Es-254m+		10

Appendix 3. Clearance levels for rooms and buildings

"Clearance level for use" applies to rooms intended to be used after clearance. "Clearance level for demolition" applies to buildings intended to be demolished after clearance.

Nuclide	Clearance level for use (kBq/m²)	Clearance level for demolition (kBq/m²)
H-3	100000	100000
C-14	10000	100000
Na-22	10	100
S-35	10000	1000000
Cl-36	1000	1000
K-40	100	100
Ca-45	10000	1000000
Sc-46	10	100
Mn-53	100000	100000
Mn-54	10	100
Fe-55	100000	100000
Co-56	10	100
Co-57	100	1000
Co-58	100	100
Co-60	10	10
Ni-59	1000000	1000000
Ni-63	100000	1000000
Zn-65	10	100
As-73	10000	100000
Se-75	100	1000
Sr-85	100	1000
Sr-90+	1000	1000
Y-91	10000	1000000
Zr-93	10000	10000
Zr-95+	10	100
Nb-93m	10000	1000000
Nb-94	10	100
Mo-93	1000	10000
Tc-97	1000	10000
Tc-97m	1000	10000
Tc-99	1000	1000
Ru-106+	100	1000
Ag-108m+	10	100
Ag-110m+	10	100
Cd-109+	1000	100000
Sn-113+	100	1000
Sb-124	10	100
Sb-125+	10	100
Te-123m	100	1000
Te-127m+	1000	100000
I-125	1000	100000
I-129	100	100
Cs-134	10	100
Cs-135	10000	100000

Nuclide	Clearance level for use (kBq/m²)	Clearance level for demolition (kBq/m²)
Eu-152	10	100
Eu-154	10	100
Eu-155	100	1000
Gd-153	100	1000
Tb-160	10	100
Tm-170	10000	100000
Tm-171	10000	1000000
Ta-182	10	100
W-181	1000	10000
W-185	10000	10000000
Os-185	100	100
Ir-192	100	1000
Tl-204	10000	10000
Pb-210+	10	10
Bi-207	10	100
Po-210	100	1000
Ra-226+	10	10
Ra-228+	10	100
Th-228+	1	10
Th-229+	1	10
Th-230	10	10
Th-232	1	10
Pa-231	1	1
U-232	1	10
U-233	10	100
U-234	10	100
U-235+	10	100
U-236	10	100
U-238+	10	100
Np-237+	10	100
Pu-236	10	100
Pu-238	10	10
Pu-239	1	10
Pu-240	1	10
Pu-241	100	1000
Pu-242	10	10
Pu-244+	10	10
Am-241	10	10
Am-242m+	10	10
Am-243+	10	10
Cm-242	10	1000
Cm-243	10	100
Cm-244	10	100
Cm-245	1	10

Cs-137+	10	100
Ce-139	100	1000
Ce-144+	100	1000
Pm-147	10000	100000
Sm-151	100000	100000

Cm-246	10	10
Cm-247+	10	10
Cm-248	1	10
Bk-249	1000	10000
Cf-248	10	100
Cf-249	1	10
Cf-250	10	100
Cf-251	1	10
Cf-252	10	100
Cf-254	10	100
Es-254+	10	100

Appendix 4. Rules for the application of nuclide-specific clearance levels

1. When the nuclide-specific clearance levels are being applied, the sum of fractions of the clearance levels for the radionuclides present must be less than or equal to 1, i.e. the following summation formula shall be applied:

$$\sum_{i=1}^{n} \frac{C_i}{C_{FNi}} \leq 1$$

Where:

ci is the total activity of nuclide i per mass unit or surface unit (Bq/g or kBq/m2),

cFNi is the clearance level for nuclide i, and

n is the number of nuclides occurring

2. The activity concentration of radioactive substances in materials subject to clearance may be calculated as a mean value of the entire quantity in question or a maximum of 1 000 kilograms. The limit of 1 000 kilograms is not applicable to thoroughly mixed liquids.

3. The clearance levels for rooms and buildings shall be applied to each square metre of the surfaces. Radioactive substances below surfaces are to be attributed to such surface and included when comparison is made with the clearance levels.

4. Daughter nuclides in accordance with Appendix 5 need not be included if their level of activity is lower than or the same as the level of activity of the parent nuclide.

5. If a radioactive substance without a specified clearance level occurs, the Swedish Radiation Safety Authority must be contacted for a decision on the clearance level to apply. For nuclides with half-lives shorter than 1 day, 0.1 becquerel per gram may be used as a default value.

Appendix 5. Daughter nuclides considered

Daughter nuclides assumed to occur at the same levels of activity as the parent nuclide and whose dose contributions were included when establishing the clearance level for the parent nuclide (designated by '+' in Appendices 1 to 3).

Parent nuclide	Daughter nuclide(s)
Sr-90	Y-90
Zr-95	Nb-95m
Mo-99	Tc-99m
Ru-103	Rh-103m
Ru-106	Rh-106
Pd-103	Rh-103m
Ag-108m	Ag-108
Ag-110m	Ag-110
Cd-109	Ag-109m
Cd-115	In-115m
Cd-115m	In-115m
In-114m	In-114
Sn-113	In-113m
Sb-125	Te-125m
Te-127m	Te-127
Te-129m	Te-129
Te-131m	Te-131
Te-132	I-132
I-131	Xe-131m
Cs-137	Ba-137m
Ce-144	Pr-144, Pr-144m
Pb-210	Bi-210, Po-210
Ra-223	Rn-219, Po-215, Pb-211, Bi-211, Tl-207
Ra-224	Rn-220, Po-216, Pb-212, Bi-212, Tl-208
Ra-226	Rn-222, Po-218, Pb-214, Bi-214, Po-214
Ra-228	Ac-228
Ac-227	Th-227, Fr-223, Ra-223, Rn-219, Po-215, Pb-211, Bi-211, Tl-207, Po-211
Th-228	Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208
Th-229	Ra-225, Ac-225, Fr-221, At-217, Bi-213, Tl-209, Pb-209
Th-232	Ra-228, Ac-228, Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208
Th-234	Pa-234m, Pa-234
U-230	Th-226, Ra-222, Rn-218, Po-214
U-232	Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208
U-235	Th-231
U-238	Th-234, Pa-234m, Pa-234
Np-237	Pa-233
Pu-244	U-240, Np-240m, Np-240
Am-242m	Np-238
Am-243	Np-239
Cm-247	Pu-243
Cf-253	Cm-249
Es-254	Bk-250
Es-254m	Fm-254

The Swedish Radiation Safety Authority's general advice on the application of the regulations concerning clearance of materials, rooms, buildings and land in practices involving ionising radiation

issued on 20 October 2011

SSMFS 2011:2

The Swedish Radiation Safety Authority hereby issues the following general advice.

Section 7

Remedial action should be considered when checking materials, rooms and buildings for radioactive substances. Loose radioactive contamination should be removed if this can be done using straightforward methods such as wiping down or washing. Loose radioactive contamination should be checked by taking random samples. The ambition of remedial action should be one-tenth of the clearance levels stipulated by Section 11.

Systems, equipment and components that may be contaminated by radioactive substances and which are not intended to be used after their clearance should be dismantled and removed with the aim of facilitating remedial action and checks for radioactive substances prior to clearance of rooms or buildings.

This general advice applies as of 1 January 2012.

Swedish Radiation Safety Authority

Ann-Louise Eksborg

Henrik Efraimsson

News briefs

International Nuclear Law Association

The next congress of the International Nuclear Law Association (INLA) will take place in Manchester, United Kingdom, from 8 October until 11 October 2012. The congress venue will be the Hilton Hotel, Manchester. The main theme of the congress will be: "The Evolution of Nuclear Law after Fukushima".

Nuclear Law Association (India) First Annual Conference, 17-18 February 2012, New Delhi, India

The Nuclear Law Association (NLA) of India held its first annual conference titled "Nuclear Energy Development in India: Role of Law and Legal Institutions" on 17-18 February 2012 in New Delhi, India. The purpose of the conference was to discuss the role of law and legal institutions in India's nuclear energy programme.

NLA was established in New Delhi, India in 2011. The association is a forum for the legal community to discuss issues relating to peaceful use of nuclear energy in India. NLA aims to promote knowledge sharing and influence policy formulation through seminars, research and outreach. More details are available at: www.nlain.org.

Approximately 80 delegates including lawyers, researchers, industry representatives, academicians, members of the scientific and regulatory community and students participated in the conference. The sub-themes of the event were Nuclear Policy, Law and Governance, Nuclear Regulatory Process and Nuclear Liability and Compensation.

Welcoming the participants, the NLA chairman explained the reasons for setting up the association, describing the objectives and activities the association plans to pursue. Justice Rajendra Babu, former Chief Justice of India and chairman of National Human Rights Commission, linked the necessity of public support to run a country's nuclear energy programme successfully in his presidential address. Further, he observed that national nuclear energy legislation must provide adequate means for encouraging public participation in activities in the nuclear field. Dr. R.B. Grover, Principal Advisor to Atomic Energy Commission, spelt out India's nuclear energy programmes, plans and policies in his inaugural address. Dr. Grover stated that when comparing nuclear energy with other energy options, in view of the expected substantial increase in demand for electricity, nuclear energy is an option which needs to be pursued vigorously. He underlined that although coal currently looks plentiful economically-viable coal resources may not last for more than five to six decades. He noted that the potential of hydro and renewable resources is modest at best. He stated that the pursuit of a closed fuel cycle will continue to be an integral part of India's nuclear power policy.

In the panel session, in response to the question of whether the judiciary will play a major role through "Public Interest Litigation", Shyam Divan, Senior Advocate Supreme Court of India, observed that courts may take up many such matters in the coming years relating to nuclear energy. However, this practice should be viewed in

the context of helping and clarifying the laws. With respect to the role of political parties in nuclear energy programmes, it was pointed out that positive consensus seems to exist with regard to indigenous nuclear programmes that do not rely on imported technology. However, if large scale expansion involves the use of imported reactors or related technology and materials, major differences seem to persist on various issues including the parameters of international co-operation, liability law and rules, regulatory structure, siting of nuclear power plants and other related issues.

India's nuclear regulatory authority was a major subject of discussion, specifically its role in the proposed regulatory structure. The Chairman of Atomic Energy Regulatory Board (AERB), Dr. S.S. Bajaj summarised the performance of the AERB to date and explained the rationale behind the regulatory structure as it stands. He emphasised that regulatory control of nuclear power plants in India involves several rigorous approval stages during siting, construction (typically up to three stages), commissioning (several stages culminating in full power operation), regular operation and decommissioning. The Nuclear Safety Regulatory Authority Bill, 2011 which is currently in the Parliament and provides for the creation of new regulatory bodies that will subsume the functions of AERB, was analysed in detail. There conference participants expressed significant differences of opinion as to the sincerity and intensity of public consultation undertaken prior to the establishment of nuclear power plants and the nature of information made available to the public.

The panel session on liability and compensation was chaired by Patrick Reyners, the former Head of Legal Affairs of the OECD Nuclear Energy Agency. Mr. Reyners described the evolution of international nuclear liability law and its future direction in the environment after the accident at the TEPCO Fukushima Daiichi nuclear power plant. India's Civil Liability for Nuclear Damage Act, 2010 and Rules were discussed with respect to interpretation and implementation issues. The expert panel was unanimous in its opinion that a country has the full right to draft a liability law that suits its needs, based on unique circumstances. However, it was felt that the recently enacted Rules, instead of clarifying provisions of law, seem to have further complicated the interpretation of the Civil Liability for Nuclear Damage Act, 2010. With respect to the establishment of an insurance pool in India, representatives of the insurance company that was tasked to set up an insurance pool stated that the inspection requirements of international insurance pools have yet to be met and this impediment is causing delays to the establishment of an insurance pool in India.

NLA is planning to organise a second annual conference in Mumbai sometime in March-April 2013.

World Nuclear University

The WNU Summer Institute 2012 will be held on 7 July-18 August 2012 at Christ Church College Oxford, United Kingdom. More information is available at: www.world-nuclear-university.org.

Bibliography

The Role of the UN Security Council in the Strengthening of the Withdrawal Clause of the NPT (2011) by Zoryana Vovchok

This comprehensive and impressive study analyses a variety of timely and significant issues with respect to the UN Security Council and its mandate, authority, and practice with respect to nuclear non-proliferation matters, in particular the Non-Proliferation Treaty (NPT). This significant publication of 384 pages, excluding annexes and bibliography, is a must-read and essential reference book for students and professionals alike.

The author assesses the role of the UN Security Council in addressing withdrawal from the nuclear Non-Proliferation Treaty and includes a brief negotiating history of the NPT by way of background. The author also assesses the powers of the UN Security Council under the UN Charter to determine whether it possesses the mandate to address announcements of withdrawal by a state from the NPT and examines the options available to the UN Security Council in this regard. The author also provides a unique and comprehensive assessment of the reactions of the NPT States to North Korea's announcements of withdrawal from the NPT in 1993 and 2003. She analyses national statements, working papers and the final documents of the NPT preparatory committees and review conferences during which this issue had been discussed, covering the period from 1993 to 2010. To date, this book contains the only analysis of the reactions of the UN Security Council and NPT States to North Korea's announcements and offers practical suggestions as to how the Security Council could address such matters in the future.

The author provides a critical assessment of the NPT and describes the scope of the NPT including its substantive provisions and content in light of UN General Assembly Resolution 2028 (1965). The author studies the NPT withdrawal clause and the competence of the UN Security Council with respect thereto, analysing its powers and focusing on the negotiations of the NPT withdrawal clause, paying particular attention to procedural requirements for withdrawal and the positions of the negotiating States with regard to the powers of the UN Security Council. The author studies the practice of withdrawal from the NPT and the role that the UN Security Council played during the DPRK nuclear crises in 1993 and 2003. Particular attention is paid to the competence of the UN Security Council under the UN Charter to address a withdrawal from the NPT. For this purpose, the author studies the negotiations on the powers of the Security Council at the United Nations Conference on the International Organization (UNCIO), the interpretation of the UN Charter on the powers of the UNSC under Articles 24 and 25 of the UN Charter as well as the Security Council's powers to determine a "threat to the peace" under Article 39 of the UN Charter. The author also addresses the Security Council's practice of determination of a "threat to the peace" during the Cold War and in the post-Cold War era and the actions in relation to the maintenance of international peace and security under Chapter VII of the UN Charter. Most importantly, the book provides an assessment of a possible text of resolutions – preventive generic and case specific resolutions – that can be passed by the Security Council in case of an announcement of withdrawal from the NPT.

This book will be of interest to nuclear policy-makers, diplomats, and UN staff working in the field of nuclear non-proliferation and arms control as well as to students of diplomacy, international law and nuclear non-proliferation, and those professionals and students whose studies and interests include the Security Council and the NPT.

The Role of the UN Security Council in the Strengthening of the Withdrawal Clause of the NPT was published by LAP LAMBERT Academic Publishing in 2011 and is only available in English. Dr. Zoryana Vovchok is Policy Planning Officer in the Director General's Office for Policy (DGOP) at the International Atomic Energy Agency (IAEA) in Vienna, Austria and was a member of the IAEA Delegation to the 2010 NPT Review Conference and the 2008-09 NPT PrepCom sessions. She holds a PhD in International Studies, major in International Law, an MA in International Studies, an MA in International Law, and a Diploma in International Nuclear Law from the International School of Nuclear Law (ISNL). At the IAEA, Dr. Vovchok has been working in the areas of nuclear non-proliferation (IAEA safeguards and verification of nuclear programmes of states) and nuclear security. She has also been involved in the development of innovative nuclear projects in the framework of international co-operation in nuclear field including multilateral approaches to the nuclear fuel cycle.

This book was based on a PhD dissertation that was started prior to employment with the IAEA and the book represents only personal views and not those of the IAEA.

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