

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

by Lutz Strack*

I. Introduction

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

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

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

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

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

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

A. The Multilateral Trade Regime of the WTO

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

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

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

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

II. *The World Trade Organization (WTO)*

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

The Uruguay Round has significantly increased the role given to the rule of law in the international trading system. The new WTO agreements and provisions are more precise and more detailed than the old General Agreement on Tariffs and Trade (“GATT 1947”). The enlargement of trade areas covered by the WTO as opposed to the previous GATT 1947 reduces the scope remaining for unilateral action by individual states. Besides creating a permanent trade institution and introducing the biggest trade liberalisation in history, the WTO Agreement⁵ provides the world trading system with the means to confront the considerable challenges facing the world economy today: the WTO has primary responsibility for establishing rules for trade in goods and services, and the protection of intellectual property rights. The WTO aims at facilitating international trade in order to contribute to international economic growth and economic welfare. In addition, the WTO Agreement refers to the principle of sustainable development and to the protection and preservation of the environment.⁶

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

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

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

III. *The GATT and its core principles*

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

IV. *The GATS and its core principles*

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

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

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

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

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

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

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

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

B. Transboundary Movement of Radioactive Waste

I. The definition of radioactive waste

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

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

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

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

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

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

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

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

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

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

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

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16. Treaty establishing the European Atomic Energy Community, 25 March 1957 [hereinafter Euratom Treaty], (<http://europa.eu.int/eur-lex>). The main provisions of the Euratom Treaty relating to the environment concern health and safety. It provides for basic standards to be laid down for the protection of the health of workers and the public arising from ionising radiation. Member States must adopt provisions to ensure compliance with these standards.
 17. O.J. 1980 No. L 246, 1, as amended by Directive 84/467/Euratom, O.J. 1984 No. L 265, 4. *See* also the not adopted Proposal for a Council Directive amending Directive 80/836/Euratom laying down the basic safety standards for the health protection of the general public and workers against the dangers of ionising radiation as regards prior authorisation of shipments of radioactive waste, O.J. 1990 No. C 210, 7.
 18. O.J. 1984 No. L 326, 31. This Directive on the supervision and control within the European Community of the transfrontier shipment of hazardous waste does not apply to radioactive waste. Additionally, Council Regulation (EEC) No. 259/93 of 1 February 1993 on the supervision and control of shipments of waste within, into and out of the European Community, O.J. 1993 No. L 30, 1, does not cover the shipment of radioactive waste either.
 19. O.J. 1992 No. L 35, 24. Annual production of all conditioned radioactive waste in the European Union is around 50,000m³.
 20. *See* Gorka Gallego, “Waste Legislation in the European Union”, 11 *European Environmental Law Review*, p. 8, at p. 12 (2002); Jean-Pierre Hannequart, *European Waste Law*, p. 284 (London 1998).
 21. Directive 92/3/Euratom, *supra*, Article 2.
 22. In respect of imports and exports from third states the Directive does not expressly require the prior informed consent (PIC) of third States before authorising the shipment. However, the Preamble makes clear that this is required, stating that to protect human health and the environment account must be taken of risks occurring outside the Community, and that accordingly “in the case of radioactive waste entering and/or leaving the Community the third country of destination or origin and any third country or countries of transit must be consulted and informed and must have given their consent.” *Id.* Preamble.
 23. *Id.* Article 12(1).
 24. *Id.* Article 11. Additionally, Article V of the 1959 Antarctic Treaty, which entered into force on 23 June 1961, prohibits the disposal of radioactive wastes in Antarctica.

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

Radioactive waste may contain nuclear materials as defined by Commission Regulation (Euratom) No. 3227/76 of 19 October 1976 concerning the application of the provisions on Euratom safeguards²⁷ and the transport of such substances must be in accordance with the provisions of the Convention on the Physical Protection of Nuclear Material.²⁸

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

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

1. The Basel Convention

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

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

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

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

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

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

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

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

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

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

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

2. *The Hazardous Wastes Protocol*

The so-called 1996 Hazardous Wastes Protocol³⁶ to the Barcelona Convention³⁷ includes some provisions that are more protective than the general system established by the Basel Convention. Besides other hazardous waste, the Protocol also applies to radioactive waste and to hazardous substances that have been banned in the country of manufacture or export for human health or environmental reasons [Article 3].

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

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

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

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

3. *The Waigani Convention*

The 2001 Waigani Convention (Convention to Ban the Importation into Forum Island Countries of Hazardous and Radioactive Wastes and to Control the Transboundary Movement and Management of Hazardous Wastes within the South Pacific Region)³⁹ is a regional agreement according to Article 11 of the Basel Convention.⁴⁰ The Waigani Convention prohibits the importation of all radioactive wastes⁴¹ into Pacific Island Developing Parties,⁴² while at the same time recognising that the standards, procedures and authorities responsible for the environmentally sound management of radioactive wastes will differ from those in respect of hazardous wastes.

4. *The Bamako Convention*

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

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

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

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

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

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

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

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

5. *The Lomé IV Convention*

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

6. *The IAEA Code of Practice*

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

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

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

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

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

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

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

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

7. *The Joint Convention*

The first binding legal instrument to directly address the issue on a global scale was the 1997 Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (Joint Convention), which entered into force on 18 June 2001.⁴⁸ It is an international legal mechanism and framework for the harmonisation of national waste management practices and standards. The main mechanism for bringing this about is the review process contained in the Convention whereby Contracting Parties to the Convention are expected to report on their own progress towards complying with the articles of the Convention and to examine the progress made by the other Contracting Parties.⁴⁹

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

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

The obligations of the Contracting Parties with respect to the safety of spent fuel and radioactive waste management are based to a large extent on the principles contained in the IAEA Safety fundamentals document “The Principles of Radioactive Waste Management”, published in 1995.⁵¹

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

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

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

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

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

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

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

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

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

52. See above.

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

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

55. Joint Convention, *supra*, Article 27 provides as follows: “(i) a Contracting Party which is a State of origin shall take the appropriate steps to ensure that transboundary movement is authorised and takes place only with the prior notification and consent of the State of destination; ... (iii) a Contracting Party which is a State of destination shall consent to a transboundary movement only if it has the administrative and technical capacity, as well as the regulatory structure, needed to manage the spent fuel or the radioactive waste in a manner consistent with this Convention; (iv) a Contracting Party which is a State of origin shall authorise a transboundary movement only if it can satisfy itself in accordance with the consent of the State of destination that the requirements of subparagraph (iii) are met prior to transboundary movement.”

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

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

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

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

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

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

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

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

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

58. Rio Declaration on Environment and Development, adopted at the UN Conference on Environment and Development (UNCED), 3-14 June 1992, reprinted in 31 *International Legal Materials*, 874 (1992). See generally Ulrich Beyerlin, *Umweltvölkerrecht*, p. 19 (München 2000).

59. The specific content of the precautionary principle is, however, still controversial. See generally Harald Hohmann, *Precautionary Legal Duties and Principles of Modern International Environmental Law*, London 1994; David Freestone & Ellen Hey (Eds.), *The Precautionary Principle and International Law: The Challenge of Implementation*, The Hague 1996; Primosch, “Das Vorsorgeprinzip im internationalen Umweltrecht”, 51 *Zeitschrift für öffentliches Recht*, p. 227 (1996). The further analysis will not examine the relevance of the precautionary principle in nuclear and WTO law.

60. See generally Report, “Nuclear Trade in a World of Increasing Globalisation”, Working Group III (Nuclear Trade) of the International Nuclear Law Association (INLA) to the “Nuclear Inter Jura 1999”, Congress held in Washington D.C. on 24-29 October 1999, on file with author.

61. See Report by the Chairman of the GATT Working Group on the Export of Domestically Prohibited Goods and other Hazardous Substances, GATT Doc. L/6872 (1991).

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

II. Compatibility with the GATT

1. Violation of GATT principles

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

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

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

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

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

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

2. *Exceptions to the GATT*

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

a) National security exception (Article XXI GATT)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

b) “Environmental exceptions” (Article XX GATT)

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

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

i) *Article XX (b) GATT*

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

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

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

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

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

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

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

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

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

ii) *Article XX (g) GATT*

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

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

iii) *“Chapeau” of Article XX GATT*

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

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

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

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

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

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

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

III. Compatibility with the GATS

1. Violation of GATS principles

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

2. Exceptions to the GATS

a) Security exceptions (Article XIV bis GATS)

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

b) “Environmental exceptions” (Article XIV GATS)

The GATS includes an environmental exception in Article XIV (b), which is similar to that in Article XX (b) GATT.⁸⁷ Therefore, the trade restrictions could be justified under Article XIV (b) GATS in the same way. However, Article XIV GATS lacks a provision that justifies measures relating to the conservation of exhaustible natural resources, in contrast to Article XX (g) GATT. Thus, the Ministerial Decision on Trade in Services and the Environment of 1994⁸⁸ notes that it is not clear

85. *Id.* p. 22.

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

87. See above.

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

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

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

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

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

But a WTO dispute settlement request remains at least a realistic possibility. Conflicts might arise, for instance, from countries considering an import/export ban unreasonable or beyond the scope of the exceptions provided under GATT or GATS. Drawing upon both customary international law, as recognised in the Vienna Convention on the Law of Treaties⁹³ and general principles of interpreting conflicting treaties, these potential conflict scenarios are quite difficult to analyse.⁹⁴ Due to the fact that the Joint Convention was signed after the WTO Agreement, and is more specifically related to radioactive waste management, the argument could be made that the Joint Convention would prevail

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

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

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

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

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

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

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

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

V. *Prior notification in other international agreements*

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

D. Summary and Conclusions

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

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

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

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

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