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Maritime Transportation of Plutonium and Spent Nuclear Fuel

Eugene R. Fidell

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In connection with the special meeting conducted by the International Maritime Organization (IMO) in March 1996, two legal studies have been circulated: *The Right to Control Passage of Nuclear Transport Vessels Under International Law*, by Duncan E.J. Currie on behalf of Greenspeace International;[1] and *Applying the Precautionary Principle to Ocean Shipments of Radioactive Materials* by Jon M. Van Dyke for the Nuclear Control Institute (NCI).[2] Because of the importance of the issues addressed at that meeting, these studies warrant careful attention. This article identifies the key assertions in the Van Dyke paper in particular, and examines them in light of prevailing doctrines of international law. Professor Van Dyke's paper proceeds from the flawed premise that a "precautionary principle" has become a part of customary international law. The inferences he draws from that mistaken premise are, in varying degrees and for various reasons, also mistaken.

I. Background

The International Atomic Energy Agency (IAEA) promulgates basic international regulations for the transportation of radioactive materials.[3] In 1993, IAEA's

*Eugene R. Fidell is a partner with Feldesman, Tucker, Leifer, Fidell & Bank in Washington, D.C.

1. Duncan E.J. Currie, *The Right to Control Passage of Nuclear Transport Vessels Under International Law* (Apr. 7, 1995). Mr Currie is employed by the Greenpeace International Legal Department.

2. Jon M. Van Dyke, *Applying the Precautionary Principle to Ocean Shipments of Radioactive Materials*, 27 OCEAN & INT'L L. 379 (1996). Professor Van Dyke teaches at the University of Hawaii School of Law.

3. *See* BARBARA KWIATKOWSKA & ALFRED H.A. SOONS, *Introduction* to TRANSBOUNDARY MOVEMENTS AND DISPOSAL OF HAZARDOUS WASTES IN INTERNATIONAL LAW: BASIC DOCUMENTS at xxvii-xxviii (Barbara Kwiatkowska & Alfred H.A. Soons eds., 1993).

regulations[4] were supplemented by the IMO *Code for the Safe Carriage of Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Waste in Flasks On-Board Ships*.[5]

In 1992 and 1995, prompted in part by efforts of the environmental organization Greenpeace International (GI), sea shipments of plutonium and radioactive waste between France and Japan drew public attention. A number of enroute states objected to these shipments, and the 1995 conference concerning extension of the Nuclear Non-Proliferation Treaty (NPT) noted these objections.

In March 1996, the IMO Secretary-General, William A. O'Neill, convened a three-day Special Consultative Meeting (SCM) in London on the carriage of nuclear materials by sea. A number of the thirty-two states that participated in the meeting submitted position papers. Ireland, for example, argued that "coastal states should be notified in advance of the passage of Irradiated Nuclear Fuel (INF) cargoes past their coastlines."[6] Similarly, Solomon Islands asserted that "[c]oastal states along the route of a ship are entitled to be advised and consulted about the voyage in advance,"[7] and "must have an input in the course of voyage planning, in the context of safe routing, enroute facilities and routine and emergency support available in their territories."[8] Solomon Islands' presentation expressly sought application of the "precautionary approach."[9] Speaking for itself and a number of other countries,[10] Argentina urged adoption of "a full code" and "a binding instrument" to achieve improvements in the present arrangements. Argentina presented a document which sought criteria to ensure that any ship transporting INF materials would only enter the jurisdictional or territorial waters of a third State—in exercise of freedom of navigation, innocent or transit passage, as recognized by the 1982 United Nations Convention on the Law of the Sea (UNCLOS)—when no high-seas route of similar convenience with respect to navigational and hydrographical characteristics existed. The criteria suggested by Argentina would also ensure that "the ships entering the jurisdictional or territorial waters of another State comply with the routing systems set up by such States in the maritime spaces subject to their jurisdiction—assuming that such systems do no[t] annul free navigation or innocent or transmit passage. . . ."[11]

4. *General Conference Resolution on Code of Practice on the International Transboundary Movement of Radioactive Waste*, IAEA (Sept. 21, 1990), 30 I.L.M. 556 (1991).

5. IMO Assembly Res. A.748(18) (Nov. 4, 1993), *discussed in* Barbara Kwiatkowska & Alfred H.A. Soons, *Comment, Plutonium Shipments—A Supplement*, 25 OCEAN DEV. & INT'L L. 419, 424 (1994). The INF Code is a voluntary Code of Practice rather than a legally binding set of regulations.

6. Statement of Ireland 3 ¶ 4.

7. Statement of Solomon Islands 2 ¶ 9.

8. *Id.* at 3 ¶ 10.

9. *Id.* ¶ 14.

10. Australia, Brazil, Chile, Colombia, Cuba, Spain, Indonesia, Ireland, Solomon Islands, Mexico, New Zealand, and Venezuela.

11. Argentina, *Towards an Adequate Regulation of the Maritime Transport of Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes* 4-5 ¶ 2.

South Africa, in its statement, recognized the right of INF Code ships to have innocent passage through its territorial waters. However, South Africa stressed the desirability of timely notice of ship movements in order for regulatory authorities to perform their functions and reassure the public.[12]

No definitive position emerged from the IMO meeting, although Chairman G.A. Dubbeld (Netherlands) identified a variety of safety and legal issues that demand further consideration within IMO's committee structure. Particularly relevant to the present study is the fact that "the possibility of excluding ships carrying INF from particularly sensitive sea areas"[13] is being considered (along with route planning) by IMO's Subcommittee on Safety of Navigation, which met in July 1996. IMO's Marine Environment Protection and Legal Committees (MEPC) may also consider this matter "since it raises various issues concerning the freedom of navigation and rights under" UNCLOS.[14]

II. The Precautionary Principle

Professor Van Dyke asserts that customary international law today includes a precautionary principle, one element of which creates a right on the part of states, through whose exclusive economic zones (EEZs) spent nuclear fuel (SNF) or plutonium is shipped, to be notified in advance of the transit. He also maintains that such states may veto voyages of this kind. These assertions do not withstand scrutiny.

Serious difficulties arise with Professor Van Dyke's thesis. First and most important, his position that the precautionary principle has become part of customary international law, and as such must be followed, is doubtful. Plainly, customary international law is one type of binding international legal norm, along with treaties and conventions. But, to be an accepted part of customary international law, more is required than a pastiche of materials, most of which fall far short of treaty status.

Intimations of a precautionary approach or precautionary principle have been discerned in various "nonbinding statements, declarations, guidelines, action programs and principles developed by private international organizations."[15] However, reliance on these developments involves what Professor Naomi Roht-Arriaza of the University of California's Hastings College of the Law has de-

12. Report by the Republic of South Africa's Representative to Special Consultative Meeting of Entities Involved in the Maritime Transport of Nuclear Material Subject to the INF Code at 3 ¶ 15.

13. *Three-Day Meeting on Nuclear Materials Ends*, IMO File Ref. A4/A/102 (Mar. 7, 1996).

14. *Id.* at 2.

15. Naomi Roht-Arriaza, *Book Review*, 21 COLUM. J. ENVTL. L. 183, 187 (1996) (reviewing HARALD HOHMANN, PRECAUTIONARY LEGAL DUTIES AND PRINCIPLES OF MODERN INTERNATIONAL ENVIRONMENTAL LAW, THE PRECAUTIONARY PRINCIPLE: INTERNATIONAL ENVIRONMENTAL LAW BETWEEN EXPLOITATION AND PROTECTION (1994) and BASIC DOCUMENTS OF INTERNATIONAL ENVIRONMENTAL LAW (1994)).

scribed as a "novel" methodological approach which "flies in the face of much traditional doctrine about the sources of international law."[16]

Setting aside the sufficiency *vel non* of its sources, conscious international recognition of a precautionary principle is of recent vintage. Indeed, the precautionary principle has been said to date only to 1987. According to Professor Freestone and Dr. Hey, "[t]he first explicit formulation of the precautionary concept at the international level was contained in the Declaration of the Second International North Sea Conference on the Protection of the North Sea (London Declaration)."[17] The London Declaration occurred in late 1987, only ten years ago. The same authors point to a reference to a precautionary concept in the earlier Bremen Declaration, apparently suggesting some slippage on this point between the English and German texts,[18] but even so, that would hardly suggest that recognition of a precautionary principle has existed for a substantial period of time. After all, that Declaration was issued in late 1984, thirteen years ago. Another author comments that "[s]ince 1982-1987, modern international environmental law has been largely characterized by precautionary legal duties and principles."[19] Professor Dan Bodansky of the University of Washington School of Law has suggested that the precautionary principle lay behind the commercial whaling moratorium proposals of the 1970s.[20] Also, Philippe Sands (who does not squarely claim that the principle has become part of international law)[21] argues that the "traditional approach to the burden of proof began to shift as early as 1969," citing the Oil Pollution Intervention Convention of that year.[22]

Regardless of the diverse starting points selected, and even allowing for the general acceleration in the tempo of international relations in the late twentieth

16. *Id.* at 189.

17. David Freestone & Ellen Hey, *Origins and Development of the Precautionary Principle*, *in* THE PRECAUTIONARY PRINCIPLE AND INTERNATIONAL LAW: THE CHALLENGE OF IMPLEMENTATION 5 & n.15 (David Freestone & Ellen Hey eds., 1996); *see also* James E. Hickey, Jr. & Vern R. Walker, *Refining the Precautionary Principle in International Environmental Law*, 14 VA. ENVTL. L.J. 423 (1995).

18. Freestone & Hey, *supra* note 17.

19. HOHMANN, *supra* note 15, at 343.

20. *New Developments in International Environmental Law*, 85 AM. SOC'Y INT'L L. PROC. 401, 414 (1991).

21. Philippe Sands, *The "Greening" of International Law: Emerging Principles and Rules*, 1 IND. J. GLOBAL LEGAL STUD. 293, 300-02 (1994) (principle "has . . . received widespread support by the international community," its status "as a governing rule of international law has been challenged as questionable," "[a]t a minimum . . . there is sufficient evidence of state practice to justify the conclusion that the principle, as elaborated in the Rio Declaration, reflects a broadly accepted basis for international action, even if the consequence of its application in a given situation remains open to interpretation"). *Id.* at 300-302.

22. *Id.* at 298 & n.17 (citing International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Damage), Nov. 29, 1969, arts. I, V(3)(a), 9 International Legal Materials (I.L.M.) 25, 29 (entered into force, May 6, 1975)).

century[23] and the fact that persistence over a long period of time is no longer required for a principle of customary international law to take root,[24] a principle must be "relatively extensive and uniform" and "state practice must be consistent with the existence of the obligation in order for the principle to become part of customary international law."[25] The precautionary principle does not meet these requirements since, although it has been extensively referred to, the references are far from uniform.[26] Nor, in the specific context addressed by Professor Van Dyke, can it be said that there exists the required wealth of consistent state practice based on state reaction to a small number of voyages. This is particularly noteworthy since, despite the fact that UNCLOS provisions "confer upon coastal states the ability to adopt a variety of measures for the marine environment's protection notwithstanding the recognition of various navigational rights such as innocent or transit passage, . . . some states persist in taking unilateral measures that existing international law does not strictly support."[27] It is therefore difficult to accept the notion that so sweeping a doctrine has, in this time and manner, ripened into a binding norm of international law.

Authorities disagree as to whether the precautionary principle (which even its proponents must admit has not been *codified* in international law)[28] has become part of customary international law. Professor Freestone and Dr. Hey report that "[t]he precautionary concept has become intrinsic to international environmental policy, especially with the adoption, in 1992, of the Rio Declaration at the United Nations Conference on Environment and Development (UNCED)."[29] They also assert that "the precautionary concept *found its way into international law* and

23. "Compared with the past, the process of the formulation of customary [international] law has accelerated considerably." HOHMANN, *supra* note 15, at 167.

24. Roht-Arriaza, *supra* note 15, at 189 & n.24 (citing, *inter alia,* North Sea Continental Shelf Cases (*F.R.G. v. Den., F.R.G. v. Neth.*), 1969 International Court of Justice (I.C.J.) 3, 42-44 (Feb. 20).

25. Roht-Arriaza, *supra* note 15, at 189 & n.25 (citing North Sea Continental Shelf Cases, *supra* note 24).

26. *See infra* text accompanying notes 38-43, 55.

27. Donald R. Rothwell, *Navigational Rights and Freedoms in the Asia Pacific Following Entry into Force of the Law of the Sea Convention*, 35 VA. J. INT'L L. 587, 608-09 (1995) (footnotes omitted) (citing, *inter alia*, "the request by a number of states, including Indonesia and the Philippines, for the plutonium carrying *Akatsuki Maru* to remain outside of territorial waters." *See id.* at 609 & n.152).

28. Jennifer R. Kitt, Note, *Waste Exports to the Developing World: A Global Response*, 7 GEO. INT'L ENVTL. L. REV. 485, 502 (1995).

29. Freestone & Hey, *supra* note 17, at 3; *see also* Leigh Hancher, *EC Environmental Policy—A Precautionary Tale?*, *in* Freestone & Hey, *supra* note 17, at 187 & n.3. Principle 15 of the Rio Declaration calls upon states to apply a "precautionary approach" to environmental protection. "The negotiators rejected suggestions by some European countries to promote a Precautionary Principle." Jeffrey D. Kovar, *A Short Guide to the Rio Declaration*, 4 COLO. J. INT'L ENVTL. L. & POL'Y 119, 134 (1993).

policy as a result of German proposals to the International North Sea Ministerial Conference,''[30] thus clearly implying that it is part of international law.[31]

However, in an earlier article, Dr. Hey wrote guardedly on the question, stating ''while *the precautionary concept may be on its way to becoming part of customary international law*, its precise content and implications remain unclear.''[32] Professors Hickey and Walker have likewise observed that ''[r]eferences to precaution reveal a variable, vague, and often confusing 'principle' for states to follow in preventing pollution.''[33]

> Numerous authors have expressed their views on whether the precautionary concept has been accepted as customary international law. Based on these views, it is fair to say that *the concept has at least approached the status of a rule of customary international law*, and that the support expressed by states for documents containing the concept is not without legal significance. However, the precise implications of this development remain—to use the description so accurately chosen by Gundling—elusive.[34]

More recently, Professor Freestone and Dr. Hey have written that ''[*w*]*hether it has entered the hallowed portals of customary international law is still a matter of debate amongst international lawyers* but for most intents and purposes that debate is no longer of central importance.''[35] This opinion improperly minimizes the critical distinctions between state action taken because it is compelled by an external, binding legal norm (or not taken despite the existence of such a norm), on the one hand, and state action taken solely because it is ''good public policy'' (or eschewed because it is not ''good public policy''), on the other.

Two other authors, Mr. Cameron and Ms. Abouchar, have, in turn, commented that ''[a]lthough some would contend that the precautionary principle has yet to be firmly established as a customary norm, a vast amount of

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30. Freestone & Hey, *supra* note 17, at 4 & n.13 (emphasis added). *See also* Ellen Hey, *The Precautionary Approach: Implications of the Revision of the Oslo and Paris Conventions*, 15 MARINE POL'Y 244-45 (July 1991).

31. *See, e.g.*, Gregory D. Fullem, Comment, *The Precautionary Principle: Environmental Protection in the Face of Scientific Uncertainty*, 31 WILLAMETTE L. REV. 495 (1995). The student author of this article comments:

> Regardless of the naysayers, the precautionary principle is being incorporated into environmental law and policy at an ever-escalating rate, and a cogent argument can thus be made that the principle, in light of environmental and economic exigencies, is becoming customary international law.

See Roht-Arriaza, *supra* note 15, at nn.24-25.

> [D]espite its varied forms and amorphous definition, its prevalence justifies commentators' assertions,that the precautionary principle is emerging as a customary norm of international law.

See id. at n.17, text accompanying note 71.

32. Ellen Hey, *The Precautionary Concept in Environmental Policy and Law: Institutionalizing Caution*, 4 Geo. Int'l Envtl. L. Rev. 303, 307 (1992) (emphasis added).

33. Hickey & Walker, *supra* note 17, text accompanying note 12.

34. Hey, *supra* note 32, at 307 & nn.19-20 (emphasis added).

35. David Freestone & Ellen Hey, *Implementing the Precautionary Principle: Challenges and Opportunities*, *in* Freestone & Hey, *supra* note 17, at 249 & n.1.

evidence stands contrary to that notion."[36] Yet another author states quite simply: "Now that the precautionary principle has become accepted as an international legal principle. . . ."[37]

Professors Birnie and Boyle are among those questioning whether the precautionary principle has become part of customary international law. In 1992, they wrote that:

> [d]espite its attractions, the great variety of interpretations given to the precautionary principle, and the novel and far-reaching effects of some applications suggest that it is not yet a principle of international law. Difficult questions concerning the point at which it becomes applicable to any given activity remain unanswered and seriously undermine its normative character and practical utility, although support for it does indicate a policy of greater prudence on the part of those states *willing to accept it.*[38]

Another expert questioning the status of the precautionary principle as a rule of customary international law is Dr. Konrad van Moltke. In his view, the precautionary principle, "like other principles of environmental management, is not a legally binding mandate,"[39] a formulation in which Professor Freestone and Dr. Hey ultimately concur.[40]

The unresolved content of the precautionary principle has been remarked on repeatedly. In 1995, Professors Hickey and Walker, who are certainly not unfriendly to the concept, explained that

> the articulations since 1987 have not refined the pollution prevention obligation into a predictable substantive rule of precautionary obligation. Fundamental uncertainties still must be addressed. First, it is unclear whether precaution is a recommendation, an obligation, or some intermediate duty. . . .
>
> Second, the level of environmental risk that triggers precautionary measures remains unsettled. . . .
>
> Third, uncertainties exist regarding not only which sciences, factors, or scientific determinations are relevant, but also the factual settings in which different levels of scientific knowledge would apply. . . .[41]

Professors Hickey and Walker are not alone in suggesting that there are large holes in this doctrinal cheese. Professor Bodansky commented at the 1991 Annual Meeting of the American Society of International Law that "[a]lthough the precau-

36. James Cameron & Juli Abouchar, *The Status of the Precautionary Principle in International Law*, *in* Freestone & Hey, *supra* note 17, at 36-37.

37. André Nollkaemper, *"What You Risk Reveals What You Value," and Other Dilemmas Encountered in the Legal Assaults on Risks*, *in* Freestone & Hey, *supra* note 17, at 73 & n.3 (citing six conventions from 1991-94).

38. Cameron & Abouchar, *supra* note 36, at 37 n.27 (quoting PATRICIA W. BIRNIE & ALAN E. BOYLE, INTERNATIONAL LAW AND THE ENVIRONMENT 98 (1992)).

39. Konrad von Moltke, *The Relationship Between Policy, Science, Technology, Economics and Law in the Implementation of the Precautionary Principle*, *in* FREESTONE & HEY, *supra* note 17, at 106.

40. David Freestone & Ellen Hey, *Implementing the Precautionary Principle: Challenges and Opportunities*, *in* Freestone & Hey, *supra* note 17, at 253.

41. Hickey & Walker, *supra* note 17, at 436 (*see infra* text accompanying notes 54-63) (footnotes omitted).

tionary principle is often espoused, its parameters and meaning are not altogether clear.''[42] He further stated:

> The precautionary principle provides a general orientation to environmental issues. In my view, however, it is far too vague to serve as a regulatory standard. It either does not address—or addresses only in the most general terms—two key questions: First, what level of risk warrants precautionary action? And, second, what level of precaution is warranted and at what price? Indeed, the answers to these questions given by different formulations of the precautionary principle are so varied that it is difficult to speak of a single precautionary principle at all.[43]

He repeatedly introduces his discussion with ''even if we adopt the precautionary principle,''[44] and suggests ''a cautious attitude'' towards it (even though ''we may wish to adopt it as a general goal''),[45] thus clearly implying that, in his view, that principle has not yet been adopted as a binding norm in customary international law. For him, it is clear that, at best, ''the jury is still out.''[46]

In a similar vein, writing on *State Responsibility and the Precautionary Principle*, Professor Catherine Tinker has observed:

> The precautionary principle or the principle of precautionary action has appeared as *soft law* in numerous conference declarations and other statements of what governments think the law should be. It has also been included in several treaties. However, absent strong evidence of state practice and *opinio juris*, such as an explicit statement from a high-level government minister that precautionary measures were adopted because they are mandated under international law, *it is difficult to conclude that the precautionary principle is or is not customary law.* Rather the question is the effect on the international law of state responsibility and liability of the precautionary principle *if it is or becomes law*, either through treaty obligations or through the development of customary international law.[47]

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42. *New Developments in International Environmental Law, supra* note 20, at 414. He was previously with the Office of the Legal Adviser, U.S. Department of State. *Id.* at 401. *See also* M.P.A. Kendall, *UNCED and the Evolution of Principles of International Environmental Law*, 25 J. MARSHALL L. REV. 19, 23-25 (1991) (noting debate over formulation of the principle); Christopher D. Stone, *Deciphering ''Sustainable Development,''* 69 CHI.-KENT L. REV. 977, 982 (1994) (''there is no 'the' precautionary principle, but text-books [sic] full of precautionary principles, plural''). A student author has noted that the Bamako Convention ''is a particularly novel use of the precautionary principle'' since it ''requires preventative measures even without scientific proof of harm,'' whereas the precautionary principle ''normally advocates action by states when scientific proof is unclear, not when it is nonexistent.'' Kitt, *supra* note 28, at 502.

43. *New Developments in International Environmental Law, supra* note 20, at 415-16; *see also* Hickey & Walker, *supra* note 17.

44. *New Developments in International Environmental Law, supra* note 20, at 416-17.

45. *Id.* at 417.

46. Inexplicably, Professor Van Dyke's paper implies (at n.11) that Mr. Bodansky is among those who hold that the precautionary principle is already a norm of customary international law.

47. Freestone & Hey, *supra* note 17, at 53 & n.1 (footnote omitted; emphasis added). In the omitted footnote, Professor Tinker cites only one source as asserting that the precautionary principle is recognized as binding international law, HOHMANN, *supra* note 15, at 343 & n.42, and two that are critical of such a claim. *See* Günther Handl, *Environmental Security and Global Change: The Challenge to International Law*, *in* ENVIRONMENTAL PROTECTION AND INTERNATIONAL LAW 59-87, 78-79 (Winfried Lang *et al.* eds., 1994); BIRNIE & BOYLE, *supra* note 38, at 98. Dr. Hohmann's thesis candidly relies on a notion of how customary international law grows that represents a departure

Even an author on the other side of the argument has been properly cautious, noting in 1995 that "[t]he legal status of the precautionary principle is evolving" and "has now received sufficiently broad support to allow a good argument to be made that it reflects a principle of customary law."[48] To say only that "a cogent argument"[49] or "a good argument" can be made is hardly a ringing endorsement and a far cry from the kind of firm, definitive judgment that ought to be demanded before members of the community of nations find their historic autonomy constrained by a new legal norm without their consent.

Other experts have been highly critical.[50] A 1995 article by John M. Macdonald of the University of Washington in *Ocean Development and International Law* perceptively addresses these issues. His conclusion is:

> the precautionary principle is problematic for a variety of reasons, most notably because no consensus has developed to interpret its place in international policy making. . . . Although recognizing its role in policymaking, the international community is sharply divided on how to apply the theory, and as a result, its status is subject to sharp debate between decision makers, scientists, international conventions, and nongovernmental organizations (NGOs).
>
> . . . Perhaps the greatest obstacle to establishing it as a guiding principle in international law is a failure to understand its role in the shifting paradigms; ultimately the principle may prove not to be an established norm of customary international law, but may be the temporary answer to a policy/management void that these shifts have created.[51]
>
> . . . As the doctrine increasingly is being evaluated and asserted in international dialogue, *it may well be evolving into a consensual form of behavior constituting customary international law.*[52]
>
> . . . The principle is *not yet recognized as accepted customary law*, primarily because of the polarized arguments that have arisen in attempting to define the doctrine.[53]
>
> . . . [T]he precautionary principle is referred to in a variety of international treaties on the marine environment and within international environmental negotiations, but *most scholars agree that, as nonbinding documents, these instruments and policies do not form any legal obligation—an obligation that must be required if the precautionary*

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from the conventional view. HOHMANN, *supra* note 15, at 170-71 & n.20a ("I will plead for a modification of State practice, namely that diplomatic practice (internal practice) normally (or at least for international environmental law) suffices" for the creation of customary international law).

48. Cameron & Abouchar, *supra* note 36 (quoting Philippe Sands, *Principles of International Environmental Law I: Frameworks, Standards and Implementation* 213 (1995)), *in* Freestone & Hey, *supra* note 17, at 37 & n.29; *see also* Sands, *supra* note 21.

49. *See* Fullem, *supra* note 31 (text accompanying note 25). Ultimately, Mr. Cameron and Ms. Abouchar draw the same "good argument" conclusion. Cameron & Abouchar, *supra* note 36, at 52.

50. Professor Christopher D. Stone (of the University of Southern California School of Law), for example, has acidly written: "That 'the precautionary principle' has become as fashionable as it has is a sad testament to the level of the new legal scholarship. . . ." Stone, *supra* note 42, at 982.

51. John M. Macdonald, *Appreciating the Precautionary Principle as an Ethical Evolution in Ocean Management*, 26 OCEAN DEV. & INT'L L. 255, 155-56 (1995).

52. *Id.* at 262 (emphasis added).

53. *Id.* at 263 (emphasis added).

principle is to become "accepted" as law. Thus, its international status is still subject to debate.[54]

. . . Greenpeace is one international NGO that has embraced the precautionary principle in its strictest interpretation with respect to marine pollution (where any uncertainty exists, do not allow the pollutant into the marine environment) and has raised the level of public concern for continued pollution of the marine environment. Nonetheless, theoretical implications of the principle are still debated passionately within international and state negotiations. Thus, *the concept has no clear definition as an "accepted" principle of customary international law that the NGOs can agree on.*[55]

. . . It is precisely because it may be considered to be more of a soft principle than a code of conduct that its acceptance is so problematic as a form of customary international law, because "soft" notions are vague and ambiguous. "An evolution of the precautionary principle may fill the temporal gap in customary law. However, *at this point, [it is] too vague to allow a crystallization into customary law.*"[56]

The precautionary principle has proved to be one of the most problematic developments in the field of international environmental law. The literature devoted to defining the principle is enormous and divisive. Scholars, policy makers, scientists, and NGOs do agree on one point: Its future in international marine policy is highly controversial.[57]

Mr. Macdonald's observations are fairminded and supported. Without discussing each of the intermediate judgments on which the "good argument" position taken by others rests,[58] the present writer concludes that elements of both "political correctness"[59] and wishful thinking[60] are here in the notion that the precautionary principle—a relatively new entry on the horizon of international relations—has, at this time, been elevated into a rule of international law. As Professor Roht-Arriaza has noted, the generally accepted view is that "soft law" "can be a precursor of the formation of either treaty or customary law, or can confirm existing customary duties, but it cannot in itself establish new customary law."[61]

Casting his net broadly within the exploding body of literature, Professor Van Dyke's paper posits a lengthy shopping list of specific obligations that he claims

54. *Id.* at 265 (emphasis added).

55. *Id.* at 269 (emphasis added).

56. *Id.* at 270 (emphasis added).

57. *Id.* at 276.

58. For example, Mr. Cameron and Ms. Abouchar write that "[i]mplementation of the precautionary principle through national legislation, and national judicial decisions is *patchy*, although the intention to incorporate the precautionary principle is evident in policy papers and legislation." Cameron & Abouchar, *supra* note 36, at 52 (emphasis added).

59. Or "fashionable." *See* Stone, *supra* note 42, at 982.

60. *E.g.*, Roht-Arriaza, *supra* note 15, at 201 (until there is "international movement towards pollution prevention and toxics use reduction[s], where financial incentives and technical assistance from rich countries combine with the rediscovery and development of traditional low-input means for producing goods it is optimistic to think of international environmental law as fully precautionary in its approach"). A circular quality to the observation exists that "[n]onimplementation of this general principle can be characterized as states resisting obligations (both binding and not) agreed to at the international level, rather than grounds for finding that the obligation does not exist." Cameron & Abouchar, *supra* note 36, at 52.

61. Roht-Arriaza, *supra* note 15, at 190 & nn.28-29 (footnotes omitted).

arise from or reflect the overarching precautionary principle. These can be addressed *seriatim*.

THE DUTY TO PREPARE AN ENVIRONMENTAL IMPACT ASSESSMENT

In his latest paper, Professor Van Dyke states that "[t]his duty has been recognized in numerous treaties, and a treaty has been drafted that spells out the procedures to be used in drafting such an assessment in the international context."[62] He also cites a 1985 Organization for Economic Cooperation and Development (OECD) recommendation.[63] As authority for his first point, he cites, among other authorities, his own earlier article,[64] which in turn cites U.S. National Environmental Policy Act (NEPA) (domestic United States legislation that spawned an enormous body of litigation),[65] several provisions of UNCLOS,[66] and the Convention for the Protection of the Natural Resources and the Environment of the South Pacific Region.[67] Article 206 of UNCLOS provides:

> When States have reasonable grounds for believing that planned activities under their jurisdiction or control may cause substantial pollution of or significant and harmful changes to the marine environment, they shall, as far as practicable, assess the potential effects of such activities on the marine environment and shall communicate reports of the results of such assessments in the manner provided in article 205.[68]

The contents of this report are not further spelled out, and it certainly seems premature to rely on a mere draft treaty, as Professor Van Dyke seems to do, for this purpose. His earlier article lists elements that he believes an environmental impact statement (EIS) must contain, but his only authority for that list is an even earlier essay of his own.[69] Interestingly, in his current essay, Professor Van Dyke comments, among other things, that "[a]ctivities which are likely to pose a significant risk to nature shall be preceded by an exhaustive examination. . . ."[70] If this statement correctly frames the issue, then, if it can be concluded that significant risk is not "likely" to be posed, no prior examination is required.

62. Van Dyke, *supra* note 2 (text accompanying notes 17-18) (footnotes omitted).

63. *Id.* (text accompanying notes 19) (footnotes omitted).

64. Jon M. Van Dyke, *Sea Shipment of Japanese Plutonium Under International Law*, 24 OCEAN DEV. & INT'L L. 399, 402-03 & nn.38-40 (1993).

65. 42 U.S.C. § 4321 (1994).

66. Van Dyke, *supra* note 64, at 402-03.

67. *Id.* at 403 & n.40.

68. Oct. 7, 1982, 21 I.L.M. 1261 (1982). Article 205 requires that article 206 reports be furnished "at appropriate intervals to the competent international organizations, which should make them available to all States." *Id.*

69. Van Dyke, *supra* note 64, at 403 & n.41 (citing Jon M. Van Dyke, *Environmental Impact Assessments*, *in* CULTURAL VALUES IN THE AGE OF TECHNOLOGY 93-94 (Effie Cameron et al. eds., 1991)).

70. Van Dyke, *supra* note 2 (note 15).

THE DUTY TO CONDUCT RESEARCH

Professor Van Dyke asserts that "[e]veryone agrees that research efforts to overcome uncertainties are essential,"[71] citing only an OECD paper and Dr. Hey's 1992 article in the *Georgetown International Environmental Law Review*. These authorities simply do not create a duty under international law to conduct research.

THE DUTY TO NOTIFY

This duty permits states to prepare contingency plans. Professor Van Dyke distinguishes it from the duty of prompt notification in case of an actual emergency. He quotes another author for the proposition that the duty to notify "is *almost* a fundamental principle of the international law of the environment."[72] The "OECD documents" he cites prove to be mere recommendations.[73] To the extent that his paper addresses radioactive wastes (in addition to other radioactive materials), his reliance[74] on the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and Their Disposal[75] is particularly surprising, since—as Professors Kwiatkowska and Soons pointed out in offering "clarifications and additions"[76] to his 1993 article on *Sea Shipment of Japanese Plutonium Under International Law*[77]—such wastes "are not covered" by the Basel Convention.[78]

THE DUTY TO CONSULT

Based on some of the authorities cited by Professor Van Dyke (especially those in the earlier article to which he refers),[79] one might think a plausible case can be made for a duty to consult concerning plutonium shipments by sea. But this proposition is far from clear. For example, a key quotation from the book he relies on most heavily[80] speaks of the "use of radioactive materials . . . in a way that poses significant risk of appreciable harm to another country. . . ."[81] Query, however, whether mere transportation constitutes "use" for this important purpose. As for article 199 of UNCLOS, which he also invokes,[82] that provision

71. *Id.* (text accompanying note 34).
72. Van Dyke, *supra* note 2 (text accompanying note 36) (quoting Laura Pineschi, *The Transit of Ships Carrying Hazardous Wastes Through Foreign Coastal Zones*, in INTERNATIONAL RESPONSIBILITY FOR ENVIRONMENTAL HARM 314 (F. Francioni & Tullio Scovazzi eds., 1991)) (emphasis added).
73. *See* HOHMANN, *supra* note 15, at 148-49.
74. Van Dyke, *supra* note 2 (text accompanying note 38).
75. Mar. 22, 1989, 28 I.L.M. 652 (1989).
76. Kwiatkowska & Soons, *supra* note 5, at 419.
77. Van Dyke, *supra* note 64, at 412 & n.178.
78. Kwiatkowska & Soons, *supra* note 5, at 419, 426 n.1.
79. Van Dyke, *supra* note 64, at 400-02.
80. Frederic Kirgis, *Prior Consultation in International Law* (1983).
81. *Id.*
82. Van Dyke, *supra* note 2, and text accompanying note 41.

applies only to "the cases referred to in article 198," which in turn applies only "[w]hen a State becomes aware of cases in which the marine environment *is in imminent danger of being damaged* or *has been damaged by pollution*."[83] It is difficult to view every shipment of plutonium or INF as presenting, *a priori*, an "imminent danger" to the marine environment. Finally, assuming arguendo that there would be a duty to consult does not necessarily mean that the intended track must be disclosed, nor does it entirely resolve the question of *which* states must be consulted.

The Duty to Develop Alternative Techniques

The notion that such a duty exists based solely on the international community's past approach to a single activity—ocean incineration of wastes—is truly extravagant. "It is like the thirteenth stroke of a crazy clock, which not only is itself discredited but casts a shade of doubt over all previous assertions."[84]

The Duty to Mitigate All Reasonably Foreseeable Damage

Professor Van Dyke cites, as authority for this "obligation," the precautionary principle and "the core notions developed at Stockholm in 1972 and Rio de Janeiro in 1992."[85] The former does not support such a claim, and the latter do not constitute binding rules of international law. Having thus posited a nonexistent rule, Professor Van Dyke proceeds to attempt to reconcile that rule with established rules regarding freedom of navigation, noting that "freedom of navigation is not an absolute freedom and is subject to qualifications in all international agreements."[86] In his view, "traditional navigational freedoms do not apply to ultrahazardous cargoes" and "state practice requires notification and consultation regarding shipments of ultrahazardous cargoes."[87] However, neither of these assertions carries the day for his case.

The tension Professor Van Dyke seeks to create between recognized rights of innocent passage and transit passage, on the one hand, and other duties under UNCLOS, on the other, is a mirage. For example, he cites article 22(2) of UNCLOS for the proposition that coastal states may regulate "ships carrying nuclear or other inherently dangerous or noxious substances or materials,"[88] but an inspection of that provision reveals that it applies only to the territorial sea and simply permits coastal states to establish sea lanes.[89] He cites one author for the proposition that article 198, which requires notification where "the marine

83. UNCLOS arts. 198, 199 (emphasis added).
84. A.P. Herbert, Uncommon Law, 28 (3d ed. 1937).
85. Van Dyke, *supra* note 2 (text following note 43).
86. *Id.*
87. *Id.* (text preceding notes 44 and 71)
88. UNCLOS art. 22(2).
89. UNCLOS art. 22(1).

environment is in imminent danger of being damaged or has been damaged by pollution,''[90] ''might be applicable even where a State becomes aware that a ship flying its flag and carrying harmful wastes is not complying with the safety regulations prescribed by Article 194.''[91] But Ms. Pineschi cites no authority for her view, which runs afoul of the obviously narrow language the drafters carefully employed in article 198. The drafting of article 198 would plainly be subverted if *any* violation of article 194 gave rise to coastal state power to interfere with a transmitting vessel that carries hazardous materials.

Professor Van Dyke's reliance on the Basel Convention as ''provid[ing] guidance on this topic''[92] is baffling given the fact that, as he and others[93] have noted, the convention does not govern the movement of radioactive wastes if other international agreements are in place with respect to those wastes. His discussion, therefore, of the Japanese declaration (and those of other major maritime states) concerning the Basel Convention not only seems irrelevant but also evinces a lack of common ground as to the point he seeks to make by analogy. Even after his earlier paper relying on the Basel Convention evoked a spirited and detailed response by Professors Kwiatkowska and Soons, Professor Van Dyke labors to avoid the textual problem as to ''the Pacific Pintail's shipment of vitrified glass blocks of high level wastes.''[94]

Article 17 of UNCLOS provides that ''[s]ubject to this Convention, ships of all States, whether coastal or land-locked enjoy the right of innocent passage through the territorial sea.''[95] Professor Van Dyke suggests that article 19, which excludes from the definition of innocent passage[96] ''(h) any act of wilful and serious pollution contrary to''[97] UNCLOS, is pertinent because ''it is obvious that many coastal nations view the consequences of an accident involving a shipment of radioactive materials to be so catastrophic that such shipments constitute wilful acts of serious pollution even though the likelihood of an accident that would actually cause such pollution may be small.''[98] This is not a plausible argument

90. UNCLOS art. 198.

91. Pineschi, *supra* note 72, at 306.

92. *Id.*

93. Kwiatowska & Soons, *supra* note 5, at 419, 426 n.1; Raul A. Pedrozo, *Transport of Nuclear Cargoes by Sea*, 28 J. MAR. L. & COM. 207, 222 n.68 (1997).

94. *Id.*

95. UNCLOS art. 17.

96. His paper inadvertently refers to the ''[m]eaning of innocent *practice*'' (emphasis added).

97. UNCLOS art. 19(n)

98. Van Dyke, *supra* note 2 (text accompanying note 66). In this regard he cites Ms. Pineschi, who in turn cites article 23 of UNCLOS, under which ''ships carrying nuclear substances shall, when exercising the right of innocent passage through the territorial sea, carry documents and observe special precautionary measures established for such ships by international agreements.'' UNCLOS art. 23. In other words, the drafters of UNCLOS negotiated a provision that permits innocent passage by such vessels to be trenched upon only as provided by international agreements. *See* Rothwell, *supra* note 27, at 614. It thus in no way supports self-help or unilateral measures by coastal states through whose territorial waters such vessels may sail.

simply as a textual matter; if words have meaning, one cannot treat as *a wilful act of actual pollution* the passive permitting of operating conditions that an interested observer might view as giving rise to *a risk of pollution*. As Professor Rothwell has stated, UNCLOS

> does not allow for a proactive suspension of passage because of the risk of pollution. Indeed, article 23 clearly anticipates that vessels carrying noxious substances can engage in innocent passage.
>
> Although there can be no denying that a maritime accident involving a cargo of plutonium poses a substantial environmental risk to a coastal state, unilateral responses by states to this problem will only create conflict in an uncertain area of the law. . . .[99]

Contrary to Professor Van Dyke's contention, no requirement exists for prior notification and consultation (much less prior informed consent (PIC)) as a matter of customary international law in the case of plutonium or radioactive waste shipments by sea. The state practice he cites[100] shows a marked divergence of state positions on the matter. Moreover, he produces, at best, ambiguous evidence for Japanese acquiescence in the protests its shipments have encountered. For example, he notes that the vessel carrying the 1992 plutonium shipment appeared to have avoided some EEZs but not others.[101] Acquiescence in the Chilean show of force in the context of the *Pacific Pintail* voyage in 1995 is equally unavailing, not only because of the imbalance of forces, but also because of the presence of other factors, such as adverse weather and sea conditions, that counseled in favor of a course adjustment.[102]

Setting aside this mixed record of state practice, Professor Van Dyke's principle is far from uniformly established in diplomatic practice. For example, as Professors Kwiatkowska and Soons have noted, "the most pronounced difference [between the London Dumping Convention (LDC) and the Basel Convention] consists in the absence from the LDC of requirements of prior notification/PIC which are envisaged in the Resolution LDC.29(10) without specifying their detailed conditions and defining the role of [the] transit state."[103] They also comment:

> Whereas there appears to be no need of including notification/PIC procedures into the LDC which has objectives different from (though complementary to) the export/import-oriented Basel Convention, the objections raised against such inclusion during the LDC meetings could partly relate to the politically sensitive question of the enforceability of these procedures by a transit state. In particular, under the Basel Convention/IAEA Code system (and likewise the [Organization of African Unity] (OAU) Bamako Convention) there arises a major difficulty in accommodating the rules of prior notification and consent of the transit state for waste shipments on the one hand, and the regimes of maritime spaces (territorial sea and 200 mile zone) within its jurisdiction where navigation is not subject to either prior notification or permission of that state on the

99. Rothwell, *supra* note 27, at 616 & nn.198-200 (footnotes omitted).
100. Van Dyke, *supra* note 2 (text accompanying notes 71-107).
101. Van Dyke, *supra* note 2; *see also supra* text accompanying notes 83-86.
102. Van Dyke, *supra* note 2; *see also supra* text accompanying notes 93-95.
103. KWIATKOWSKA & SOONS, *supra* note 3, at xliii.

> other hand. In fact, such accommodation, which belonged to the hard-core issues throughout the preparations of the Basel Convention, appears impossible without affecting either of the rights involved. This can be exemplified by the position of the United States aiming to restrict the applicability of PIC under the Basel Convention to land territory and internal waters of the transit state. While preserving navigational rights, this can diminish the effectiveness of the PIC. A position favouring navigational freedoms can also be anticipated from the [European Community] EC members and other maritime powers. It seems, therefore, most likely that such maritime states prefer to prevent extension of this controversial problem into the LDC framework.[104]

In light of this discussion, and since existing treaties are, to say the least, inconsistent with respect to prior notification/PIC, it would be difficult to show there was, absent some applicable treaty, such an obligation under customary international law.

III. Conclusion

Based on this review of the pertinent authorities and literature, although many thorny navigational rights issues must still be resolved under UNCLOS,[105] the position espoused by Professor Van Dyke with respect to the transportation of plutonium and SNF by sea must be understood more as advocacy than as a disinterested appraisal of the current state of international law. As IMO and other interested international organizations and nongovernmental organizations (NGOs) address the interplay of the law of the sea, environmental law and the pertinent public policy questions, they must not be under the misimpression that traditional concepts of maritime transportation and the law of the sea have been either supplanted or diluted in the fashion he suggests. It must be emphasized that it is by no means clear that a precautionary principle (much less any particular formulation or application of such a principle) has the force of customary international law at this time. Whether such a principle *ought* to or will in time be reflected in some binding international agreement applicable to the transportation of plutonium and SNF depends on what makes sense from a public policy standpoint, with due regard to the navigational rights that have heretofore been so very firmly embedded in the body of international law.

The law of the sea is inherently a conservative body of doctrine, and the major maritime powers are, barring unforeseen circumstances, likely to continue to be highly wary of embracing principles the parameters of which are fuzzy and which, as a practical matter, may infringe on their navigational, economic and political interests. One can confidently predict that these states will be vigilant (now that issue has been joined over the application *vel non* of the precautionary principle to maritime transport of plutonium and SNF) in asserting their own views and, where appropriate, resisting the accretion of further incidental support for that principle in this context.

104. *Id.* at xlvi-xlvii.

105. *See generally* Rothwell, *supra* note 27, at 628-31.