10

The Precautionary Principle

James Cameron

> In order to achieve sustainable development, policies must be based on the precautionary principle. Environmental measures must anticipate, prevent, and attack the causes of environmental degradation. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.[1]
>
> [We must] recognize that much more progress is needed in the WTO Committee on Trade and the Environment. Its work must be revitalised if the trade and environmental agendas are to advance in a mutually supportive way . . . Other areas where we need to clarify the relationship between both policy objectives—trade liberalization and environmental protection—include, among others . . . the so-called precautionary principle.[2]
>
> Questions involving the environment are particularly prone to uncertainty. Technological man has altered his world [the effects of which] are often unknown . . . commonly, "reasonable medical concerns" and theory long precede certainty. Yet the statutes—and common sense—demand regulatory action to prevent harm, even if the regulator is less than certain that the harm is otherwise inevitable.[3]

The precautionary principle is part of a system of rules designed to guide human behaviour towards the ideal of an environmentally sustainable

economy.[4] Fundamentally, it provides the philosophical authority to take public policy or regulatory decisions in the face of scientific uncertainty.[5] The precautionary principle began to appear in international legal instruments only in the 1980s, but it has since experienced what has been called a meteoric rise in international law.[6]

It has been said that the "Precautionary Principle is a statement of commonsense"[7] and it certainly has utility in balancing the competing concerns of economic development against limited environmental resources. The economics of globalization continue to place ever-increasing demands on resources while increasing the efficiency of their use. This essential paradox, together with well-organized opposition to trade liberalization from the environment lobby, has informed the search for balance between trade and environment policy.[8] As Renato Ruggiero, former Director-General of the World Trade Organization (WTO), has stated, "we plainly need a balance, and an integrated approach to policy-making."[9] Furthermore, the precautionary principle has now entered the jurisprudence of the WTO's Dispute Settlement Body.[10] It is no longer a remote concept exclusively located in the environmental law sphere.

This chapter first sets out a brief history of the principle, as evidenced in the usage of explicit precautionary language in law. It then seeks to identify the core concepts of the precautionary principle and define what exactly it is, and examines the principle's status in international law; finally it looks at the precautionary principle in trade in the context of the WTO. The first three parts lead to the fourth and in part respond to those in the trade community who ask straightforwardly: What is the precautionary principle?

1. History of the precautionary principle

The first treaty to make explicit reference to precaution is the 1985 Vienna Convention on Ozone Depleting Substances, wherein the parties recognize "precautionary measures" taken at the national and international levels.[11] The most commonly referenced form of the principle comes from the Bergen Declaration of 1990, quoted above.

Though there have been critics along the way,[12] the principle was finally embraced at the United Nations Conference on Environment and

Development (UNCED) in Rio de Janeiro in 1992.[13] Five environmental instruments, two binding (the United Nations Framework Convention on Climate Change and the Convention on Biological Diversity) and three non-binding (Agenda 21, the Rio Declaration on Environment and Development, and Statement of Forest Principles), were signed and acceded to by virtually all heads of state. Though the full acceptance of the principle as universal can be seen as coinciding with this conference, the precautionary principle has since been reaffirmed in virtually every international agreement on the environment and as the lead principle in the European Union's environmental law, and has been applied by tribunals at all levels to determine disputes and as the basis of domestic regulation relating to the environment.

A more detailed tracking of the precautionary language can be found elsewhere, but there is no doubt that the principle, through general international law, "seeps through the pores"[14] into the legal order of the WTO.

2. The conceptual core of the precautionary principle

Some critics have argued that the principle is an "elusive concept,"[15] and therefore has questionable status in international law, or "at present . . . is not a term of art."[16] However, the precautionary principle does have a conceptual core, and, though its legal status is often contested, its essence should not be.[17]

Much of the confusion surrounding the principle's interpretation stems from confusion between precautionary and preventative measures.[18] Preventative standards may be precautionary or non-precautionary in certain degrees, but precautionary standards, although able to vary the degree of prevention, cannot be non-preventative. This is because, regardless of the particular language used by an instrument, a key element in defining the core of precaution is a lack of certainty about the cause-and-effect relationships or the possible extent of a particular environmental harm. If there is no uncertainty about the environmental risks of a situation, then the measure is preventative, not precautionary. In the face of uncertainty, however, the precautionary principle, like the

Vorsorgeprinzip, allows for the state to act in an effort to mitigate the risks. Put best, *"the precautionary principle stipulates that where the environmental risks being run by regulatory inaction are in some way uncertain but non-negligible, regulatory inaction is unjustified."*[19]

This definition of the conceptual core of the precautionary principle does leave three issues undecided, though it must be stressed that these questions centre around distinctions in kind and do not detract from the essence of the principle.[20] The three issues prompted by the core principle are the meaning and extent of non-negligible risk, the regulatory action that is justified by the principle, and the thresholds and responses to uncertainty.[21] It is important to point out that the third issue, of thresholds, is really addressing the question of how to determine answers to the first two issues, an exercise that ultimately relies on politics and incorporation.

The notion of non-negligible risk is the first issue raised by the well-defined core of the precautionary principle. Gundling, in augmenting his definition of the precautionary principle as "more than the prevention of risk," elaborates that it requires "prevention of environmental impacts irrespective of the existence of risks,"[22] meaning that non-negligible risk arises in all cases of environmental impact. This must be too broad, because all human activity carries with it environmental impacts, and human pollution is unavoidable.[23] What is essential here is the recognition that not all environmental risks are non-negligible and that the scope of precaution must be reasonable in defining this threshold, otherwise an unsustainable utopian element enters into the discourse of the precautionary principle.[24]

Like the confusion between prevention and precaution mentioned above, there is a possible arena of confusion here in the distinction between risk and uncertainty.[25] Risk is the amalgam of the probability of an event occurring and the seriousness of the event's consequences.[26] Thus, if either the likeliness or the seriousness of the event is high, the strategy is high risk. As a starting point, then, the threshold of risk must incorporate the notion that, in order to be non-negligible, a given risk must, in theory, have both of its aspects, on balance, meet this threshold. In the most common form of precaution adopted to date, there is a minimum risk severity before precaution is triggered, that of "serious or irreversible harm."[27] But risk obviates itself altogether from the precau-

tionary principle when its likeliness and severity are known. If both the probability and the magnitude of risks are known, precaution is not a factor because the level of uncertainty involved is relatively low.[28] Risk is inseparable from uncertainty,[29] then, but is not the same as uncertainty.

Assuming the threshold of non-negligible risk is surpassed, the question of what are justifiable regulatory actions comes into play. Regulation seeks the advancement of particular social ends through law.[30] An instrument is designed through a political process to change behaviour for the public good. The ends sought through precautionary means range from avoidance of irreversible environmental harm[31] to protecting biodiversity "regardless of its worth to man."[32] This range of ends provides a further scaling of the precautionary aspect of any environmental regime, with the degree of precaution increasing as more emphasis is placed on environmental ends in their own right and decreasing as qualifying ends (perhaps economics) are incorporated.[33] Thus, in cost–benefit terms, the precautionary principle attributes a high cost to regulatory inactivity in the face of uncertainty while recognizing the inherent benefit of action in such cases.[34]

Though the notion of justified regulatory action was bifurcated into ends and means, the points of note in regard to each are quite similar. This is because means in such international environmental regimes are in essence intermediate ends rather than specific procedures, such as the use of best available technology (BAT).[35] One key is that, because it deals in matters of degree, limiting language on such subsidiary or final ends of any precautionary device does not preclude those ends from being precautionary or imply non-recognition of the doctrine. In fact, there are inherent dangers in being too precautionary, such as economic waste, political embarrassment, or a reduction in later precautionary measures owing to the waste and embarrassment.[36] Thus, such limiting of degree is necessary in mitigating these dangers. Some analyses suggest that, for this reason, cost assessment procedures should be applied in precautionary principle situations,[37] while others, arguing on an insurance analogy, point out that the value obtained by any disaster aversion policy is not undermined by the non-occurrence of the disaster insured against.[38] "Precaution accepts that uncertainty in both outcome and practical response is a precondition of action and devises techniques to plan always for the worst outcome."[39]

After entertaining the notions of thresholds of risk and action on a general level, the question of thresholds becomes, more specifically, one of how the thresholds of (a) non-negligible risk and (b) costs of regulatory inaction should be set. A general precautionary answer to this question stipulates that the thresholds should be (a) low and (b) high, though that, in turn, again begs the question of degree.[40] Since the scientific evidence is uncertain, this determination must be made in a more overtly judgemental forum, namely that of politics, because such institutions are where one must regulate public affairs absent recourse to pure science.[41] Thus, by explicitly noting the limits of scientific determination, the precautionary principle legitimates public political determination of these issues, in some sense democratizing international environmental law.[42]

The question remains as to how much such political processes can be superimposed on scientific evidence. Again, the examples from international law vary in degree, from "no scientific evidence to prove a causal link"[43] to "before a causal link has been established by absolutely clear scientific evidence."[44] Science cannot be divorced from the precautionary principle because a scientific view of the risk is an essential component of the evaluation of risk that the principle anticipates.

The following observations can be made. First, the precautionary principle can attribute much of its rise, nationally and abroad, to a public perception of scientific inadequacy in addressing environmental regulation. Secondly, the fact that science is uncertain at its most basic level[45] throws doubt on its adequacy, in theory, at addressing environmental concerns.[46] As well, science has little ability to answer the questions of law and policy, which ask science to provide answers in yes or no terms, a task it is uniquely designed to avoid. Finally, all scientific assessments of environmental damage are dependent on subjective assumptions of what constitutes harm, especially in degrees, and therefore necessarily involve judgements that have cultural, economic, and political bases.[47]

Once it is established that the thresholds of non-negligible risk and justified regulatory action in response to uncertainty necessarily boil down to a judgemental political question, two other points of interest become apparent. The first of these is the phenomenon of changing uncertainties and precaution due to a change in physical circumstances

1 LINE SHORT

and geographic locale.[48] This notion of understanding differing ecological, cultural, political, and economic needs of differing places and physical circumstances, often found under the rubric of "equity" in international environmental discourse, has many impacts on the implementation of the precautionary principle. Different states will define non-negligible risk and justified regulatory acts differently based on differing probability and severity of risk and differing capabilities to regulate. For instance, just looking at the risk side of the equation, one can see that the magnitude of global climate change, which might be low for some countries, could be potentially devastating or fatal for low-lying small islands. In such a case, not only may degrees of precaution change, but a regime may even switch between being preventative or being precautionary.[49] One point that cannot be overstated, however, is that environmental interdependence and the nature of uncertainty dictate that the successful implementation of a vital preventative standard in one part of the planet is contingent upon the adoption of, at a minimum, precautionary standards elsewhere.[50]

Finally, a commonality of all precautionary measures is a shifting of the burden of proof away from traditional legal standards, which have said that parties accused of environmental degradation must be "proven wrong" before they are required to stop the activity in question.[51] The precautionary principle, via determining what the thresholds are for both risks and justifiable regulation, can ease the required burden for what exactly constitutes a likely harm, making it less than scientific proof.[52] In fact, this burden of what must be proven can shift completely, requiring that there be proof of no harm prior to action, rather than proof of harm prior to halting action. But what must be proven is only one facet of the burden of proof. The party bearing the burden is of legal concern as well, and it has been pointed out that the burden of proof should rest with the party seeking to change the status quo. Of note is that the "status quo" refers to the unaltered state of the environment in this instance, because in some contexts in international law "status quo" will refer to development and its current pace, a completely opposite framing of the issue.[53]

1 LINE SHORT

3. The precautionary principle as international law

I feel confident in making the argument that the precautionary principle is part of the body of international environmental law. It is possible reasonably to argue the contrary. Experience reveals that it is very easy to challenge an argument for a customary law rule in a court of law, especially a domestic court or a specialist international tribunal used to applying technical rules. Judges of one kind or another generally prefer to interpret rules written in an agreement rather than construct a rule from widely differing sources of evidence and *then* interpret it.

None the less, the starting point of the argument for the principle, being a principle of law, must be to list the sources of international law.[54] Treaties apply only to signatories to the treaty, and only within its scope. Customary law, however, has the potential to bind all states, if the specific conditions for custom are met. General principles of law are evidenced, for the most part, through the specific national legal practices of various states, and will often derive from judicial decisions and even the writings of leading individual authorities, as pointed out by the Statute of the International Court of Justice (ICJ) and evidenced in example by the ALI Restatement on International Law.

Where the precautionary principle is part of a treaty such as the UN Framework Convention on Climate Change, it is binding on the parties that sign and ratify the treaty. It is binding in the terms expressed in writing as interpreted by the parties themselves in the practice of the organization, by the Secretariat if and when asked to contribute an opinion, by any compliance procedure internal to the treaty, or by any other international tribunal called upon to decide on a particular case where a party argues for its relevance. In this way, at one level, there is simply no doubt that the principle is part of international environmental law. It is there in writing in multilateral environmental agreements. But in order to judge whether the principle is relevant to another international agreement, on trade, we must look at the other sources of international law as well as WTO agreements.

Customary law is developed over time in the international arena as states exhibit a pattern or practice of behaviour arising from a perceived legal duty. These two requirements of customary law are called state

practice and *opinio juris,* respectively. Historically, little environmental law reached the level of custom. Respecting the exercise of high seas freedoms, cooperating in the use of shared resources, and preventing trans-boundary pollution are items on the shortlist of what constitutes customary environmental obligations binding on all states.[55]

There are several who argue that the precautionary principle is not, or not yet, customary law. Some claim there are problems with its variety of interpretations, leading to difficulty in deciding when to apply it and opening the floodgates for far-reaching effects.[56] Others cite its vagueness, and urge the conundrum that one use precaution when applying precaution.[57] Both of these arguments, essentially the same, speak not to custom but rather to the principle itself, and can be answered by the core meaning discussion above.

The precautionary principle has been included in virtually every recently adopted treaty and policy document related to the protection and preservation of the environment.[58] The Convention on Biological Diversity places no direct precautionary obligation on the parties. This is because the language of the principle—"full scientific certainty should not be used as a reason"[59] —is contained in the preamble, a non-binding statement of general principles in international documents. However, obligations under the Convention will be interpreted in light of such preambular statements.[60] Another of the UNCED documents, the Rio Declaration, more fully embraces the wide application of the precautionary principle, stating, "the precautionary approach shall be widely applied," and "lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures."[61] The Framework Convention on Climate Change from Rio requires "precautionary measures," forbids scientific uncertainty as an excuse for inaction in the face of irreversible damage,[62] and outlines ways to achieve precaution.[63] Agenda 21 employs precautionary language tied to specific measures to enhance sustainable development policy.[64]

The OSPAR Convention[65] makes the principle a mandatory obligation of the parties ("shall apply") and establishes a threshold for precautionary action ("reasonable grounds for concern").[66] The Second Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution incorporates "precautionary measures" in the preamble,[67] and further reflects the approach in its targets and monitoring programme. Sig-

natories to the Second North Sea Conference saw the "precautionary approach [as] necessary"[68] as well, and signatories to the Baltic Sea Declaration state their "firm intention" to "apply the precautionary principle."[69] In addition to multilateral documents, the precautionary principle also appears in regional international documents, such as the African Bamako Convention[70] and European Directives on genetically modified organisms (GMOs).[71] These international legal instruments evidence state practice and, within their spheres, *opinio juris.* Where states make arguments in international tribunals as to the state of the law, evidence can be derived of *opinio juris.* For example, Hungary, in its application to the ICJ on the Diversion of the Danube River, referred to the obligation in international law to apply the precautionary principle to protect a trans-boundary resource.[72] The parties to the 1992 Transboundary Watercourses and International Lakes Convention agreed to be bound by the precautionary principle "by virtue of which action to avoid the *potential transboundary impact* of the release of hazardous substances shall not be postponed on the ground that scientific research has *not fully proved a causal link* between those substances, on the one hand, and the potential transboundary impact, on the other hand."[73]

A fairly recent statement of the principle is found in the 1995 UN Straddling Stocks Agreement, which has specified how states should apply the principle:

> States shall apply the *precautionary approach widely to conservation, management and exploitation* of straddling fish stocks and highly migratory fish stocks in order to *protect* the living marine resources and *preserve* the marine environment.
>
> States shall be *more cautious* when the information is uncertain, unreliable or inadequate. The absence of adequate scientific information shall *not* be used as a reason for postponing or failing to take conservation and management measures.[74]

The expression "precautionary principle" formally entered the language of environmental policy in the European Communities (EC) only with the Dublin Declaration of 1990, followed in 1992 by the Fifth Action Programme on Environment. The Fifth Action Programme, which refers to the Dublin Declaration, states in Chapter 2 that: "the guiding principles for policy decisions under this Programme derive

from the PRECAUTIONARY APPROACH and the concept of SHARED RESPONSIBILITY, including effective implementation of the Polluter Pays Principle."[75] In 1992, the Maastricht Treaty amended Article 130R, inserting the precautionary principle among the other principles of EC environmental law (the principle of prevention, the principle of rectifying damage at source, and the polluter-pays principle). Article 13OR(2) now provides that: "Community policy on the environment . . . *shall* be based on the precautionary principle."

The earliest example of an explicit reference to a precautionary measure in legislation of the European Communities is to be found in the EC Council Decision of April 1980 on chlorofluorocarbons (CFCs), which provides that "a significant reduction should, as a *precautionary measure,* be achieved in the next few years in the use of chlorofluorocarbons giving rise to emissions." Other examples of the precautionary principle being embodied in EC legislation are Directive 79/831 on the testing of new chemicals before they are marketed, Directive 80/778 of July 1980 on maximum admissible concentrations of pesticides in drinking water, Directives 90/219 and 90/220 concerning genetically modified organisms, and Directive 91/271 on urban waste water.

The precautionary principle can also be seen in the domestic regulation of states, which in turn can be taken as evidence of *opinio juris.* It is also possible, although it is a more exacting task, to show that these national laws displaying precaution count as evidence of the third type of international law: "general principles common to the major legal systems."[76]

In Germany, as detailed above, the *Vorsorgeprinzip* demands that damage to the environment be avoided in advance and provides for action absent conclusive science, buttressing governmental precautionary action.[77] The *Vorsorgeprinzip* also encourages immediate investment into existing cleaner technology, requires the use of best available technology, and promotes economic measures meant to internalize the pollution externalities.[78] The United Kingdom incorporated precaution in, *inter alia,* the White Papers, dating back to the 1990 *This Common Inheritance: Britain's Environmental Strategy,* which states the government "will be prepared to take precautionary action . . . even where scientific knowledge is not conclusive, if the balance of likely costs and benefits justifies it."[79] An interesting version appeared in the National Report of what

was then the Czech and Slovak Federal Republic prepared for UNCED: "Environmental policy should be based on the following principles [among them] preliminary prudence and caution."[80]

The precautionary principle has seen extensive implementation not only in Europe, but on other continents as well. In North America, Canada incorporated the principle in the Environmental Protection Chapter of the Agreement on International Trade, aimed at interprovincial barriers to trade. Article 1502.3 permits the use of the precautionary principle as a rationale for environmental measures even if these might have a negative impact on international trade.[81] And, although not explicitly referred to, Alberta's Environmental Protection and Enhancement Act implicitly supports the precautionary principle in that standards can be set without full scientific proof.[82] There is currently a Bill, C-32, going through the Canadian parliament to amend the Environmental Protection Act to include the precautionary principle.

Ironically, however, given the ambivalent position of the United States at the international level, no country has so fully adopted the essence of the precautionary principle in domestic law as the United States. Although not described as such, the principle underlay the first wave of US federal environmental statutes in the 1970s, with the most striking characteristic being the unwillingness to wait for definitive proof.[83] The 1970 Clean Air Act (CAA) called on the Environmental Protection Agency (EPA) to apply "an ample margin of safety" in setting emissions limits for hazardous pollutants.[84] The Clean Water Act of 1972 (CWA) adopted a zero emissions goal on water pollution.[85] In fact, though the United States has often questioned the precautionary principle in international forums, its domestic law has been surprisingly precautionary.[86]

The United States' first true environmental law, the National Environmental Policy Act (NEPA) of 1969, substantively required the Environmental Protection Agency, which it created, to "use all practicable means . . . consistent with other considerations" in "considering" the environment, an act necessitated by any major federal action significantly affecting the quality of the human environment.[87] NEPA is an example, more than anything, of the use of procedural duties in an effort to act in precaution. Though the substantive duty listed above is quite discretionary for the Agency, the preparation of an Environmental Impact Statement (an analogue of the environmental impact assessment) is

required by any federal action unless the environment will not be affected. In order to determine this, an environmental assessment must be done and, if there is no need for an Environmental Impact Statement, a Finding of No Significant Impact (FONSI) must still be filed.[88] Further, in *Sierra Club v. Siegler,* the Court found that NEPA requires a worst-case analysis, saying it is necessary "to assist decision making in the face of scientific uncertainty and as furthering the mandate of NEPA."[89]

Being exhaustive here is not possible. The US environmental regulations embracing precaution abound, with many statutes shifting the burden of proof (e.g. Federal Food, Drug, and Cosmetics Act and the Federal Insecticide, Fungicide, and Rodenticide Act), some creating strict liability for destroying biodiversity (e.g. Endangered Species Act, Marine Mammal Protection Act, and Bald and Gold Eagle Protection Act), and still others requiring the best available technology (e.g. CAA and CWA).[90] Congress has even chosen to be specific on this issue, saying of the 1977 CAA Amendments that the EPA's duty was to "assess risks rather than wait for proof of actual harm."[91]

There are now several judicial decisions concerning the precautionary principle. In the second nuclear test case (*New Zealand v. France*) in the International Court of Justice, the precautionary principle was argued. Although the case never proceeded to the merits, and the order of the ICJ of 22 September 1995 does not rule upon the status of the principle in international law, there is ample material to be derived from the case that advances the argument that the principle is custom. Judges Weeramantry and Palmer, having reviewed all the international treaties applying the precautionary principle, arrived at the conclusion that this principle had developed sufficiently to be considered "a principle of custom international law relating to the environment."[92] It is worth noting that in addition to New Zealand all the other intervening governments from the South Pacific region (Australia, Samoa, Solomon Islands, Marshall Islands, and the Federated States of Micronesia) argued that France was bound by custom international law to respect the precautionary principle and to carry out environmental impact assessment before conducting the nuclear tests.

In 1996 the International Court of Justice heard two requests for an advisory opinion from the World Health Organization and the United

Nations General Assembly on the legality of the threat or use of nuclear weapons. Again the precautionary principle was argued and, although incidental to the ultimate decision of the tribunal, the Court did refer to the principle in a brief section on the general principles of international environmental law.[93] In the *Gabcikovo–Nagymaros* case, also before the ICJ, Vice President Weeramantry in a separate opinion ruled that, in the case of a potential significant impact on the environment, there was a duty upon states to carry out "continuing environmental impact assessment." He stated that the environmental impact assessment was "a specific application of the larger general principle of caution."[94]

In the European Court of Justice (ECJ) there has been no definitive ruling on the status of the precautionary principle. The issue might have been determined if the plaintiffs in *Danielsson & Others v. The Commission*[95] had been granted standing to bring their case. However, the *Danish Bees* case[96] indirectly applies the precautionary principle to justify a measure having equivalent affect to a quantitative restriction in EC law. In the *Danish Bees* case the ECJ ruled in favour of a decision by the Danish Minister for Agriculture prohibiting the keeping of nectar-gathering bees, other than those of the sub-species *Apis Mellifera Mellifera* (Laeso Brown Bee), on the island of Laeso. Even in the absence of conclusive scientific evidence establishing both the particular character of that sub-species of bee in relation to others and the risk of extinction, the Court concluded that:

> Measures to preserve an indigenous animal population with distinct characteristics contribute to the maintenance of biodiversity by ensuring the survival of the population concerned. By so doing, they are aimed at protecting the life of those animals and are capable of being justified under Article 36 of the Treaty.

Here, in the context of a trade principle such as the free movement of goods, the public policy exceptions in Article 36 are being interpreted in a precautionary manner.

In an Australian decision, the Land and Environment Court of New South Wales noted that Australia was a signatory to international conventions containing the principle and had incorporated it into state regulatory strategies.[97] Stein J. said of the debate over the legal status of the principle, "It seems to me unnecessary to enter into this debate . . .

the precautionary principle is a statement of commonsense prior to the principle."[98] This reasoning was followed in the *Friends of Hinchinbrook Society* case. This was a case involving the World Heritage Convention, the Great Barrier Reef, and ministerial decisions taken under Australia's implementing legislation, the 1983 World Heritage Properties Conservation Act. The Federal Court found in favour of the ministerial decision but only on the basis that the minister had in fact exercised caution in the face of scientific uncertainty:

> It is true that the Minister did not expressly refer to the precautionary principle or some variation of it, in his reasons. But it is equally clear that before making a final decision he took steps to put in place arrangements designed to address the matters of concern identified in the scientific reports and other material available to him. The implementation of these arrangements . . . indicates that the Minister accepted that he should act cautiously in assessing and addressing the risks to World Heritage values . . . he took into account the commonsense principle that caution should be exercised where scientific opinion is divided or scientific information is incomplete.[99]

Barton points to this and other instances in Australia to support the statement that, in Australia, the principle is "a valid policy means of achieving improved environmental protection."[100]

In the United Kingdom, the Court held that Article 130R of the EC Treaty, as amended by the Maastricht Treaty, did not impose the duty on the Secretary of State to implement the principle in relation to trade. However, the important fact is that the principle was accepted as a principle of law by the tribunal, with the debate being limited to whether Article 130R created direct obligations on a Minister of the Crown.[101] Along with the cases mentioned above, the US courts have also said, "[w]here a statute is precautionary in nature, the evidence difficult to come by [or] uncertain . . . the regulations designed to protect the public health, and the decision that of an expert administrator, we will not demand rigorous step-by-step proof of cause and effect."[102] Further, national judicial decisions supporting the constitutional right to a balanced ecology for both present and future generations have been found in Costa Rica, Argentina, Ecuador, Peru, India, and Pakistan.[103]

There are common elements in all instruments implementing precaution. These common elements constitute the core meaning. Regardless of the differences in wording, all of these precautionary examples share three common elements: (1) regulatory inaction threatens a non-negligible harm; (2) there exists a lack of certainty as to the cause-and-effect relationships; and (3) in such circumstances, regulatory inaction is unjustified.[104]

International law can readily absorb these elements in the principle of good neighbourliness, which, for environmental protection purposes, is expressed in Principle 21 of the Stockholm Declaration.[105] The duty to take state action to prevent harm is embedded in the customary duty to prevent trans-boundary pollution, dating back to the *Trail Smelter Arbitration* early in the twentieth century.[106] The precautionary principle on the international plane can attach itself to Principle 21, which is an established customary law rule.[107]

The precautionary principle is no less legal because it is general—the lack of definitive understandings for the terms "property rights" and "public utility" would not keep the international legal system from hearing an expropriation and compensation case.[108] In short, the support for the principle is steadily becoming broader, perhaps even to the degree that it reflects a principle of customary law.

4. The precautionary principle and international trade

The precautionary principle is now implicated in the trade and environment debate. It will be on the agenda, in the loosest sense of that word, for the third Ministerial Conference of the WTO in Seattle in December 1999. The European Union (EU) has "clarification of the application of the precautionary principle" on its official proposal for negotiations in the new round.[109] Specifically, the EU argues for a review if a clarification of the relationship between multilateral trade rules and core environmental principles, notably the precautionary principle, is needed. It is necessary to ensure the right balance between prompt, proportional action, where justified, and the avoidance of unjustified precaution, bearing in mind that the basic concept of the precautionary principle is

already present in the WTO in several key provisions, such as the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS) and the Agreement on Technical Barriers to Trade (TBT).

The context for this proposal is well expressed by Renato Ruggiero:

> [E]conomic integration can turn what were once domestic issues into global concerns. And all represent legitimate and important policy goals that the international trading system is being asked in one way or another to address . . . "No one is being asked to choose one over the other and no one should."[110] None of us can ignore the reality of these global concerns—whether they be environmental, development, social, or ethical issues. To describe the WTO—as sometimes happens at present—as an institution which is only focused on free trade and is insensitive to broader human concerns and values is a false representation.[111]

The EU makes its proposal having attempted to use the principle to prevent imports of US hormone-raised beef. Policy makers with complex environmental problems to address have a range of instruments at their disposal. The precautionary principle is designed to assist in changing behaviour in order to reduce risk to society. It is a controversial policy because it makes a difference. In these circumstances it is unsurprising that conflicts with economic interests emerge. Sir Leon Brittan stated recently: "There is of course a dilemma for policy makers when partial but not complete evidence becomes available that products may be harmful to the consumer, or damaging to the environment, or both. I accept the legitimacy of the concept of precaution in the field of environment and health."[112]

The WTO has already adopted sustainable development as an orientation for trade liberalization. The Preamble to the Agreement Establishing the WTO states:

> Recognizing that their relations in the field of trade and economic endeavour should be conducted with a view to raising standards of living, ensuring full employment and a large and steadily growing volume of real income and effective demand, and expanding the production of and trade in goods and services, while allowing for the optimal use of the world's resources in accordance with the

> objective of sustainable development, seeking both to protect and preserve the environment and to enhance the means for doing so in a manner consistent with their respective needs and concerns at different levels of economic development. . .[113]

President Clinton referred to this at the Ministerial Conference of 1998, saying the Preamble "explicitly adopts sustainable development as an objective of open trade, including a commitment to preserve the environment."[114] This view is clearly expressed in the US communication to the General Council that contains its proposals for the 1999 Ministerial Conference.[115] Preambular provisions are not binding in themselves but they do guide interpretation of rules. It is possible therefore that precaution, allied to sustainable development, could be a guiding factor in determining where exactly the balance lies between free trade and environmental and health protection. This is consistent with good faith interpretation in accordance with stated objectives and purposes.[116] It is also possible that the precautionary principle will assist in interpreting unclear rules when environment or public health values are at risk, providing guidance to panels or the Appellate Body where the WTO rules have not.[117] Both the SPS Agreement and the TBT Agreement, together with the General Agreement on Tariffs and Trade (GATT), Article XX, can be informed by the principle.

The TBT Agreement applies to national regulations that use technical rules to protect health and the environment, such as packaging, marketing, and labelling requirements. The TBT Agreement is intended to ensure that members do not use technical regulations as disguised economic protectionism, and attempts to do this by encouraging harmonization.[118] The TBT Agreement places obligations on two types of measures: regulations and standards.[119] A regulation establishes mandatory product requirements based on processes and production methods (PPMs), whereas a standard establishes voluntary requirements for products or related PPMs.[120] Harmonization is promoted by requiring international standards to be used as the basis for such national requirements, unless the member can demonstrate such a standard is inappropriate to fulfil a legitimate objective.[121] Furthermore, there must be no other available means less restrictive to trade in addressing the issue.[122] The TBT Agreement does not explicitly incorporate the

precautionary principle in its text. The principle could however be relevant to the application of the TBT to domestic measures in two ways:

- it may be used as a general principle behind the adoption of a specific rule that is classified as a technical barrier;
- it may determine the level of protection a country chooses.

In both circumstances the traditional analysis of what constitutes a "like product" will be stretched. The scientific evidence required to justify the domestic standard under the TBT Agreement will, for those countries adopting precautionary measures, pass through a precautionary lens.

The Worldwide Fund for Nature (WWF) urged application of the precautionary principle before the WTO Dispute Settlement Body in the *Shrimp-Turtle* dispute. The WWF urged the panel that, in review of Article XX exceptions, the panel should bear in mind the precautionary principle, in that the subject matter of the dispute concerned an endangered resource threatened with extinction.[123] The Sanitary and Phytosanitary Agreement (SPS) 1994 adopts a form of precautionary approach[124] to safeguarding human or animal life, and since the threat of turtle extinction was both serious and irreversible there should be cost-effective measures taken to prevent such damage from occurring.[125]

On Appellate Body review of the decision, WWF again filed a supplementary *amicus curiae* brief, in which it alleged that the panel failed to consider customary law in not applying the precautionary principle. It claimed that the SPS Agreement required the treaty—GATT 1994 in this case—to be interpreted taking into account relevant rules of international law.[126] The Appellate Body had already indicated a willingness to have arguments regarding custom and the principle in the *Hormones* case, and there was an even stronger case for its application here.[127]

The *Hormones* case

The principle did not determine the *Shrimp-Turtle* case, but it was a significant part of the *Hormones* case. In that case, the Appellate Body spoke directly to the relevance of the principle in the interpretation of the SPS Agreement. Ultimately, the principle did not apply, they

decided, because it could not override the explicit wording of Article 5.1 and 5.2 of the SPS Agreement, which provided that SPS measures be based on risk assessment, a duty the EU had failed to honour.[128] The Appellate Body pointed out, though, that the principle had, in essence, been incorporated into Article 5.7 of the SPS Agreement.[129]

The SPS Agreement provides a state with arguments for trade-restrictive measures to protect health or the environment. It supersedes the requirements of GATT Article XX(b), and it is expressly not subject to the TBT Agreement.[130] The SPS Agreement has two main requirements relevant to the precautionary principle. The first is that measures be based on risk assessment, and the second is the right to take provisional measures where science is insufficient.

At the panel stage the EU chose not to argue its case based on the grounds of 5.7. It reasoned that 5.7 provides for a temporary measure, subject to requirements of further research and later review, and the EU sought a more permanent rule. Ultimately the EU argued that the precautionary principle had become "a general customary rule of international law" or at least "a general principle," and should be applied to Articles 5.1 and 5.2.[131] This would entail reading the risk assessment requirement of the SPS Agreement to be flexible in the face of scientific uncertainty, particularly by allowing members to be cautious. The United States argued that it did not consider the principle to be part of international law but merely "an approach." The United States further argued that the SPS Agreement does recognize a precautionary approach; indeed, Article 5.7 permits the provisional adoption of SPS measures even where the relevant scientific evidence is insufficient. Thus it argued there was no need to invoke a "precautionary principle" in order to be risk averse since the SPS Agreement, by its terms, recognized the discretion of members to determine their own level of sanitary protection. Furthermore the EU's indication of a "precautionary principle" could not create a risk assessment where there was none, nor could a "principle" create "sufficient scientific evidence" where there was none.[132]

The Appellate Body recognized that one of the issues in the appeal was "whether, or to what extent, the precautionary principle is relevant in the interpretation of the SPS Agreement."[133] The Appellate Body decided that the principle was "the subject of debate among academics, law

practitioners, regulators, and judges," and that the status of the precautionary principle in international law was something they should not rule on.[134] They decided that "*the precautionary principle cannot override our finding* . . . namely that the EC import ban . . . in accordance with good practice, is, from a substantive point of view, not based on risk assessment."[135] The Appellate Body did however agree with the European Union "that there is no need to assume that Article 5.7 exhausts the relevance of a precautionary principle."[136]

Although not taking a decision on the substantive application of the principle in the case, the Appellate Body was able to "note some aspects of the precautionary principle in the SPS Agreement."[137] Although not in itself a ground for maintaining an otherwise incompatible measure, it does find reflection in Article 5.7. Also, it is reflected in Article 3.3, which explicitly recognizes the right of members to establish their own appropriate level of sanitary protection, which may be higher, or more cautious, than international standards and guidelines. In addition, the panel should bear in mind that responsible governments act from a perspective of prudence when they determine "sufficient scientific evidence."[138]

Another important outcome of the *Hormones* decision is what it revealed about the burden of proof. It confirmed explicitly that the burden is on the member challenging an SPS measure to establish *prima facie* evidence that there is a lack of risk assessment. Once that burden has been met, the burden then shifts to the defending party to counter the inconsistency.[139] The Appellate Body also interpreted that the 5.1 and 5.2 requirements that measures be "based on" risk assessment were determined by a "rational relationship" test between the measure and a risk assessment, which can be established absent scientific certainty.[140]

Two conclusions relating to precaution and trade come from this discussion. First, the principle *is* relevant to the trade regime. Secondly, by avoiding ruling on its status as custom, the Appellate Body ensured that it will have to revisit the issue in future cases.

Hormones was followed by *Australia—Measures Affecting Importation of Salmon*[141] in which Canada challenged an Australian prohibition on the import of uncooked salmon. The Appellate Body upheld a panel decision that Australia was in violation, ruling that the ban failed to meet the requirements of Article 5.1 because it was not based on a risk assess-

ment.[142] For the first time interpreting "risk assessment" in the environmental, rather than health, context, the Appellate Body defined the elements of a risk assessment to be: (1) identification of the pests or diseases sought to prevent as well as the biological and economic consequences of their entry, (2) evaluation of the likelihood of entry and the consequences absent the SPS measure, and (3) evaluation of the likelihood with the measure in place.[143] The body also noted that a member could determine "its own appropriate level of protection to be 'zero risk.' as long as [it was] more than theoretical."[144] In principle, this decision suggests that members have scope in taking precautionary measures, but how much scope remains to be seen in practice.

Article 5.7 provides that members may provisionally adopt SPS measures in the face of insufficient scientific evidence, and this was the focus of *Japan–Varietals.* In this case, the United States challenged Japan's fumigation and varietal testing requirements on eight orchard crops. The Appellate Body cited Article 2.2 of SPS, pointing out that only 5.7 allows access to SPS measures absent scientific evidence and risk assessment.[145] Japan had violated this by maintaining requirements for four of the crops absent "sufficient" scientific evidence. Being forced to address this "sufficiency" requirement, the Appellate Body noted it was a "relational concept. 'Sufficiency' requires the existence of a sufficient or adequate relationship between . . . the SPS measure and the scientific evidence,"[146] to be determined on a case-by-case basis.[147] They went on to say that this requirement of 2.2 also applied to Articles 5.1 (basis on risk assessment) and 5.7, citing and reaffirming *Hormones.*[148] Further, the Appellate Body outlined four requirements created by 5.7, saying a member could adopt a provisional measure if: (1) the situation was one of insufficient scientific information, (2) it was adopted based on pertinent available information, (3) the member sought to obtain the additional information for a risk assessment, and (4) the member reviews the measure within a reasonable period of time.[149] The Appellate Body dealt with Japan's precautionary principle in short order, quoting *Hormones* briefly before moving on.[150]

SHORT PAGE BEFORE HEADER

5. Conclusion

The precautionary principle has been adopted by the environmental movement as a kind of standard to bear arms against those who threaten environmental harm. One notable response from Public Citizen sets out several of the key arguments of the more radical environmental groups:

> *The Evisceration of the Precautionary Principle in the Beef-Hormone Case*
>
> The Beef Hormone Decision demonstrates how the SPS Agreement can undermine countries' health, safety and environmental standards when trade challenges are initiated . . . Indeed, many areas of U.S. law—such as our system for pharmaceutical approval—are based on the precautionary principle . . . The potential boomerang effect of this WTO determination on a range of U.S. laws is immense.
>
> Second, the Beef-Hormone case demonstrates that the SPS Agreement exalts the role of science far beyond the point it is appropriate, attempting to eliminate all "non-science" factors from standard-setting . . . While science plays a valuable role in informing such policy decisions, it is ultimately Congress or a state legislature that must make the political decision about how much risk society will face under a food safety or other law . . . by requiring food safety standards to be based on a risk assessment, the SPS Agreement eliminates the possibility that a society's values . . . should outweigh the uncertain outcome of a risk assessment . . .
>
> Moreover, risk assessments can be no better or more accurate than the data on which they are based. Yet, most of the data on emerging toxins, like E-coli H:157, is scanty; and therefore, the risk assessments are incomplete as well . . .
>
> The Beef-Hormone ruling makes clear that despite promises to the contrary by the United States government, the SPS Agreement will result in diminishing the safety of our food and in reducing the level of health or environmental protection for Americans. The U.S. beef industry may be happy with the bottom line, but the jurisprudence established by this case threatens numerous U.S. laws.[151]

Regardless of whether this view is accepted, the precautionary principle will continue to be argued in the international trading scheme. Members will look to safeguard their rights to prohibit or regulate trade in the public interest. The value-rich precautionary principle provides an authority or justification for that desire to safeguard. Finally, we must avoid the futility of the "sound science vs. precaution" debate. The application of the precautionary principle involves scientific argument about risk or irreversibility in a political and legal context. The case against the application of the precautionary principle involves scientific argument about risk or irreversibility in a political or legal context.

Acknowledgements

This paper could not have been completed without the help of Jon P. Sanders, Juris Doctorate candidate, Vermont Law School, USA; Intern, Foundation for International Environmental Law and Development (FIELD). I am extremely grateful to him for his assistance. I have also been assisted by reading an early unpublished draft of "The Implications of the Precautionary Principle for Trade and Sustainable Development," UNEP Paper, June 1999. And finally, at the College of Europe, Matthia Pellegrini wrote an excellent paper entitled "Is the Precautionary Principle a Norm of Customary International Law?" which I have found very helpful.

Notes

1. United Nations Economic Commission for Europe (ECE), Ministerial Declaration on Sustainable Development in the ECE Region, Bergen, May 1990, para. 7.
2. "The Future of the World Trading System," Address by Renato Ruggiero, Director-General of the World Trade Organization, 15 April 1998, to the Institute for International Economics Conference, Washington, DC, reproduced at http://www.wto.org/speeches/bergen.htm.
3. *Ethyl Corp. v. EPA,* 541 F.2d 1, 24, 25 (D.C. Cir. 1976), cert. denied, 426 U.S. 941 (1976).
4. James Cameron and Juli Abouchar, "The Status of the Precautionary Principle in International Law," in David Freestone and Ellen Hey, eds., *The Precautionary Principle and International Law: The Challenge of Implementation,* London: Kluwer Law International, 1996, pp. 29–53, at p. 29.

5. James Cameron, "The Precautionary Principle—Core Meaning, Constitutional Framework, and Procedures for Implementation," Conference paper, Institute of Environmental Studies, University of New South Wales, 1994, p. 2.
6. Cameron and Abouchar, "The Status of the Precautionary Principle," op. cit., p. 80. See also James Cameron and Will Wade-Gery, "Addressing Uncertainty: Law, Policy, and the Development of the Precautionary Principle," CSERGE Working Paper, GEC 92-43, 1992, also in Bruno Dente, ed., *Environmental Policy in Search of New Instruments,* Dordrecht: Kluwer Academic Publishers, 1994.
7. *Leatch v. National Parks and Wildlife Service* (1993) 81 LGERA 270 (Stein J.), Australia.
8. James Cameron, Paul Demaret, and Damien Geradin, eds., *Trade and Environment: The Search for Balance,* vol. 1, London: Cameron & May, 1994.
9. Ruggiero, "The Future of the World Trading System," op. cit., p. 2.
10. See, generally, *EC Measures Concerning Meat and Meat Products (Hormones)—Complaint by the United States,* Panel Report, WT/DS26/R/USA, 18 August 1997; see also the Appellate Body Report, WT/DS26/AB/R, WT/DS48/AB/R, 16 January 1998.
11. Vienna Convention on Ozone Depleting Substances, 1985, Preamble, n. 179.
12. See below.
13. Cameron and Abouchar, "The Status of the Precautionary Principle," op. cit., p. 37.
14. Timothy O'Riordan and James Cameron, "The History and Contemporary Significance of the Precautionary Principle," in Timothy O'Riordan and James Cameron, eds., *Interpreting the Precautionary Principle,* London: Earthscan Books, 1994, p. 16.
15. L. Gundling, "The Status in International Law of the Precautionary Principle," *International Journal of Estuarine and Coastal Law* 5(3), 1990, 25.
16. G. Handl, "Environmental Security and Global Change: The Challenge of International Law," *Yearbook of International Environmental Law* 1, 1990, 23.
17. See Cameron, "The Precautionary Principle," op. cit., p. 6.
18. Ibid.
19. Ibid., pp. 7 and 8; see also Cameron and Wade-Gery, "Addressing Uncertainty," op. cit., pp. 7 and 8.
20. Cameron, "The Precautionary Principle," op. cit., p. 8.
21. Ibid.; see also, Cameron and Wade-Gery, "Addressing Uncertainty," op. cit.
22. Gundling, "The Status in International Law of the Precautionary Principle," op. cit., pp. 26 and 27.
23. J. Cameron and J. Abouchar, "The Precautionary Principle: A Fundamental Principle of Law and Policy for the Protection of the Global Environment," *Boston College International & Comparative Law Review* 14(1), Winter 1991, 3.
24. Cameron and Wade-Gery, "Addressing Uncertainty," op. cit., p. 9.
25. Ibid.
26. Ibid., pp. 9 and 10.
27. Bergen Declaration, op. cit.
28. Cameron and Wade-Gery, "Addressing Uncertainty," op. cit., p. 9.
29. Anthony Giddens, *Risk,* BBC Reith Lectures 1999, lecture 2, available at http://news.bbc.co.uk/hi/english/static/events/reith_99/week2/week2.htm. See also H. Cousy, "The Precautionary Principle: A Status Question," *Geneva Papers on Risk and Insurance* 21, 1996, 162.

30. Ibid., p. 12.
31. See statement to the GLOBE General Assembly by H.E. Mr. Renagi R. Lohia, OBE, Permanent Representative of Papua New Guinea to the United Nations, on behalf of AOSIS, Washington, DC, 3 February 1992.
32. World Charter for Nature, G.A. Res 37/7, GAOR, Thirty-Seventh Sess. Supp. No. 51 (A/37/51).
33. Cameron and Wade-Gery, "Addressing Uncertainty," op. cit., p. 13.
34. Ibid.
35. Ibid., p. 14.
36. Ibid., pp. 14 and 15, citing T. O'Riordan, "The Precaution Principle in Environmental Management," CSERGE paper, GEC 92-03, 1992, pp. 25 and 26.
37. Ibid., p. 15.
38. Ibid.
39. Cameron, "The Precautionary Principle," op. cit., p. 13.
40. Ibid., pp. 14 and 15.
41. O'Riordan, "The Precaution Principle," op. cit., p. 1.
42. Cameron, "The Precautionary Principle," op. cit., p. 15.
43. Final Ministerial Declaration of the Third International Conference on the Protection of the North Sea, The Hague, 8 March 1990, p. 4, reproduced in *Yearbook of International Environmental Law* 1, 1990, 658–691.
44. Second International Conference on the Protection of the North Sea, London, 24–25 November 1987, Ministerial Declaration, issued by the UK Department of the Environment, April 1988.
45. As demonstrated by "Hume's Problem," wherein it is found that, no matter how often a phenomenon is observed, we cannot be sure this represents a universal law, a problem biting at the heart of the hypothesis–falsification–new hypothesis nature of the scientific method. See John M. Stonehouse and John D. Mumford, *Science, Risk Analysis and Environmental Policy Decisions,* UNEP Environment and Trade Series No. 5, 1994, p. 2.
46. Cameron, "The Precautionary Principle," op. cit., pp. 15–17.
47. Ibid., p. 17, citing Greenpeace International, *Critical Review of GESAMP Reports and Studies: No. 45 on Global Strategies for Marine Environmental Protection,* 1991, LDC 14/INF.29, 22 November 1991, p. 2.
48. Cameron and Wade-Gery, "Addressing Uncertainty," op. cit., p. 10.
49. Ibid., pp. 10 and 11.
50. Ibid., p. 11.
51. Ibid., p. 19.
52. Ibid., p. 20.
53. See, *inter alia,* arguments in the Climate Change context based on projected climate change possibilities based on "business as usual" and the current status quo.
54. Article 38(1) of the Statute of the International Court of Justice:

> The Court, whose function is to decide in accordance with international law such disputes as are submitted to it, shall apply:
> (a) international conventions, whether general or particular, establishing rules expressly recognized by the contesting states;
> (b) international custom, as evidence of a general practice accepted as law;
> (c) the general principles of law recognized by civilized nations;

(d) subject to the provisions of Article 59, judicial decisions and the teaching of the most highly qualified publicists of the various nations, as subsidiary means for the determination of rules.

The ALI Restatement on International Law (*The Restatement of the Law Third, Foreign Relations Law of the United States 3d,* vols. 1–2, American Law Institute, 1988), §102:

Sources of International Law

1) A rule of international law is one that has been accepted as such by the international community of states:

(a) in the form of customary law;

(b) by international agreement; or

(c) by derivation from general principles common to the major legal systems of the world.

2) Customary international law results from a general and consistent practice of states followed by them from a sense of legal obligation.

3) International agreements create law for the state parties thereto and may lead to the creation of customary international law when such agreements are intended for adherence by states generally and are in fact widely accepted.

55. Patricia W. Birnie and Alan E. Boyle, *International Law and the Environment,* Oxford: Clarendon Press, 1992, p. 83.

56. Ibid., p. 98.

57. Daniel Bodansky, *Proceedings of the Annual Meeting—American Society of International Law,* Washington, DC: American Society of International Law, 1991, pp. 413–417, at p. 417.

58. Cameron and Abouchar, "The Status of the Precautionary Principle," op. cit., p. 40.

59. Convention on Biological Diversity, Preamble, para. 9.

60. Cameron and Abouchar, "The Status of the Precautionary Principle," op. cit., p. 42.

61. Ibid., citing Principle 15 of the Rio Declaration.

62. United Nations Framework Convention on Climate Change, Article 3.

63. Ibid., Article 3(3).

64. Cameron and Abouchar, "The Status of the Precautionary Principle," op. cit., p. 43.

65. Convention for the Protection of the Marine Environment of the North East Atlantic (OSPAR).

66. Cameron and Abouchar, "The Status of the Precautionary Principle," op. cit., p. 43, citing OSPAR, Chapter 17, para. 17.22.

67. Cameron and Abouchar, "The Status of the Precautionary Principle," op. cit., p. 44, citing Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Further Reduction of Sulphur Emissions, 1994, United Nations Doc. GE.94.31969.

68. Second International Conference on the Protection of the North Sea, London, 24–25 November 1987, Ministerial Declaration, issued by the UK Department of the Environment, April 1988.

69. Cameron and Wade-Gery, "Addressing Uncertainty," op. cit., p. 3, citing Baltic Sea Declaration, adopted at Baltic Environment Conference held at Ronneby, Sweden, 2–3

September 1990, IMO Doc. MEPC 30/22/5, Annex, text reproduced in *Yearbook of International Environmental Law* 1, 1990, 423–429.
70. The Convention on the Ban of Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa. Now ratified and in force; 51 developing countries have now committed to implement precaution in respect of the regulation of trade in waste.
71. Cameron, "The Precautionary Principle," op. cit., p. 3, citing Directive 90/219, Council Directive of 23 April 1990 on the continued use of genetically modified micro-organisms, O.J. L117/1 (1990), and Directive 90/220, Council Directive of 23 April 1990 on the deliberate release into the environment of genetically modified organisms, O.J. L117/15 (1990).
72. Ibid., p. 40, citing *Case Concerning the Gabcikovo-Nagymaros Project (Hungary/Slovakia),* International Court of Justice, 25 September 1997, General List, No. 92, 10.
73. Transboundary Watercourses and International Lakes Convention, Article 2(5)(a), emphasis added.
74. UN Straddling Stocks Agreement, Article 6(1)(2); UN Documents, A/CONF. 164/37.
75. Reproduced in Nigel Haigh, "The Introduction of the Precautionary Principle into the U.K.," in O'Riordan and Cameron, *Interpreting the Precautionary Principle,* op. cit., pp. 229–251, at p. 235.
76. ALI Restatement, op. cit. This was alluded to by Canada in the *Hormones* case—*EC Measures Affecting Meat and Meat Products (Hormones)—Complaint by Canada,* Appellate Body Report, WT/DS26/AB/R, WT/DS48/AB/R, 16 January 1998, para. 122.
77. Sonja Boehmer-Christiansen, "The Precautionary Principle in Germany—Enabling Government," in O'Riordan and Cameron, *Interpreting the Precautionary Principle,* op. cit., p. 30.
78. Ibid., p. 50.
79. Cameron and Abouchar, "The Status of the Precautionary Principle," op. cit., p. 39, citing Haigh, "The Introduction of the Precautionary Principle," op. cit., p. 246.
80. Cameron and Abouchar, "The Status of the Precautionary Principle," op. cit., p. 39, citing *National Report of the Czech and Slovak Federal Republic,* Czechoslavak Academy of Sciences and the Federal Committee for the Environment, March 1992, p. 117.
81. Cameron and Abouchar, "The Status of the Precautionary Principle," op. cit., p. 41, citing personal communication with Janet Bax, Director, Federal Provincial Relations, Environment Canada, letter at Foundation for International Environmental Law and Development (FIELD).
82. Cameron and Abouchar, "The Status of the Precautionary Principle," op. cit., citing personal communication with Ron Hicks, Assistant Deputy Minister, Alberta Environmental Protections, letter of 20 October 1994, on file at FIELD.
83. Daniel Bodansky, "The Precautionary Principle in US Environmental Law," in O'Riordan and Cameron, *Interpreting the Precautionary Principle,* op. cit., pp. 203–228, at p. 204.
84. Ibid., citing Clean Air Act (CAA), §112, 42 USC §7412.
85. Ibid., citing Clean Water Act (CWA), §101, 33 USC §1251.

86. Ibid.
87. National Environmental Policy Act (NEPA), §§ 101, 102.
88. NEPA, §102, argued in *Calvert Cliffs v. A.E.C.* (D.C. Cir. 1971).
89. *Sierra Club v. Siegler,* 695 F.2d 957, 974 (5th Cir. 1983).
90. Bodansky, "The Precautionary Principle," op. cit., pp. 209–221.
91. Ibid., p. 207, citing HR Rpt No. 294, 1977, 49.
92. Nuclear tests [1995] ICJ Reports, Weeramantry J dissenting opinion, p. 342, and Palmer J dissenting opinion, p. 412.
93. Advisory opinion of 8.7.1996, *Legality of Threat or Use of Nuclear Weapons* [1996] 35 ILM 809.
94. Judgment of 25.9.1997, *Case Concerning the Gabcikovo - Nagymaros Project* [1998] 37 ILM 162 at p. 212.
95. *Danielsson & Others -v- The Commission* [1996] ECR II-3051.
96. Judgment of 3.12.1998, Case 67/97 Bluhme.
97. Cameron and Abouchar, "The Status of the Precautionary Principle," op. cit., p. 46, citing *Leatch v. National Parks and Wildlife Service* (1993) 81 LGERA 270 (Stein J.)
98. Ibid., pp. 94 and 95.
99. *Friends of Hinchinbrook Society Inc -v- Minister for Environment & Others* [1997] 87 LGERA 10, p. 25.
100. Carmian Barton, "The Status of the Precautionary Principle in Australia: Its Emergence in Legislation and as a Common Law Doctrine," *Harvard Law Review* 22, 1998, 509, 523.
101. See *R. v. Secretary of State for Trade and Industry ex parte Duddridge et al.* (unreported judgment), 3 October 1994, Smith J.
102. *Ethyl Corp. v. EPA,* op. cit., p. 28.
103. Cameron and Abouchar, "The Status of the Precautionary Principle," op. cit., pp. 47–48, n.63–66.
104. Ibid., p. 45.
105. Ibid.
106. Ibid.
107. Ibid.
108. Ibid.
109. *EC Approach to Trade and Environment in the New WTO Round,* WT/GC/W/194, 1 June 1999.
110. Quoting Charlene Barshefsky.
111. Ruggiero, "The Future of the World Trading System," op. cit., pp. 1–2.
112. The Rt. Hon. Sir Leon Brittan QC, Vice-President of the European Commission, speech at the High Level Symposium on Trade and Environment, Geneva, 15 March 1999, SPEECH/99/47, reproduced at http://www.wto.org/wto/hlms/lbenv.htm.
113. Agreement Establishing the World Trade Organization, 1994, Preamble, para. 2.
114. Address by President William J. Clinton, Monday 18 May 1998, available at http://www.wto.org/wto/anniv/clinton.htm.
115. *Preparation for the 1999 Ministerial Conference, Trade and Sustainable Development: Communication from the United States,* WT/GC/W/30V, 6 August 1999.

116. Ibid., citing *United States—Standards for Reformulated and Conventional Gasoline,* AB-1996-1, Report of the Appellate Body, WT/DS2/AB/R, 29 April 1996, p. 17, which adopts this notion of treaty interpretation as an element of customary law.
117. Ibid., p. 34.
118. Ibid., p. 42.
119. Ibid.
120. Ibid., citing TBT Agreement, Annex I.
121. TBT Agreement, Articles 2.2–2.5 and Article 11 (providing for departing from international standards based on scientific justification).
122. TBT Agreement, Article 2.3.
123. Cameron and Werksman, Amicus Curiae Brief Submitted by WWF/FIELD, commissioned by and submitted on behalf of WWF International, Gland, Switzerland, para. 3.6.3, on file at FIELD.
124. Ibid., citing Articles 5–12 of the Sanitary and Phytosanitary Agreement 1994.
125. Ibid., paras. 3.5.4 and 3.6.5.
126. Cameron and Werksman, Supplementary Amicus Curiae Brief Submitted by WWF/ FIELD, commissioned by and submitted on behalf of WWF International, Gland, Switzerland, on file at FIELD, para. 9.4, citing Article 31(3)(c) of the Sanitary and Phytosanitary Agreement 1994.
127. Ibid., para. 9.3.
128. *EC Measures Concerning Meat and Meat Products (Hormones)—Complaint by the United States,* AB-1997-4, Report of the Appellate Body, WT/DS26/AB/R, WT/DS48/AB/R, 16 January 1998 (hereinafter *Hormones* Appellate Body Report), para. 44.
129. Ibid.
130. TBT Agreement, Article 1.5: "The provisions of this Agreement do not apply to sanitary and phytosanitary measures as defined in Annex A of the [SPS Agreement]."
131. *Hormones* Appellate Body Report, op. cit., para. 45, citing the EC's appellant's submission, para. 91.
132. Ibid., para. 43.
133. Ibid., para. 96(c).
134. Ibid., para. 123.
135. Ibid., para. 120.
136. Ibid., para. 124.
137. Ibid.
138. Ibid.
139. Ibid., para. 253(a).
140. Ibid., paras. 188–191, and *Japan—Measures Affecting Agricultural Products,* AB-1998-8, Appellate Body Report, WT/DS76/AB/R, 22 February 1999 (hereinafter *Japan-Varietals* Appellate Body Report), para. 84.
141. *Australia—Measures Affecting Importation of Salmon,* AB-1998-5, Appellate Body Report, WT/DS18/AB/R, 20 October 1998.
142. Ibid., para. 73.
143. Ibid.
144. Ibid., para. 74.
145. *Japan-Varietals* Appellate Body Report, p. 19, para. 72.

146. Ibid., para 73.
147. Ibid., p. 22, para. 84.
148. Ibid., para. 75.
149. Ibid., pp. 23–24, para. 89.
150. Ibid., p. 21, para. 81.
151. *Comments of Public Citizen Regarding U.S. Preparations for the World Trade Organization's Ministerial Meeting,* Fourth Quarter 1999, 22 October 1998, reproduced at Public Citizen, Ralph Nader's NGO, website, www.citizen.org/public_citizen/pctrade/gattwto/1999.htm#intro.

PAGE 270 BLANK