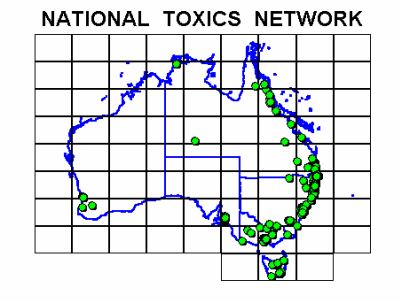

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The Precautionary Principle Gets Real

' Precautionary principle simply a statement of commonsense'

- The Honourable Justice Paul L. Stein, AM [1]

'When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. In this context the proponent of an activity, rather than the public, should bear the burden of proof. The process of applying the Precautionary Principle must be open, informed and democratic and must include potentially affected parties. It must also involve an examination of the full range of alternatives, including no action.'

- Wingspread Conference on the Precautionary Principle, January, 1998

As environmental damage grew more apparent in the second half of the 20th Century, there was a growing acknowledgement that scientific method does not necessarily give certainty to either the opinion or assessment of scientists.[2] The inherent uncertainty or bias in the scientific method combined with a perennial lack of resources and a consequential lack of data to assist scientists, lead inevitably to the conclusion that there was likely to be an incomplete understanding of the full extent

[1] The Honourable Justice Paul L. Stein, AM, "Are Decision makers too Cautious with the Precautionary Principle?" (2000) Vol. 17, No 1 Environmental & Planning Law Journal at 13

[2] *Conservation Council of South Australia v DAC &Tuna Boat Owners Association* (No 2) [1999] SAERDC 86 para 20.

of the environmental impacts of any particular policy or activity. In response to this recognition and based upon observation that the environment could not assimilate all the consequences of activities impacting upon it, the precautionary principle was born.

The Evolution of the Precautionary Principle

The evolution of the precautionary principle began in the 1970s, predominantly with the adoption of regional agreements within Europe. The principle's origins are generally ascribed to the German 'vorsorgeprinzip,' translated literally as the 'foresight principle.'[3] It formed one of five principles that underpinned environmental protection and air pollution legislation in Germany.[4] The first explicit reference to precaution in a multilateral agreement was in the London Declaration of the Second International North Sea Conference in 1987.[5] A stronger formulation was included in the 1990 Final Declaration of the Third International Conference on Protection of the North Sea. This required governments to "apply the precautionary principle, that is, to take action to avoid potentially damaging impacts of [toxic] substances ...even where there is no scientific evidence to prove a causal link between emissions and effects."[6] This formulation in effect, requires governments to take action without considering offsetting factors and without direct scientific evidence of harm.[7]

Further references to precautionary measures were included in the *Montreal Protocol on Substances that Deplete the Ozone Layer* (1990) [8] where Parties were required to take precautionary measures to control global emissions of ozone depleting substances with an ultimate objective of their elimination.[9] Both the *Bamako Convention on the Ban of Import into Africa and the Control of Transboundary Movement and Management of Hazardous within Africa* (1991) [10] (Article 4) and the OECD Council Recommendation C(90) 164 on Integrated Pollution Prevention and Control, January 1991[11] included reference to the precautionary approach.

In 1992, the *Rio Declaration* from the UN Conference on Environment and Development (UNCED) provided Principle 15;

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[3] Stein op cit at 3
[4] Harding, R. & Fisher, B.*, Perspectives on the Precautionary Principle,* The Federation Press, Sydney, 1999 at 4
[5] Department of the Environment of the United Kingdom, Ministerial Declaration April 1988 on Second International Conference on the Protection of the North Sea, London, 24-25 November 1987, ILM 27 p. 835.
[6] *Final Declaration of the Third International Conference on Protection of the North Sea (* March 7-8, 1990) 1 YB Int'l Envtl Law 658, 662-73 (1990).
[7] United Nations Development Programme *Human Development Report 2001 - Making new technologies work for human development*, Oxford University Press, New York, USA at 70
[8] *Montreal Protocol on Substances that Deplete the Ozone Layer, 1990 Amendments,* ILM 30 p. 541 Available at <http://www.unep.org/ozone/> [Accessed 12 November 2000]
[9] Preamble, *Montreal Protocol*
[10] *Bamako Convention on the Ban of Import into Africa and the Control of Transboundary Movement and Management of Hazardous within Africa* (1991) ILM 30 p 775 Art 4 states "Each Party shall strive to adopt and implement the preventive, precautionary approach to pollution problems which entails, inter alia, preventing the release into the environment of substances which may cause harm to humans or the environment without waiting for scientific proof regarding such harm. The Parties shall cooperate with each other in taking appropriate measures to implement the precautionary principle to pollution prevention through the application of clean production methods, rather than the pursuit of a permissible emissions approach based on assimilative capacity assumptions."
[11] Hickey, J., & Walter, V., "Refining of the Precautionary Principle In International Environmental Law", (1995) 14: *Virginia Environmental Law Journal* at 423- 436. The Recommendation is accompanied by Guidance, which states that the absence of complete information should not preclude precautionary action to mitigate the risk of significant harm to the environment.

> In order to protect the environment, the precautionary approach shall be widely applied by states according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

The *Rio Declaration* signed by most countries in the world, was never intended as a set of legally binding rules, rather it was a 'soft law instrument.'[12] However, there is as tendency[13] for soft law provisions to develop overtime into legally binding rules as shown by "principle 21 of the 1972 Stockholm Declaration, reaffirmed through principle 2 of the 1992 Rio Declaration, and enshrined in a binding instrument in Article 3 of the *Convention on Biological Diversity*."[14]

Delegates to UNCED also chose to include the precautionary principle in the Preamble to the *Convention on Biological Diversity* (1992)[15] and in the *Framework Convention on Climate Change* (1992).[16] Both closely tracked the language of Principle 15. Chapter 35 of Agenda 21, which addressed science for sustainable development, incorporated the following description:

> In the face of threats of irreversible environmental damage, lack of full scientific understanding should not be an excuse for postponing actions, which are justified in their own right. The precautionary approach would provide a basis for policies relating to complex systems that are not yet fully understood and whose consequences of disturbance cannot yet be predicted.[17]

In 1992, the *OSPAR Convention for the Protection of the Marine Environment of the North East Atlantic* [18] included Article 2 (2)a), which required parties to

> (A)pply the precautionary principle, by virtue of which preventive measures are to be taken when there are reasonable grounds for concern, even when there is no conclusive evidence of a causal relationship between the inputs and effects.[19]

By 1993, the *Treaty Establishing the European Community* (1992) [20] established the precautionary principle as one of the guiding principles of environmental law in the European Union (EU).

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[12] Hunter, D., Salzman, J., & Zaelke, D., "Principles & Concepts In International Environmental Law" in *International Environmental Law and Policy*, Foundation Press, 1998 at 318

[13] Stec, S., Casey- Lefkowitz, S. & Jendroska, J. *UN/ECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, The AARHUS Convention: An Implementation Guide.* Regional Environmental Center for Central and Eastern Europe, United Nations, Geneva 2000 Available at <http://www.unece.org/env/pp> [Accessed 10 March 2002]

[14] id at 11. Also see the *Convention on Biological Diversity* (1992) ILM 31 p. 818 Available at < http://www.biodiv.org/> [Accessed 12 March 2001]

[15] Preamble, *Convention on Biological Diversity* (1992) ILM 31 p. 818 Available at < http://www.biodiv.org/> [Accessed 12 March 2001]

[16] United Nations Framework Convention On Climate Change (1992) ILM 31 p. 848 Available at <http://www.jus.uio.no/lm/un.climate.change.framework.1992/doc.html> [Accessed 3/2/2002]

[17] *UN Conference on Environment & Development; Agenda 21, Chapter 35 "Science for Sustainable Development,* Available at <http://iisd1.iisd.ca/rio+5/agenda/chp35.htm> [Accessed 8 December 2001]

[18] *OSPAR Convention for the Protection of the Marine Environment of the North East Atlantic* (1992) ILM 32 p. 1069, Available at <http://www.ospar.org/eng/html/welcome.html> [Accessed February 2002] [hereinafter *OSPAR Convention*]

[19] Article 2 (2) a), *OSPAR Convention*

[20] *Treaty Establishing the European Community* (1992) ILM 4 p. 776. Article 174(2) states that "the precautionary principle is one of the principles to be taken into account in Community policy on the environment; whereas this principle is also applicable to human health, as well as to the animal health and plant health." sectors; Available at <http://europa.eu.int/abc/obj/treaties/en/entoc05.htm> [Accessed 23 February 2002]

Since the Earth Summit in Rio, precaution has been operationalised in the *Convention Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks* (1995)[21] and the *Cartagena Protocol on Biosafety to the Convention on Biological Diversity* (2000)[22] The Preamble of the *Long-range Transboundary Air Pollution (LRTAP) Protocol on Persistent Organic Pollutants* (1998) includes a specific reference to Principle 15.[23]

Precaution was established as a guiding principle in the *Stockholm Convention on Persistent Organic Pollutants* (2001)[24] and the final text includes explicit references in the Preamble; 'Acknowledging that precaution underlies the concerns of all the Parties and is embedded within this Convention;' and the Objective; 'Mindful of the precautionary approach as set forth in Principle 15 of the *Rio Declaration* on Environment and Development, the objective of this Convention is to protect human health and the environment from persistent organic pollutants.'

Article 8 (7)a) of the *Stockholm Convention* states 'Lack of full scientific certainty shall not prevent the proposal from proceeding' and in the listing of chemicals in Annexes A, B and C, Article 8 (9) directs that '(T)he Conference of the Parties, taking due account of the recommendations of the Committee, including any scientific uncertainty, shall decide, in a precautionary manner, whether to list the chemical, and specify its related control measures, in Annexes A, B and/or C'.

Annex C Part V (B)a) on general guidance on best available techniques and best environmental practices directs that '(I)n determining best available techniques, special consideration should be given, generally or in specific cases, to the following factors, bearing in mind the likely costs and benefits of a measure and consideration of precaution and prevention'.

The precautionary principle has grown in acceptance and may soon be considered a principle of international environmental law, a view supported by the Nice European Council Meeting, which in December 2000 stated that the precautionary principle is "gradually asserting itself as a principle of international law in the fields of environmental and health protection." [25]

Others already consider that the precautionary principle is close to being an enforceable norm of 'customary international law' from which no nation can dissent.[26] However, this depends on consistent state practice, both across countries

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[21] *Convention Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks* (1995) ILM 34 p. 1542, Article 6. Available at <http://fletcher.tufts.edu/multi/texts/ilm1542.txt> [Accessed 23 February 2002] [hereinafter *Straddling Fish Stock Convention]*

[22] *Cartagena Protocol on Biosafety to the Convention on Biological Diversity* (2000) ILM 39 p. 1027. Article 10 (6) Available at <http://www.biodiv.org/biosafety/> [Accessed 24 February 2002]

[23] *Protocol to the Convention on Long-range Transboundary Air Pollution (LRTAP) on Persistent Organic Pollutants* (1998) ILM 37 p. 505, Preamble, Available at <http://fletcher.tufts.edu/multi/texts/trans.txt> [Accessed 24 February 2002] [hereinafter *LRTAP Protocol*]

[24] *Stockholm Convention on Persistent Organic Pollutants* (2001) ILM 40 p. 531[hereinafter Stockholm Convention

[25] *Presidency Conclusion, Annex III Council Resolution on the Precautionary Principle*, Nice European Council Meeting 7-9 December 2000 at para 3

[26] See Sands, P. (1995) *Principles of International Environmental Law*, New York: Manchester University Press; Also see the *International Tribunal for The Law of the Sea (27 August 1999) Southern Bluefin Tuna Cases (New Zealand v Japan; Australia v Japan) Request For Provisional Measures.*

and within advocate countries.[27] State practice is essential to developing customary international law and it "must be extensive, be virtually uniform and include those States most particularly affected by the norm."[28]

Opposition to the Precautionary Principle

Nevertheless, there is still strong opposition to the precaution principle. Common criticisms included the arguments that current regulatory procedures are already precautionary (for example, the safety factors used in risk assessments ensure precaution); the precautionary principle is not scientifically sound because it advocates making decisions without adequate scientific justification; and if it were implemented, the Precautionary Principle would stifle innovation by requiring proof of safety before new technologies could be introduced. [29]

Although, it is in international trade, where the precautionary principle is most opposed. It is presented as representing a non-tariff barrier impeding the free movement of goods across national borders.[30] The World Trade Organisation (WTO) applies a 'least trade restrictive' criterion for their review of national laws and regulations, whereas a precautionary approach asks what is 'the least environmentally harmful way to achieve a particular public policy objective.'[31] Thus, the precautionary principle is often viewed as defending environmental public health measures that are overly trade restrictive and therefore, protectionist.

Yet, a central tenet of the *Sanitary and Phytosanitary (SPS) Agreement* [32] is the right, under Article 3.3, of each WTO member to set standards more stringent than established international standards, reflecting their individual 'appropriate level of protection', individual 'tolerance to risk' and 'degree of precaution.' This right is balanced by obligations not to set such standards in an arbitrary or discriminatory fashion.[33]

In March 2001 at the Meeting of the Committee on Sanitary and Phytosanitary Measures,[34] Canada called for a review of precaution in the *SPS Agreement* arguing the need for developing a common understanding on how to manage risks in situations where there is limited scientific information, and guidance on addressing precaution in the context of the existing rights and obligations of the SPS Agreement.

Other opposition harks back to the desire for certainty in science, under the banner of the as yet undefined 'sound science' principle. It is suggested that the basis of the United States vocal opposition to the precautionary principle can be found in the US

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[27] Weiner, JB & Rogers MD, Comparing precaution in the United States and Europe, (2002) 5 (4) *Journal of Risk Research at* 317–349

[28] Saladin, C., "Precautionary Principle in International Law" (2000) Vol.6 No 4 October/December *International Journal of Occupational and Environmental Health* at 271

[29] Kreibel, D., Tickner, J., Epstein, P., Lemons, J., Levins, R., Loechler, E., Quinn, M., Rudel, R., Schettler, T. & Stoto, M., "The Precautionary Principle In Environmental Science" , (2001) Vol 109 (No 9) *Environmental Health Perspectives* at 871

[30] Personal Communication, Ian Booth, Head of the Australian Delegation, INC 5, Johannesburg, December 2000

[31] Saladin loc cit

[32] The *Agreement on the Application of Sanitary and Phytosanitary Measures* (1994) ILM 33 p. 1125 Available at <http://www.wto.org> [Accessed September 2000] [hereinafter '*SPS Agreement*']

[33] Article 5.5 *SPS Agreement*

[34] Statement by Canada, "The Treatment of Precaution In The SPS Agreement" World Trade Organisation Committee on Sanitary & Phytosanitary Measures, (G/SPS/GEN/246) 14-15 March 2001. Available at <http://www.wto.org>

Supreme Court ruling in the 1980 Benzene case [35] where it was found that the national occupational and safety regulators, OSHA could not regulate on the basis of mere conjecture about uncertain risks and that the agency must demonstrate 'significant risk' before regulating.[36] This was further entrenched in the 1983 National Academy of Sciences Guidebook Risk Assessment which established scientific risk assessment as the basis for American risk regulation.[37]

Some argue that the opposition is based on the differences of the legal systems of varying countries. Weiner [38] notes the openness of US law to citizen advocacy groups, judicial review, and science-based adversarialism, suggesting that this may help explain the US resistance to the adoption of strong versions of the precautionary principle in international treaty negotiations, as the US legal system is more likely to enforce treaty provisions on precaution. Whereas the EU, having already adopted precaution in its own treaties and knowing that its domestic legal systems are less likely than US courts to stringently enforce such language, is more comfortable with signing on to strong precautionary language.

Another common argument opposing the precaution principle is based on the different interpretations or forms of the precautionary principle. Critics argue that the principle is vague and difficult to define,[39] perhaps due in part to the different formulations of the precautionary principle, ranging from 'soft' to 'strong.'[40]

These definitional difficulties are dismissed by those[41] who conclude that there are now significant elements that clearly identify the precautionary principle. They are:

- taking precautionary measures even if not all cause and effect relationships are fully understood;
- shifting the burden of proving safety onto the proponent of a potentially harmful activity;
- making environmental and public health decisions in an open, informed, and democratic way;
- examining the full range of alternatives to a particular activity; and
- relying on a weight of evidence approach, rather than waiting for absolute certainty.

Operationalising of the Precautionary Principle in Policy, Legislation and the Courts – an Australian case study

Australia, while objecting to the inclusion of the precautionary principle within the *Stockholm Convention*, has operationalised the principle into its own national and State practices. Having signed the *Rio Declaration*, Australia incorporated Agenda 21 into a 1992 Inter-Governmental Agreement on the Environment (IGAE)[42]signed by

[35] Industrial Union Dept., AFL-CIO v. American Petroleum Institute (1980) 448 US 607
[36] Weiner op cit at 318
[37] ibid
[38] Weiner op cit at 340
[39] Segal, J., "An Industry Perspectives on the Precautionary Principle" in Harding and Fisher (eds), *Perspectives On The Precautionary Principle*, The Federation Press, Sydney, 1999 at 59
[40] United Nations Development Programme *Human Development Report 2001 - Making new technologies work for human development*, Oxford University Press, New York, USA at 70
[41] Saladin op cit n24 at 271
[42] *Inter-Governmental Agreement on the Environment* (IGAE 1992)

the Commonwealth and State governments as well as the Local Government Association, and included it in the National Strategy for Ecologically Sustainable Development (ESD).[43]

The IGAE states that the;

> (D)evelopment and implementation of environmental policy and programs by all levels of Government should be guided by the following considerations and principles; the Precautionary principle, the principle of Inter-Generational Equity and the conservation of biological diversity and ecological integrity.[44]

The ESD principles are also reflected in Australia's national strategies for chemical management and environmental health, including the:

- National Strategy for Management of Scheduled Waste (ANZECC) 1993;
- National Strategy of Agricultural and Veterinary Chemicals (ARMCANZ) 1998; and
- National Environmental Health Strategy (Department of Health and Community Care) 1999

The *National Environmental Protection Council Act* 1994 (Cth)[45] (responsible for developing National Environment Protection Measures for soil and air) is based on the principles of ESD as set out in the IGAE. Section 391 of the *Environment Protection and Biodiversity Conservation Act* 1999 (Cth) requires the Commonwealth Minister for the Environment to take into account the precautionary principle in his decision-making.

By 2004, the consideration of ESD principles is required by over 23 pieces of Commonwealth legislation and at least, 47 State Acts in New South Wales (NSW) alone.[46] The precautionary principle has now been consistently incorporated into State and Commonwealth legislation in Australia. In 1999, the Australian government argued before the international Tribunal for the Law of the Sea that the precautionary principle was a customary norm.

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[43] The Commonwealth Government of Australia*, National Strategy for Ecologically Sustainable Development,* Canberra, AGPS, December 1992 at 6

[44] IGAE (1992) s 3.5.1 Precautionary Principle - Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation, s 3.5.2 Intergenerational equity - the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations. s 3.5.3 Conservation of biological diversity and ecological integrity - conservation of biological diversity and ecological integrity should be a fundamental consideration.

[45] See *National Environmental Protection Council Act* 1994 (Cth) s 34 [hereinafter *NEPC Act*]

[46] Honourable Justice Paul L. Stein op cit at 9 See *.* For examples see *Agricultural Tenancies Act* 1990 (s 3), *Coastal Protection Act* 1979 (s 3), *Contaminated Land Management Act* 1997 (s 3), *Energy Services Corporations Act* 1995 (s 5), *Fisheries Management Act* 1994 (s 3), *Gas Supply Act* 1986 (s 3), *Landcom Corporation Act* 2001 (s 6), *Local Government Act* 1993 (s 7), *National Parks and Wildlife Act* 1974 (s 2A), *Native Vegetation Conservation Act* 1997 (s 3), *Pesticides Act* 1999 (s 3), *Plantations and Reafforestation Act* 1999 (s 3), *Protection of the Environment Operations Act* 1997 (s 3), *Rural Fires Act* 1997 (s 3), *State Owned Corporations Act* 1989 (s 8, s 20E), *Sydney Water Act* 1994 (s 21), *Sydney Water Catchment Management Act* 1998 (s 14), *Threatened Species Conservation Act* 1995 (s 3), *Transport Administration Act* 1988 (s 5, s 18B, s 19D, s 20), *Water Avoidance and Resource Recovery Act* 2001 (s 3), *Waste Recycling and Processing Corporation Act* 2001 (s 5), *Water Management Act* 2000 (s 3), *Western Lands Act* 1901 (s 2*), Independent Pricing and Regulatory Tribunal Act 1992* (s 15(1)(f)), *Local Government Act 1993* (s 89(1)(c) and (2)), *Natural Resources Commission Act 2003* (s14(a))

- Southern Bluefin Tuna Cases (*New Zealand v Japan; Australia v Japan*) Request For Provisional Measures, The International Tribunal For The Law Of The Sea, 27th of August 1999,

In July 1999, Australia and New Zealand instituted proceedings for provisional measures against Japan before the International Tribunal for the Law of the Sea (ITLOS).[47] Australia and New Zealand maintained that Japan had breached international legal obligations regarding the conservation and management of the Southern Bluefin Tuna (SBT) fishery and in particular, the *Law of the Sea Convention* (1982),[48] the *Convention for the Conservation of Southern Bluefin Tuna* (1993)[49] and customary international law. [50]

ITLOS considered whether the urgency of the situation warranted provisional measures, which according to the *Law of the Sea* are appropriate to protect the rights of parties or to prevent serious harm to the environment. Japan argued that the scientific evidence had failed to show that its experimental fishing program would cause further threats to the already depleted SBT stocks. Australia and New Zealand, argued that in the light of competing scientific claims and in the absence of a complete scientific picture of all the threats to SBT stocks, there were obligations under customary international law to the precautionary principle.

While ITLOS did not find that the precautionary principle was a binding customary norm, it did order a precautionary approach aimed at stopping further deterioration of SBT through the cumulative effect of Japan's experimental fishing program. The order stated that although the tribunal could not conclusively assess the scientific evidence, it considered measures should be taken as a matter of urgency to avert further deterioration of the SBT stock.[51] It required parties to act with prudence and caution in ensuring that effective conservation measures are taken to prevent serious harm to the SBT stock. Notably, the judgment referred to the *Straddling Fish Stock Convention*,[52] which obliges parties to apply the precautionary principle and

[47] Anton, D., "The Southern Bluefin Tuna Cases, Provisional Measures and the Precautionary Approach" (1999) Vol. 56 *IMPACT* at 4. Also see the *International Tribunal for The Law of the Sea (27 August 1999) Southern Bluefin Tuna Cases (New Zealand v Japan; Australia v Japan) Request For Provisional Measures.*

[48] *United Nations Convention on the Law of the Sea* (1982) ILM 21 p. 1261 Available at < http://home.earthlink.net/~apronto/treaties/sea.htm> [Accessed December 2002]

[49] *Convention for the Conservation of Southern Bluefin Tuna* (1993) 39 ILM p. 1359 Available at < http://www.austlii.edu.au/au/other/dfat/treaties/1994/16.html> [Accessed June 2002] [hereinafter *SBT Convention*]

[50] Section 28 & 29, *International Tribunal for The Law of the Sea (27 August 1999) Southern Bluefin Tuna Cases (New Zealand v Japan; Australia v Japan) Request For Provisional Measures*; "That Japan has breached its obligations under Articles 64 and 116 to 119 of UNCLOS [*United Nations Convention on the Law of the Sea*] in relation to the conservation and management of the SBT [southern bluefin tuna] stock, including by:
(a) failing to adopt necessary conservation measures for its nationals fishing on the high seas so as to maintain or restore the SBT stock to levels which can produce the maximum sustainable yield, as required by Article 119 and contrary to the obligation in Article 117 to take necessary conservation measures for its nationals;
(b) carrying out unilateral experimental fishing in 1998 and 1999 which has or will result in SBT being taken by Japan over and above previously agreed Commission [Commission for the Conservation of Southern Bluefin Tuna] national allocations;
(c) taking unilateral action contrary to the rights and interests of New Zealand as a coastal State as recognised in Article 116(b) and allowing its nationals to catch additional SBT in the course of experimental fishing in a way which discriminates against New Zealand fishermen contrary to Article 119 (3);
(d) failing in good faith to co-operate with New Zealand with a view to ensuring the conservation of SBT, as required by Article 64 of UNCLOS;
(e) otherwise failing in its obligations under UNCLOS in respect of the conservation and management of SBT, having regard to the requirements of the precautionary principle."

[51] Section 80, *Southern Bluefin Tuna Case, Australia and New Zealand v. Japan, Award on Jurisdiction and Admissibility, August 4, 2000. Rendered by the Arbitral Tribunal constituted under Annex VII of the United Nations Convention on the Law of the Sea.*

[52] id at s71

commented that that countries should view this agreement as a set of standards and approaches commending broad international acceptance.

In 1999 in South Australia, a environmental non government organisation (NGO) used the precautionary principle to challenge the environmental sustainability of tuna farms.

- *Conservation Council of South Australia v DAC and Tuna Boat Owners Association* 1999

In *Conservation Council of South Australia v DAC and Tuna Boat Owners Association* (1999),[53] the Environmental Resources and Development Court of South Australia considered the role of ecologically sustainable development in a decision with respect to a proposal to establish tuna farms in the waters of South Bay in the Spencer Gulf.

The judgment found that the onus lies on the proponent to show that the development would meet the policy set out in the Development Plan, ie would be ecologically sustainable and that it was not up to the appellant to prove that the development will threaten serious or irreversible environmental damage. However, they needed to show that there was a 'likelihood' or 'probability' of significant or irreversible damage to the environment, should the proposed development proceed.

In the finding that the South Australian tuna farm industry was not operating sustainably within the requirements of the *Development Act* 1993 (SA), the court rejected the risk analysis carried out by the Australian Quarantine Inspection Service (AQIS) as not consistent with the precautionary principle approach. The AQIS risk assessment had concluded that there was no risk posed by importation into Australia of frozen pilchards, despite the widespread incidence of the pilchard death in South Australia and adjacent waters in 1995 and 1998, the cause of which had not been conclusively determined. Based on the lack of scientific information on disease in pilchards and the susceptibility of Australia's native marine species to exotic pathogens, the court rejected the AQIS conclusion.

The court concluded that due to the lack of full scientific data and science's inability to predict impacts, a precautionary and preventative approach should be taken. They found that the application of the principle should be guided by a careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment; and an assessment of risk-weighted consequences of various options. This required a preventative approach, involving the minimisation of environmental impact and taking remedial action upon evidence of a significant but not necessarily provable risk of environmental harm.

The case went to appeal[54] and the Chief Justice found that "the ERD Court was saying no more than that it would consent to the proposed development only if there was a monitoring regime that would detect emerging adverse impacts and a scheme of

[53] *Conservation Council of South Australia v DAC &Tuna Boat Owners Association* (No 2) [1999] SAERDC 86 para 31
[54] South Australian Full Court (110 LGERA 1)

conditions which would enable an appropriate authority to require those impacts to be averted if and when they emerged."

In the state of NSW, there have been 29 cases related to precautionary principle. They have covered such diverse areas as :

- Threatened species
- Coastal development policies
- Water licences/rights
- Water quality
- Groundwater
- Stormwater
- Disturbance by roads in a subdivision
- Noise
- Telecommunication towers – electromagnetic emissions
- Toxicology
- Antisocial behaviour - potential patrons of a proposed hotel development
- Piggeries
- Housing
- Boat sheds
- Subdivisions

Many of the NSW cases have been brought by Councils (Local Governments) and those have generally been successful. Others have been brought by environment and community organisations. While the precautionary principle argument was not always successfully applied, as a legal concept it has been used more regularly.

- *Leatch v National Parks and Wildlife Service and Shoalhaven Council* 1993

In *Leatch v National Parks and Wildlife Service*,[55] Stein J. considered the application of the precautionary principle to a merit appeal against the granting of a license to Shoalhaven Council to 'take and kill' endangered fauna from a road area. Stein J. noted the incorporation of precautionary principle into the Commonwealth's Strategies on Endangered Species and Biological Diversity and the 1992 IGAE, as well as State legislation such as the *Protection of the Environment Administration Act* 1991 (NSW). While acknowledging that the *National Parks and Wildlife Act* 1974 (NSW) had no express provision requiring consideration of the precautionary principle, Stein J. found that the precautionary principle was a statement of commonsense. He concluded that the consideration of the state of knowledge or uncertainty regarding a species, the potential for serious or irreversible harm to an endangered fauna and the adoption of a cautious approach in protection of endangered fauna, was clearly consistent with the scope and purpose of the National Parks and Wildlife Act.[56] It was therefore an appropriate principle to take into account when deciding the case.

[55] *Leatch v National Parks & Wildlife Service* (1993) 81 LGERA 270
[56] Stein op cit n40 at 13

- *Murrumbidgee Ground-Water Preservation Association v Minister for Natural Resources* 2004

The latest determination by the Chief Justice McCellan of the NSW Land and Environment Court in *Murrumbidgee Ground-Water Preservation Association v Minister for Natural Resources* [57] firmly places the precautionary principle as an important consideration. McCellan J noted that while the precautionary principle has not always been accorded such significance in the decision making process,[58] it is now given statutory recognition in numerous NSW Statutes and is a central element in the decision making process which cannot be confined. He acknowledged that it is not merely a political aspiration but must be applied when decisions are being made under any Act which adopts the principles. For example, when deciding a plan under the Water Management Act, the Minister's decision was required to be informed by the precautionary principle which necessitates a regime to be put in place which is likely to sustain the water source even if, as is the case, full scientific knowledge of the structure and behaviour of the aquifer is not available.

The Precautionary Principle in Assessing Risk and Uncertainty

Arguments over precaution go to the very heart of consideration of environmental risk, particularly chemical risk. Scientific method does not necessarily give certainty and in risk assessment, uncertainty inevitable arises.[59] Some risks are well documented and understood, while others are highly uncertain.[60] Uncertainty can result from incomplete information, measurement errors and variability, risk model limitations or the range of discretionary judgments[61] incorporated into the standard risk assessment.

While it has been argued that professional; or discretionary judgements may add a layer of precaution to risk assessment, their full impact can be seen in the setting of the national standards for the persistent organic pollutant, DDT in soil. [62] In Australia there was a choice to limit the consideration of exposure routes to ingestion alone, [63] ignoring inhalation and dermal absorption,[64] which resulted in a regulatory health investigation level (HIL) for DDT in residential soils of 200 milligram per kilogram. This demonstrated little consistency with the US EPA Preliminary Remediation Goals for DDT in soil, set at 5.8 milligram per kilogram (mg/kg) for total DDT in soil, [65] or

[57] *Murrumbidgee Ground-Water Preservation Association v Minister for Natural Resources* [2004] NSWLEC 122
[58] See Nicholls v Director-General of National Parks and Wildlife Service (1994) 84 LGERA 397 (Talbot J); Greenpeace Australia Ltd v Redbank Power Company Pty Ltd (1994) 86 LGERA 143 (Pearlman CJ).
[59] enHealth Council " Framework for Environmental Health Risk Assessment" April 2000, Department of Health and Aged Care, Canberra at 155
[60] Wiener JB & Rogers MD, Comparing precaution in the United States and Europe *Journal of Risk Research 2002* 5 (4), 317–349
[61] Susskind suggests that there are approximately fifty opportunities for discretionary judgments in typical risk assessment procedures. See Susskind, L. & Field, P. Dealing with an Angry Public, The Mutual Gains Approach to Resolving Disputes, The Free Press New York 1996 at 110
[62] National Environment Protection Council, *National Environment Protection Measure for the Assessment of Contaminated Sites,* NEPC Adelaide 1999 Available at <http:// www.nepc.gov.au> [Accessed 12.9.2001]
[63] Imray, P& Langley, *A Health-Based Soil Investigation Levels, National Environment Health Forum Monographs, Soil Series* South Australian Health Commission, Openbook Publishers Adelaide 1997 at 26
[64] In spite of this, in *Allen v NSW Department of Agriculture* (Unreported, Compensation Court of NSW, Armitage J, December 1998) , Judge Armitage found that inhalation of DDT contaminated dust was a contributing factor in the dipworker's cancer and subsequent death. While this could easily be dismissed as a discretionary judgment of the court, consideration of inhalation as a route of exposure is included in U.S. risk assessments.
[65] US EPA Region 9 Office Preliminary Remediation Goals (PRGs) for evaluating clean up contaminated sites. Available at <http://www.epa.gov/region09/waste/sfund/prg/> [Accessed 22/4/2002]

with the Netherlands Ministry of Housing, Physical Planning and Environment Conservation's far more precautionary intervention values of 4 mg/kg and target values of 0.0025mg/kg for total DDT/DDE/DDD in soil.[66]

The development of standards such as provisional tolerable weekly intake (PTWI) or acceptable daily intake (ADI) encompasses many toxicological 'uncertainties' including the extrapolations between and within species, incomplete toxicological data-bases, consideration of criteria in isolation, and individual variations in human subpopulations. As Dr Bruce Kennedy, Executive Director of Australian National Environment Protection Council commented "to go from a human health risk assessment to an environmental standard requires a leap of faith." [67]

While these inherent uncertainties are usually addressed by applying 'safety factors' ranging from 10 to 2,000, [68] in some cases, current exposures may be at or above the proposed criterion, which can make the application of safety factors impossible.

In 2000, the US EPA moved to ban the domestic use of chlorpyrifos, a common pesticide used for termite treatment in homes, hospitals and preschools. Certain agricultural applications on foods that are heavily consumed by children were also restricted. These regulatory actions were the result of the US EPA taking a precautionary approach after its re-evaluation of the chemical's potential risk to children, despite the United States not officially adopting the precautionary principle as a general basis for risk regulation. In Australia, notwithstanding its own inclusion of the precautionary principle in policy and legislation, regulatory authorities did not follow the US example because Australia's risk assessment was not required to build in the same extra ten fold safety/uncertainty factor to protect children.[69]

It has been suggested [70] that the reliability of scientific opinion should be tested against various types of uncertainty; for example, conceptual uncertainty, measurement uncertainty, sampling uncertainty, mathematical modelling uncertainty, causal uncertainty, testing uncertainty and communicative and cognitive uncertainty.

Precaution in Intergenerational risk

Contaminants like DDT and other persistent bioaccumulative toxins require a far more stringent consideration of the precautionary principle. Persistent bioaccumulative contaminants that persist in soil, atmosphere, water, wildlife and humans can remain for long periods in body fats, blood and bone and are passed on to

[66] Netherlands Ministry of Housing, Physical Planning & Environment *Conservation Report HSE 94.021* (9th May 1994). The Ministry abandoned the A-B-C soil and groundwater values on of 9th May 1994. These were replaced by intervention and target values outlined in the *Policy Agreement between Executive Councils of Associations of Local Authorities & Executive Board of the Water Quality Management Agencies*, The Hague (9th May 1994) at 11.
[67] Dr Bruce Kennedy, Executive Director NEPC Service Corporation; 'Human Health Risk Assessment In Environmental Standard Setting' Science Forum 111, The Practice Of Human Health Risk Assessment in Australia, Australian Government Department of Health and Aging [city of July, 2004]
[68] enHealth Council at 169
[69] Brenda Tarplee, Executive Secretary, FQPA Safety Factor Committee Health Effects Division *MEMORANDUM, SUBJECT: CHLORPYRIFOS - Re-evaluation Report of the FQPA Safety Factor*, HED DOC. NO. 014077, April 4, 2000
[70] Limpert, PB, Beyond the Rule in Mohan: A New Model for Assessing the Reliability of Scientific Evidence 54 1998 *Univ Toronto L Rev*

future generation '*in utero*' and through breast milk. Studies[71] have shown that babies are born with a range of chemicals present in their meconium (first bowel discharge). Risk assessment models provide little guidance on how to apply the principles of precaution and intergenerational equity in these cases.[72]

However, in 1999, the EU Technical Experts evaluated the data on the persistent and bioaccumulative flame retardant pentabromodiphenyl ether (PBDE). PBDE was detected in the body fat of aquatic animals and in human breast milk, and capable of disrupting the normal functioning of the thyroid hormones. They agreed that levels in human breast milk were increasing and considering the available information, it was not possible to say whether or not there is a current or future risk to human health. However, they noted it would be a concern if by the time the future information had been gathered, the analysis indicated risks to breast feeding infants. As such, there was a need to take a precautionary approach and they proposed widespread marketing and use restrictions, with a complete ban to be decided on at a later date.[73] Subsequent Directives by the EU have prohibited the use of certain BFRs in the fireproofing of textiles and garments.[74]

The decision to take action on substances found in blood and breast milk, without first having to prove that they were at levels likely to cause harm, was clear evidence of the operationalising of the precautionary principle in chemical risk management.

In chemical assessment, the substantial limitations and uncertainties of the scientific data and methodologies used to assess risk, plus the lack of follow-up environmental monitoring to confirm or disprove the original assessment means that the level of precaution incorporated into the process should be much greater than the discretionary judgments of the risk practitioner or the safety factors of software models.

Precautionary Principle in Action, a Decision Tree Approach

There are alternatives to risk based approaches to chemical hazards, based on the principle of shared responsibility and the precautionary principle.[75] In these processes, stakeholders come together to cooperatively assess the hazards, consolidate the necessary information, identify options and alternatives, determine the cause of action and ensure followup and monitoring. The participation of all stakeholders is needed at the earliest opportunity.[76] The Australian enHealth framework for Environmental Health Risk Assessment recommends a model based on a partnership approach with the community, commensurate with the potential effects on the community.[77]

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[71] Deuble L, Whitehall JF, Bolisetty S, Patole SK, Ostrea EM & Whitehall JS, *Environmental pollutants in meconium in Townsville, Australia,* Department of Neonatology Kirwan Hospital for Women, Townsville & Department of Pediatrics Wayne State University, Michigan, 1999, Abstract (unpub.)

[72] Section 3.5.2 of Agenda 21 defines intergenerational equity as: the present generation ensuring that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.

[73] Gwynne Lyons, WWF-UK, *PentaBDE: An Important Precedent in the Risk Assessment of Chemicals Found In Breast Milk in the European Union*, Briefing, April 15 2000

[74] European Directives 79/663/EEC/74 & 75 as reported in Danish EPA, *Environmental Project no. 494 1999, Brominated Flame Retardants, Substance Flow Analysis and Assessment of Alternatives'*, Available at <http://www.mst.dk/udgiv/publications/1999/87-7909-416-3/html/helepubl_eng.htm#kap5.2> [Accessed 23/4/2002]

[75] Tickner, J., Raffensperger, C., & Myers, N. *The Precautionary Principle in Action, A Handbook,* Science & Environmental Health Network, June 1999 at 8

[76] Bacow, L. S. & Wheeler, M., *Environmental Dispute Resolution,* Plenum Press, New York, 1987 at 161.

[77] enHealth op cit at 26

Community involvement is seen as providing valuable information and improved accountability at each step of the risk assessment process from:

- Issue identification; where community involvement can provide information about the site including weather patterns, local environmental information, health concerns and potential value conflicts. Community input can be sought on what risks deserve priority attention and what information may be available in the general community.
- Hazard identification; where the community may provide information about previous studies and/or datagaps, local perceptions of hazards and the applicability of assumptions to that particular community.
- Dose-response relationships; providing information about community attitudes towards the range and type of technical data and selected tests, as well as the assumptions made in the interpretation of the data.
- Exposure assessment; providing information about the community's attitude to biological monitoring and health monitoring; local knowledge of the range and nature of exposures, relevant exposure settings; the community's attitudes to sampling design and environmental monitoring and to the uncertainties and assumptions in the exposure assessment phase.
- Risk characterisation; providing information on the community's concepts of risk and safety.
- Evaluating the actions taken; community involvement will affect how environmental monitoring may be undertaken to ensure that the best decisions are made.
- Risk management; providing information on the communities' concepts of acceptable risk and safety.

All risk processes need the participation of all interested parties, to incorporate all interests including those of future generations and environmental entities in a truly precautionary approach. Community involvement cannot however address the outstanding issues of uncertainty including substantial information datagaps, disagreements over methods and the discretionary judgments.

In response, Tickner, Raffensperger and Myers[78] recommend a cooperative decision tree approach as one way to provide a consistent basis for the community and institutions to define, examine and identify alternatives to threats to human health and the environment; and to, in effect, implement the precautionary principle. They propose six general steps:

- Step One: Identify the possible threat and characterise the problem.

The characterisation stage provides for a better understanding of what might happen if the activity commences or continues and ensures that all stakeholders are asking the right questions about the issue. The aim is to identify the immediate problem or issue and any associated issues. It is argued that poor solutions are often a result of badly defined problems. The scoping phase identifies what is at threat; the potential scale and magnitude of the threat or impact; the full range of potential impacts; whether those impacts are direct or indirect; whether they are reversible or not; the temporal scale of the threat and any aspect of the population either human or environment that

[78] Tickner et al op cit at 8

are disproportionately affected. Once established, the information base allows the parties to more fully understand all the relevant facts and focus on the substantive issues. The scoping exercise is best undertaken as a 'joint fact finding' exercise by all stakeholders.

- Step Two: Identify what is known and what is not known about the threat.

The goal of this step is to gain a better picture of the uncertainty involved in the activity or hazard. The type of questions to be addressed are whether the uncertainty can be reduced with more data, if so, what sort of information is needed; How great is the uncertainty and what is known about the additive or synergistic impacts; and are any of the proponent's claims of safety, based on lack of knowledge regarding harm.

- Step Three: Reframe the problem to describe what needs to be done.

This stage is to provide a better understanding of what is the purpose of the proposed activity or chemical substance. The issue can be reframed in terms of what needs to be achieved, thereby facilitating better identification and understanding of the range of alternatives.

- Step Four : Assess the alternatives

Step Four requires a systematic analysis of all the alternatives, which refocuses the questions away from how much risk is acceptable to whether there is an alternative safer and cleaner way to undertake the activity or achieve the outcome.

- Step Five: Determine the cause of action.

The information collected in the previous steps is then considered and how much caution is required is determined. An effective way to do this is by convening a group of people to weigh the evidence by considering the information on the range and magnitude of impacts, the uncertainties and the alternatives. There are pertinent examples using the decision sciences and geographic information technologies,[79] demonstrating how the assessment of the weight of evidence can be used to lead to an appropriate course of action.

- Step Six: Monitor and follow-up.

As the complexity of technical and scientific issues increases, so does the importance of monitoring the outcomes. The monitoring needs to be carried out independently and the resultant information used to assess whether any further follow-up action is required.

Precautionary outcomes[80] for complex chemical issues depend on a collaborative approach to minimise the risks of being wrong. As the complexity of technical and scientific issues increase, so does the importance of monitoring the outcomes. If decisions had been based on mistaken assumptions, then the parties can reconvene and alter their assessment, thereby mitigating harm.[81] Through monitoring and feedback, a better information base for future decisions is developed.

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[79] Merkhofer, M., Conway, R. & Anderson, R., "Profile: Multiattribute Utility Analysis as a Framework for Public Participation in Siting a Hazardous Waste Management Facility" (1997) Vo. 21 No. 6 *Environmental Management* Springer-Verlag, New York at 831

[80] Susskind, L & Cruikshank,J. *Breaking The Impasse, Consensual Approaches to Resolving Public Disputes* Basic Books HarperCollins Publishers, Harvard 1987 at 28

[81] id at 32

Implementing the Precautionary Principle

These six step provide a guide to implementing the precautionary principle in all disciplines. Tools to support each stage can be identified and developed. These may include community information systems, participation protocols, capacity building kits, community monitoring initiatives, legislative actions or international conventions.

Examples of Practical Projects Implementing the Precautionary Principle

Synergy of the Chemically Related Conventions

The synergy of the international chemical conventions provides life cycle management for chemicals and through this a proactive and precautionary response to current and emerging chemical problems. The Waigani Convention Handbook[82] was developed as a capacity building exercise for the Small Island States of the South Pacific. It provided reference material assessing the problem and threats of poor chemical management and reviewed how the obligations of the four chemical conventions addressed these threats.

Combined implementation of the chemical conventions provides the crucial elements for life cycle management of toxic chemicals, that is, the :

- evaluation of hazardous chemicals to determine hazards based on inherent characteristic;
- development and application of clean production methods to avoid generation of hazardous wastes, substances and products;
- provision of information to all levels of society on hazards of chemicals;
- reduction and eventual elimination of POPs releases;
- use and production of POPs;
- international trade in toxic chemicals;
- transport of hazardous and radioactive waste;
- avoidance of the introduction of new hazardous chemicals either via unintended use or illegal dumping;
- environmentally sound remediation of waste stockpiles; and
- identification of contaminated sites.

The requirement of the conventions for proactive information dissemination and technical capacity building can improve a country's environmentally sound management of chemicals and hazardous waste.

By providing explanations and implementation tools, the handbook, delivered as both a CD and a web site offers capacity building tools for developing countries in sound chemical management under the framework of the synergy of the chemical conventions.

[82] The Waigani Convention Handbook is available at www.oztoxics.org

Community Information Systems - a tool to inform precautionary decision-making

To ensure an informed, equitable and precautionary consideration of the impacts and alternatives of environmental policy or decision-making, all stakeholders need to have access to comprehensive information on all aspects of the problem. Many disputes have their basis in disagreements over interpretation of scientific or technical data and the differing assessment of the risks involved. Much of the information that needs to be considered is technical by nature and often complex.

A process of cooperative information consolidation (CIC) is an affective process that ensures all stakeholders are involved in a holistic investigation of the problem, the alternatives and options, as well as the monitoring.

The process of CIC is guided by the principles of social equity and environmental sustainability; inclusiveness and involvement; a commitment to sharing data and information; respect and inclusion of all forms of knowledge; and an acknowledgement of power disparities.

The CIC process is an important capacity building activity for participants and focuses them on the information required for sound precautionary decision making. The CIC process moves from the identification of the problem to consolidation of the necessary information in a community information system (CIS).

The CIC steps are as follows:

Step 1. Review the history and identify the components of the issue.
Step 2. Conduct preliminary problem identification.
Step 3. Identify other interests or stakeholders to the dispute.
Step 4. Clearly define the protocols of the CIC process.
Step 5. Carry out a literature review of similar issues and disputes.
Step 6. Conduct a user study and user needs assessment by surveying key regulators, industry, residents and NGOs and list all identified concerns.
Step 7. Confirm problem identification and establish the aims and objectives of the CIS.
Step 8. List the dispute components as a series of questions needing explanation, which form the datasets for the CIS repository.
Step 9. Jointly work through the CIS questions, prioritising and also identifying contentious issues that may require special attention.
Step 10. Identify data gaps and restricted information, and a process to address them.
Step 11. Identify need for expert advice and a process to address it.
Step 12. Jointly identify key documents and datasets specific to the dispute issues and negotiate their inclusion into the CIS repository.
Step 13. Consolidate the information into an agreed CIS repository focusing on ease of data management, retrieval and dissemination.

The resultant CIS will by its very nature be electronic in order to manage the large amounts of information. However, the provision of hardcopy printout facilities for some users is essential.

The criteria for a well functioning and effective CIS repository includes:

- designed in response to the users' needs;
- developed from clearly established aims and objectives;
- prototyped to test acceptance of the data structure, content, layout, retrieval navigation and menu functionality;
- capable of storing large amounts of data with flexibility to incorporate changes in information requirements;
- built from a data collection plan with all data sets jointly accepted through a CIC process;
- inclusive of different levels of complexity of information;
- easy to retrieve data by key word search, menu links and cross referencing;
- in one clearly identifiable and easily accessible system incorporating all relevant data;
- reviewed regularly with ongoing modifications, where appropriate; and
- attention is given to resources and time allocation for maintenance and upgrades.

Future Research Projects

- A proposed project could focus on the monitoring of precautionary principle judgments by state, national and international bodies. Monitoring of national, state and international practice could be further strengthened by the mounting of high profile mounting legal challenges regarding environmental and health risks.

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- Development of an Insurance Pack setting out the precautionary principle, based on the six step process whereby insurance is granted on the basis of implementation of the six step process.

Conclusion

The precautionary principle is now accepted by many countries and has been given expression in both international forums as well as in some national legislation. However, for it to become enforceable norm of 'customary international law' from which no nation can dissent, it requires operationalising by lead nations such as the United States. This can only be brought about by an informed civil society working with regulators to show that the precautionary principle is the much needed commonsense approach to environmental risk. This requires extensive capacity building initiatives and easy access to all relevant information.

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