Conference Reports: A Precautionary Tale

Report Back from the Precautionary Principle Debate Held at the 3rd SETAC World Congress, Brighton, May 21-25, 2000

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What is precaution? More specifically, what does it mean to apply the precautionary principle within the context of environmental policy? The most common response to this question is reference to Principle 15 of the Rio Declaration [1]:

"*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*".

Despite the degree of qualification, the principle so defined allows substantial breadth for interpretation. Moreover, although probably the most commonly cited formulation (due to its status), Principle 15 is one of many which might legitimately be cited as representing the precautionary principle. This diversity, and in some cases, divergence of definitions has undoubtedly contributed to the variety of opposing views on the utility and appropriate application of the principle.

So precisely how can the precautionary principle be defined, and how is it best implemented in guiding policy decisions? These questions formed the basis for one of the closing session debates of the **3rd World Congress of the Society for Environmental Toxicology and Chemistry (SETAC)**, held in Brighton, UK, in the last week of May 2000. Leading the debate was a panel of three scientists, each with substantial, though differing, experience of addressing precaution as applied at the science: policy interface; **John Carey** (NWRI Department of Environment Canada), **Christine Majewski** (European Commission) and **David Santillo** (Greenpeace Research Laboratories, University of Exeter).

The session was chaired by SETAC Past President, **Bill Bishop**, of the Global Technical Policy Department, Procter & Gamble Company. Bishop opened proceedings by drawing on the work of Sandin [2] to provide a formulation of the precautionary principle reduced to fundamental elements:-

> "If there is (1) a threat, which is (2) uncertain, then (3) some kind of action (4) is mandatory".

Sandin identified these four elements as dimensions of threat, uncertainty, action and command. Within this definition, also, there was clearly scope for differing interpretation in precise application, and the relative magnitude of each dimension. Nevertheless, the formulation was useful in clarifying the basis of the principle (namely the need for timely, effective action in response to a threat, even when the scale of that threat cannot be precisely known).

Bishop went on to note the polarity of views regarding the precautionary principle. One side of the debate focused on the need for precaution as a response to the failure of existing risk-based approaches to provide adequate protection, with the principle seen as a mandate for anticipatory action which, though firmly based on science, could not be incorporated simply as a risk management tool. Others argued that the principle represented a radical departure from science-based policy making, and even that attempts to apply it routinely would lead rapidly to decision-paralysis and the stifling of innovation.

The panel discussions were introduced by Bishop with a final thought drawn from the work of Jordan & O'Riordan [3]:

"Paradoxically, we conclude that the application of precaution will remain politically potent so long as it continues to be tantalisingly ill-defined and imperfectly translatable into codes of conduct, while capturing the emotions of misgivings and guilt".

Bishop questioned this as an adequate basis for the formulation of public policy, if – in fact – application of the principle cannot be reduced to a formulaic procedure but instead encompasses a breadth of quantitative and qualitative considerations.

John Carey (Environment Canada) opened the panel presentations with a personal perspective of the appearance and application of the precautionary principle within Canadian environmental law, coupled with the parallel significance of the influential Krever Commission. The Commission of Inquiry on the Blood System in Canada, led by Mr. Justice Krever, was established in 1993 in response to public concerns over delays in action to address the threat of hepatitis transmission through the blood transfusion service. Although focusing on accountability within that service, the recommendations were intended to have wider application within the fields of health, safety and environmental protection and have set a benchmark for science-based regulation in Canada. Among the key lessons were:

- not awaiting scientific certainty before taking action to reduce risk;
- acting (at all times) at arm's length from the organisations being regulated;
- not delegating functions to others, nor relying on consensus decision-making as a substitute for independent judgement;
- not relying solely on, or deferring to, manufacturers for information, expertise, and judgement, but self-generating or

seeking independent scientific information and advice;
- not assuming a passive or responsive role, or relying on a philosophy of voluntary compliance, to protect Canadians.

The Krever report implicitly raises a more general question; *should public agencies and authorities be accountable only for meeting defined duties or do they have a responsibility also to meet the standards of care imposed by public expectations?* Indeed, could such wider accountability be seen as a duty of responsible governance?

Over the same period, the Canadian Government was engaged in the revision of the Canadian Environmental Protection Act (CEPA/88), culminating in the revised CEPA in 1999 which incorporated a stronger focus on pollution prevention. CEPA/99 made several specific references to the precautionary principle, both as a guiding principle and as part of the detailed implementation, using as its basis the Rio definition. Furthermore, Section 2 of CEPA/99 made it a duty of the whole of the Government of Canada to apply the precautionary principle in administering the Act. [URL link to the CEPA documents/website?]

Despite the agreed principle, Carey noted the difficulties which arose when deciding the appropriate level of action in response to a threat, the scale and probability of which may be subject to substantial and irreducible uncertainties. He stressed also that precautionary measures need not necessarily address the entire threat, providing the measures prevented environmental degradation in a cost-effective manner. The requirement for cost-effectiveness implied, under CEPA/99, accounting of any potential economic benefits of precautionary action, in addition to direct costs which such action might entail.

Carey summed up by posing an important question to the meeting: *does the precautionary principle simply negate uncertainty as grounds for inaction, as the Rio definition would imply, or does it more strongly advocate preventative action, as implied in other formulations?* This followed from the earlier question of responsible governance. Whether the principle is 'offensive or defensive', concluded Carey, appeared to depend on whether the decision to propose responsive measures was the result of a duty or a discretion. In other words, where a duty existed to take preventative measures, yet scientific uncertainty suggested inaction, the precautionary principle should not only negate that suggestion but, moreover, support action.

Christine Majewski introduced the European Commission's communication [4] on the precautionary principle, noting that the principle was enshrined within European environment policy by way of its inclusion in the EC Treaty [5] and that existing case law extended its application into other policy areas. The Communication [URL link to the EU/communication web site?], published in February 2000, was an attempt by the Commission to describe how the precautionary principle could be applied in practice, in response to two key concerns:

1. differing understandings of what the application of the principle would mean in terms of Community practice, which were resulting in a polarised and 'aggressive' debate;
2. the potential for fragmentation of the internal market which might arise from differing interpretations of the principle between Member States.

Majewski was keen to stress that the Commission was not, by preparing the communication, attempting to redefine the precautionary principle, but wanted simply to inform Member States and stakeholders of how the Commission intended to apply the principle in practice. Within the field of food safety, Majewski's own area of expertise, precaution had been applied for many years, although the detail and method of its application had never been described. As its prescription was seemingly slightly different in other fields, the Commission was keen to provide some universal guidelines as to how the principal would be applied in general under the umbrella of European policy and legislation. The communication was intended also to 'open a debate' which might lead to a common understanding of how to assess and manage risks in the face of uncertainty.

In introducing the communication, Majewski highlighted that the Commission regarded the principle as having most relevance to risk managers, and as something distinct from the application of caution applied as part of standard scientific assessment methods. The implication, therefore, is that precaution is merely a tool for the management of risks, and should only be applied where the scale of such risks might be 'unacceptable' but cannot be determined with sufficient certainty using standard risk assessment methodologies. This introduces, in turn, the concept of judging acceptability of risk, which Majewski noted was a political responsibility.

In elaborating the Commission's intended approach, Majewski stressed that precautionary measures must ensure: *proportionality* – tailoring measures to the potential risk and 'chosen level of protection';

1. *non-discrimination* – comparable situations should not be treated differently;
2. *consistency* – precautionary measures should be of comparable scope and nature to those already taken in equivalent areas in which all scientific data are available;
3. *examination of costs and benefits* – intended to be broader than a simple economic cost benefit analysis, taking into account the principle and case law that protection of health takes precedence over economic considerations;
4. *subjectivity to review* – implying that precautionary measures are preliminary only, pending completion of full risk assessments;
5. *capability of assigning responsibility for further data gathering* – stressing that, other than in cases where prior authorisation is required, reversal of the burden of proof on to the producer or proponent of an activity cannot be made a general rule.

The main concern underlying the establishment of such a Commission interpretation of the principle in application is, it would seem, the possibility of "unwarranted recourse to the precautionary principle as a disguised form of protectionism", i.e. the use of the principle as false justification for non-uniform trade restrictions with an economic motive. Majewski expressed this concern by stating that the

Commission did not want to see the precautionary principle 'dragged out of the air' to support measures which would otherwise be unacceptably restrictive. A scientific evaluation, as complete as possible, was an essential precursor to any proposal for precautionary action. It was only in this way, Majewski concluded that the Commission could approach a balance between the freedom and rights of individuals, industry and organisations and the need to reduce risks of adverse effects on health and the environment.

David Santillo (Greenpeace Research Laboratories) concluded the panel presentations with a call to re-explore the origins and fundamental intentions of the precautionary principle, some of which were becoming lost in attempts to formulate precaution as little more than a set of risk management guidelines. It was, for example, difficult for Santillo to see how the requirements for proportionality, consistency and non-discrimination set out in the Commission's communication, and for full prior risk assessment wherever possible, would allow for truly precautionary action.

Santillo stressed that many of the concerns surrounding 'inappropriate recourse' to the principle stemmed in part from a failure to understand or accept its firm scientific basis, and its necessity for responsible governance. Applied properly, and according to its initial formulation (e.g. the *Vorsorgeprinzip* of German Federal Law [4]), the principle could never be seen to be ' dragged out of the air' to justify unreasonable measures. Some indication of threat was clearly a prerequisite. In answer to the question posed by Carey, Santillo stressed that the principle did not simply *allow* action in response to the threat, but *required* it as a duty of responsible decision-making.

Misunderstanding, and in some cases misinformation, had, according to Santillo, led to a proliferation of arguments against the application of the principle, or attempts to neutralise its effectiveness through redefinition. He highlighted and challenged some of the common 'myths' :

1. "the precautionary principle bypasses scientific evaluation, or departs from rationality" – in contrast, the use of scientific research to guide precautionary decision-making was a central tenet of its application. This misunderstanding may have arisen from the challenge presented by precaution to standard risk assessments; there was a need to dispel the myth that it is only through risk assessment that proper account could be taken of scientific knowledge.
2. "the principle can be fully implemented as a tool of risk management" – it was essential, rather, that precaution be exercised at all stages of the identification and avoidance of potential threats. Otherwise what was termed precaution would, almost inevitably, be retrospective action.
3. "the principle can be fully implemented through the use of pessimistic assumptions in standard risk assessments" – this relied on the highly optimistic assumption that the risk assessment addressed all aspects of potential concern, and missed the point that, with precaution exercised at the stage of problem definition, the necessity for costly, time consuming and invariably subjective and incomplete risk assessment might even be avoided.
4. "applying the principle will invariably transfer risks from one area to another" – such a conclusion assumed that the principle would be applied in a 'one-sided' assessment, in a similar manner to standard risk assessment practice. In fact, precautionary evaluation encouraged decision-makers to think more holistically, and to consider options beyond the simple 'chemical X or chemical Y' choices, with a view to progressive reduction of impact on health and environment in all spheres of human activity.
5. "applying the principle will stifle innovation" – perhaps one of the most surprising misunderstandings, given that the progressive development of more protective governance outlined above would necessitate a proliferation of new solutions to existing and emerging problems, albeit solutions which did not introduce threats of a similar order. Rather than innovation resting entirely on product performance and economics, precautionary innovation must primarily ensure social, ethical and environmental responsibility both to current and future generations.

Santillo went on the stress that a broad interpretation of the precautionary principle as a means to work towards sustainability was implicit within the early formulations of the principle:

"*The principle of precaution commands that the damages done to the natural world…should be avoided in advance and in accordance with opportunity and possibility. Vorsorge further means the early detection of dangers to health and environment by comprehensive, synchronised research…it also means acting when conclusively ascertained understanding by science is not yet available. Precaution means to develop, in all sectors of the economy, technological processes that significantly reduce environmental burdens, especially those brought about by the introduction of harmful substances*" [6]

Many later formulations, including the definition within the Rio declaration, were restricted to one aspect of the principle, that of uncertainty not being a justification for inaction. It is this aspect which was also carried over in the Commission's communication which attempts, for legal reasons, to set out specific guidelines for its application. In contrast, Santillo proposed that precaution implied a way of thinking, as well as deciding and acting, which could never be captured within a rigid formula for risk-based decision making. Indeed, to try to write a formula for precaution was like trying to write a formula for being ethical or acting responsibly. Undoubtedly each had formulaic components, but they were, in total, more than those component parts. Attempts, through prescriptive legal guidelines, to avoid 'inappropriate recourse' to the precautionary principle would, Santillo concluded, undoubtedly prevent it from serving the role for which it was initially designed.

Time for discussion was, sadly, very limited. Nevertheless, a number of interesting questions were raised. One questioner expressed surprise that none of the panel had touched on the 'central problem' facing decision-making, that of limitations to research funding. In response, the panel were unanimous in their caution that further research, while essential, would never eliminate uncertainty and the indeterminate nature of natural systems. The 'regulators dilemma' of having to come to a de-

cision without knowing even how incomplete the information base is, would always remain, and precaution (in whatever form) would remain the only responsible option.

There was some agreement from the floor with the view that precaution, far from stifling innovation as some commentators had suggested, would actually necessitate innovation both in thinking and action. In this regard, it was necessary always to ask 'ourselves', as decision-makers, whether we are asking the right questions when evaluating current or proposed practice. This view received general consensus from the panel. There was some disagreement, however, with respect to the extent to which the Commission's proposed guidelines allowed for a broader participation in the decision-making process, especially at the outset of problem formulation and the identification of possible alternatives.

The session closed with a recognition from the Chair, Bill Bishop, that this was the first time that the issue of precaution had been debated by a World Congress of SETAC and that this development reflected the increasing need to view the research of SETAC members within the context of its subsequent use by decision-makers. The commitment was given to continue the debate at the 4th World Congress. No doubt this will provide an interesting and valuable focus for discussions within and beyond SETAC on this important issue.

[1] UNCED (1992) Rio Declaration on Environment and Development, 1992.
[2] Sandin, P. (1999) Dimensions of the precautionary principle. Human and Ecological Risk Assessment 5(5): 889-907.
[3] Jordan, A. & O'Riordan, T. (1999) The Precautionary Principle in Contemporary Environmental Policy and Politics, in Protecting Public Health & the Environment: Implementing the Precautionary Principle, C. Raffensperger & J. Tickner [eds], Island Press, Washington D.C.: pp. 15-36.
[4] CEC (2000) Communication from the Commission on the precautionary principle, Commission of the European Communities, Brussels, 2.2.2000, COM(2000) 1 final: 28 pp.
[5] EC (1993) Treaty establishing the European Community.
[6] Boehmer-Christiansen, S. (1994) The Precautionary Principle in Germany – enabling Government. In: Interpreting the Precautionary Principle, O'Riordan, T., & Cameron, J. [Eds], Cameron May, London: 31-60.