

# IMPLEMENTING PRECAUTION

## An NGO Response to the Government of Canada's Discussion Document

"A Canadian Perspective on the Precautionary Approach/Principle"

Prepared for and with the assistance of the

CANADIAN ENVIRONMENTAL LAW ASSOCIATION

*Report No. 419*  
*ISBN # 1-894158-57-1*



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April, 2002

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# **IMPLEMENTING PRECAUTION: AN NGO RESPONSE TO**

## **The Government of Canada's Discussion Document**

### **"A Canadian Perspective on the Precautionary Approach/Principle"**

#### **PART I: INTRODUCTION**

##### **Background**

The Government of Canada has solicited feedback and comment from the public on a "discussion document" entitled "A Canadian Perspective on the Precautionary Approach/Principle"<sup>1</sup>. Several federal government departments have posted the document on their websites and solicited comments from various sectors.

In the context of this exercise, Environment Canada has asked the Canadian Environmental Network (CEN) to prepare a written response to the document. In turn, the CEN made arrangements with the Canadian Environmental Law Association (CELA) to prepare this response, in consultation with other CEN members. The authors wish to thank members of the CEN and other NGOs who took the time to review and comment on this paper in draft form.

The Discussion Document proposes to outline "broad, guiding principles to support consistent, credible and predictable policy and regulatory decision making when applying the precautionary approach/principle. These principles reflect current Canadian practices"<sup>2</sup>.

Unfortunately, neither the Government's proposed vision, nor its current practices, reflect what is emerging as a new paradigm for decision-making about hazards in the presence of uncertainty, namely the precautionary principle. This response therefore not only responds to the discussion paper; it also illustrates an alternative vision of how precaution can be implemented in Canada in a proactive manner that better reflects the public interest and incorporates the perspectives of a broader cross-section of society and disciplines.

##### **Outline and Key Points**

Part II of this response begins by describing the emergence of and rationale for the precautionary approach, beginning with a critique of "risk-based approaches" currently prevailing in many areas of policy-making, including reference to some of the failures caused by such approaches. It describes how the precautionary approach or precautionary principle has emerged as a response to these failures, both in the international context and in Canada.

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<sup>1</sup> September 2001; and related documents (the "discussion document").

<sup>2</sup> From the Foreword of the discussion document.

We then describe in Part III what a precautionary approach should mean in practice, compared to both the discussion document's description of precaution, and compared to prevailing government practice. While it is difficult to be overly prescriptive about how precaution could work across a spectrum of government functions, this section will describe some of the key elements of precaution.

Based on the framework described in Part III, Part IV sets out how the precautionary approach should be applied in the Canadian context. Here we outline the weaknesses of the discussion document, particularly in its assertions that risk-based approaches are somehow more legitimate, both scientifically and otherwise; its reliance on cost-benefit analysis; and its presumption that precaution must be secondary to "least trade-restrictiveness" criteria. In Part V, we offer a summary, conclusions and our recommendations for implementing the precautionary principle.

Seven core elements of precaution are referred to frequently in the literature<sup>3</sup>, and are highlighted here as providing a useful framework for discussing precautionary approaches and their implementation. These interrelated elements are as follows:

- The need for **Proaction**. The typical human response has been to wait until damage from hazards has already occurred, and then to "react." "Proaction" implies earlier response based on early warnings of possible hazard, and therefore includes adjusting the threshold or trigger for taking precautionary action
- **Proportionality of response** (incorporating comparative consideration of the (cost-) effectiveness of various alternative responses to a hazard, and including acknowledgement of benefits as well as costs over varying time periods)
- Provision for **ecological margins of error** (uncertainty about ecosystem capacity to absorb harm needs to be respected with wider margins of error, in order to prevent unexpected harm, including from cumulative hazards)
- **Intrinsic value of non-human entities** (the recognition of which will influence the choice of alternative responses to hazard, to a greater extent than when only those impacts on humans in isolation from nature are considered)
- A **shift in the onus of proof** to those who propose change (as well as adjusted **standards of proof**<sup>4</sup>).
- A **concern for future generations** (incorporating, for example, traditional notions of "seventh generation" impacts, and the Brundtland Commission's concern for future generations)
- **Payment for ecological debts** through strict/absolute liability regimes (which may for example require proponents of hazardous activities to insure their actions against accident or damage, in turn influencing more careful behaviour)

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<sup>3</sup> See Jordan and O'Riordan, "The Precautionary Principle in Contemporary Environmental Policy and Politics", Chapter 1 in Raffensperger and Tickner, eds., *Protecting Public Health and the Environment: Implementing the Precautionary Principle*, at p. 24. The core elements are also referred to favourably by VanderZwaag: "The Precautionary Principle in Environmental Law and Policy: Elusive Rhetoric and First Embraces", 8 *Journal of Environmental Law and Practice* pp. 355-375, at 359.

<sup>4</sup> In this context, see for example the comments of the Royal Society's Expert Panel on Part III of this Response, on the tendency of the precautionary principle "to relax the standards of evidence demanded for the suspicion of unacceptable risks."

Implicit in each of the core elements is the need to acknowledge value assumptions inherent in decisions. In practice, this means

- **incorporating and acknowledging ethics and other disciplines** in decision-making, including social science and interdisciplinary approaches,
- **greater openness and transparency** in determining policy direction and in making decisions, thus allowing more meaningful discussion of public values and perspectives, and clearer acknowledgement of the trade-offs inherent in such decisions; and
- **consideration of alternatives** to proposed actions, and assessing these alternatives.

Further elaboration on each of these elements is found throughout this Response.

The Government of Canada's discussion document does not suggest any change to the status quo, in spite of international innovations and increasing public demand favouring more precautionary approaches. Incorporation of these dimensions in Canadian law, policy and practice will allow the precautionary principle to be implemented meaningfully.

## **PART II: THE EMERGENCE OF AND RATIONALE FOR PRECAUTION**

### **Failures of risk-based approaches**

A great deal of literature exists on the shortcomings and failures of prevailing risk-based approaches, and other approaches that over-rely on hard science, mathematics and cost-benefit analysis, and tend to downplay uncertainty and value assumptions. Examples include “Value Assumptions in Risk Assessment: A Case Study of the Alachlor Controversy”<sup>5</sup> (making explicit the value assumptions favouring proponents' interests in pesticide regulation), “Environmental Standard Setting and Children's Health”<sup>6</sup> (assessing the shortcomings of risk-based approaches in the context of children's different vulnerabilities), and “Late Lessons from Early Warnings: the Precautionary Principle 1896-2000”<sup>7</sup> (documenting failures of risk-based approaches in both historic and current contexts, including the context of current trade disputes and precaution).

Risk-based approaches have their origins in the assessment of substances and of radiation and nuclear technologies. Consequently, much of the critical literature is in this context. Risk-based approaches were used, for example, to arrive at occupational health exposure standards for benzene in the United States. These calculations vastly underestimated the true risks because they only considered some of the known health risks. Non-Hodgkins

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<sup>5</sup> Conrad G. Brunk, Lawrence Haworth and Brenda Lee, 1991. Wilfrid Laurier University Press.

<sup>6</sup> Canadian Environmental Law Association (CELA) and Ontario College of Family Physicians (OCFP) – Environmental Health Committee, 2000.

<sup>7</sup> European Environment Agency, Copenhagen, 2001 (“Late Lessons”).

lymphoma, for example, was not included in the assessments, even though the disease has recently been shown to be associated with very low exposures to benzene.<sup>8</sup> In the case of benzene, the use of precaution would have meant stopping its use and seeking better alternatives: evidence of benzene's potency as a bone marrow poison, its linkage to aplastic anaemia, and its connection to leukaemia appeared in 1897, 1923 and 1928, respectively.<sup>9</sup>

Some examples of problematic assumptions in traditional risk assessment include:

- It tends to deal with simple and direct cause-and-effect relationships, often ignoring cumulative and synergistic effects of multiple activities or events. It does not adapt well to more complex situations (such as persistent, toxic, bioaccumulative substances, or endocrine disrupting chemicals) where simple dose-response effects are inapplicable.
- Those doing the calculation may not know of all hazards posed by the activity; for example, only possible "cancer risks" but not possible developmental or neurological risks, are studied in relation to the substance at issue.
- Assumptions about levels of exposure may be completely erroneous; expected behaviour or interaction with the product or activity in question may not be the same as actual behaviour or interaction.
- The range of consequences being considered may be very narrow (e.g. only human health but not biodiversity impacts; tendency to focus on direct impacts, with less attention to indirect or systemic impacts).
- The level of anticipated consequences may be completely erroneous.
- Traditional risk assessment often excuses involuntary public exposure to harm, and exposure of vulnerable populations to harm, by assuming or substituting manufactured or implied consent for true consent, and calculated risks for true protection. It achieves this in part by setting assumptions for what damage (e.g. number of cancer deaths) is "acceptable".

### The emergence of and rationale for precaution as a response to the failures of risk

What then is the relationship between precaution and risk assessment? While the precautionary principle has its origins in Germany (see the following section on "Acceptance of precaution"), it is increasingly proposed elsewhere, including in Canada, as "a new "overlay" on risk assessment that instills in effect a new approach."<sup>10</sup>

The Government Discussion Document proceeds from the assumption that precaution is "a distinctive approach within risk management". In fact, risk-based approaches might be one element of precautionary approaches, not the other way around.

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<sup>8</sup> See Peter F. Infante, "Benzene: an historical perspective on the American and European occupational setting", Chapter 4 in *Late Lessons*, at p. 41.

<sup>9</sup> *Ibid.*, at p. 38.

<sup>10</sup> CELA and OCFP, 2000, "Environmental Standard Setting and Children's Health", at p. 154.

Risk assessment is not necessarily inconsistent with the precautionary principle, but because it omits certain basic requirements of the decision-making process, the current type of risk assessment is only helpful at a narrow stage of the process, when the product or technology and alternatives have been well developed and tested and a great deal of information has been gathered about them. Standard risk assessment in other words, is only useful in conditions of relatively high certainty, and generally only to help evaluate alternatives to damaging technologies.<sup>11</sup>

The 1998 “Wingspread Statement on the Precautionary Principle”<sup>12</sup> includes the following rationale for precaution:

The release and use of toxic substances, the exploitation of resources, and physical alterations of the environment have had substantial unintended consequences affecting human health and the environment.

Some of these concerns are high rates of learning deficiencies, asthma, cancer, birth defects and species extinctions; along with global climate change, stratospheric ozone depletion and worldwide contamination by toxic substances and nuclear materials.

Existing regulations and other decisions, particularly those based on risk assessment, have failed to protect adequately human health and the environment.

There is compelling evidence that damage to humans and the worldwide environment is of such magnitude and seriousness that new principles for conducting human activities are necessary.

While human activities may involve hazards, people must proceed more carefully than has been the case in recent history. Corporations, government entities, organizations, communities, scientists and other individuals must adopt a precautionary approach to all human endeavours.

Against this backdrop, the Wingspread Statement articulates the Precautionary Approach as follows:

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.

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<sup>11</sup> Nancy Myers, “Debating the Precautionary Principle”. March 2000, Science and Environmental Health Network at page 3 of 9. No publication data.

<sup>12</sup> Reproduced in Raffensperger and Tickner, at 353.

The precautionary principle has emerged in response to various failures not only in risk-based approaches, but also in response generally to failures to address hazard and uncertainty. Recent controversial Canadian examples of inaction and late action include contaminated blood, contaminated water, fuel additives and various consumer and medical products.

The failures of risk-based approaches have led to a search for alternative approaches to decision-making involving hazards to public health, the environment and other public goods, in the presence of uncertainty. The precautionary approach is the framework in which such alternatives are most commonly based.

### Acceptance of precaution in the international context

The precautionary principle is generally acknowledged to have its origins in the social democratic tradition of 1970s West Germany, where *Vorsorge* (precaution) and later the *Vorsorgeprinzip* (Precautionary Principle) appeared as tools for ecological modernization, acknowledging the complementarity of development and environmental protection.<sup>13</sup>

The principle is also often compared to such common notions as “an ounce of prevention is worth a pound of cure” and “better safe than sorry”, the need to “look before you leap”, and the Hippocratic imperative: “First, do no harm”.

It is not surprising, then, that the precautionary principle is increasingly acknowledged and referred to in a wide variety of contexts. There can be little doubt that it is at least an emerging principle of international environmental law.<sup>14</sup> Whether it has yet achieved the status of customary international law is subject to some debate, but the real question appears to be “when”, not “whether.”

Cameron and Abouchar support the argument that the precautionary principle is a principle of international law with examples of state practice and its incorporation into five environmental instruments signed at Rio de Janeiro in 1992: two binding agreements (being the United Nations Framework Convention on Climate Change and the Convention on Biological Diversity) and three non-binding agreements (being Agenda 21, the Rio Declaration on Environment and Development, and the Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests).<sup>15</sup>

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<sup>13</sup> See for example Jordan and O’Riordan, “The Precautionary Principle in Contemporary Environmental Policy and Politics”, Chapter 1 in Raffensperger and Tickner, at p. 20; and James Cameron and Juli Abouchar, “The Status of the Precautionary Principle in International Law”, Chapter 3 in Freestone and Hey, eds., *The Precautionary Principle and International Law*. Kluwer Law International, 1996, pp. 29-52.

<sup>14</sup> See for example David VanderZwaag, “The Precautionary Principle in Environmental Law and Policy: Elusive Rhetoric and First Embraces” (1998), 8 *Journal of Environmental Law and Practice*, 355-375; and Cameron and Abouchar (see above).

<sup>15</sup> *Ibid*, at p. 38.

As reiteration of a norm in treaty instruments may contribute to that norm's attaining the status of customary international law,<sup>16</sup> it is worth quoting the relevant text of some of these instruments. It is useful to consider simultaneously the reflection of the seven "core elements" of precaution listed in Part I, above, in the various international agreements.

The Convention on Biological Diversity (CBD), signed and ratified by Canada in 1992, includes the following in its preamble:

Noting also that where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat."<sup>17</sup>

The Cartagena Protocol on Biosafety<sup>18</sup> to the CBD, signed by Canada April 19, 2001, reads in part:

Lack of scientific certainty due to insufficient relevant scientific information . . . shall not prevent the Party of import, in order to avoid or minimize such potential adverse effects, from taking a decision, as appropriate, with regard to the import of the living modified organism in question.

These versions reflect international compromise in stating the precautionary principle in a negative fashion ("lack of certainty shall not be used as a reason for postponing / shall not prevent a decision"); stronger versions would advocate proaction in more affirmative language. The CBD and the Biosafety Protocol nevertheless indicate an international trend in recognizing the need to take earlier, preventive action.

Also in the context of the need for preventive action and the development of appropriate thresholds for action, many formulations of the precautionary principle require its exercise even when there is a "significant" threat, or when there are "reasonable grounds for concern." Not all formulations invoke the principle only when concerns reach the level of "serious or irreparable damage".<sup>19</sup>

For example, the 1996 Protocol to the 1972 London Dumping Convention<sup>20</sup>, to which Canada is one of sixteen "contracting parties" to date, reads:

In implementing this Protocol, Parties shall apply a precautionary approach to environmental protection from dumping of wastes or other matter whereby

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<sup>16</sup> "Precautionary Principle in International Law" by Claudia Saladin, in (2000) 6 International Journal of Occupational and Environmental Health 270-280, at 271.

<sup>17</sup> Convention on Biological Diversity, adopted 1992 at Nairobi and Rio de Janeiro, entry into force 29.12.1993. International Environmental Law – Multilateral Treaties, IUCN – Database No. 800000/U-992060500.

<sup>18</sup> Montreal, Jan. 29, 2000; see final text at [www.biodiv.org](http://www.biodiv.org).

<sup>19</sup> Cameron and Abouchar, at p. 44.

<sup>20</sup> 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972, Article 3, para. 1. Yearbook of International Environmental Law, Volume 7 (1996), Gunther Handl, Editor-in chief, Clarendon Press, Oxford, 1998, at 649. See [www.londonconvention.org](http://www.londonconvention.org).

appropriate preventative measures are taken when there is reason to believe that wastes or other matter introduced into the marine environment are likely to cause harm even when there is no conclusive evidence to prove a causal relation between inputs and their effects.

Moreover, proactivity implies a positive duty to act in the face of hazard. Both the Wingspread (above) and Bergen formulations place positive duties on governments to act so as to prevent serious environmental degradation or harm. The Bergen formulation<sup>21</sup> puts the obligation as follows:

Environmental measures must anticipate, prevent, and attack the causes of environmental degradation.

It is not sufficient that the precautionary principle be invoked when government happens already to be acting; the principle is, in itself, a statement of an obligation to act.

For example, Agenda 21,<sup>22</sup> one of the non-binding agreements adopted at Rio in 1992, explicitly requires proaction and lists precautionary measures to be taken to address specific global environmental threats:

A precautionary and anticipatory rather than a reactive approach is necessary to prevent the degradation of the marine environment. This requires, *inter alia*, the adoption of precautionary measures, environmental impact assessments, clean production techniques, recycling, waste audits and minimization, construction and/or improvement of sewage treatment facilities, quality management criteria for the proper handling of hazardous substances, and a comprehensive approach to damaging impacts from air, land and water. Any management framework must include the improvement of coastal human settlements and the integrated management and development of coastal areas.

CELA and the ENGO community therefore assert that Canadian government policy must invoke the precautionary principle when there are “reasonable grounds for concern” so that measures can be truly precautionary. To wait for a significant “threat” or imminent prospects of “serious and irreparable damage” may often mean that it is too late to take truly precautionary measures.

In the context of the “core element” noting the need for proportionality of expense, it should be noted that many formulations of the precautionary principle do not include the phrase “cost-effective” measures. Alternatively, the Framework Convention on Climate Change,<sup>23</sup> after stating that Parties should “take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects...” says

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<sup>21</sup> See Report of the Economic Commission for Europe on the Bergen Conference, in Yearbook of International Environmental Law, Vol. 1 (1990).

<sup>22</sup> Article 17.21, Agenda 21. See Agenda 21: Earth’s Action Plan, Annotated. Nicholas A. Robinson, ed., Oceana Publications, Inc., 1993.

<sup>23</sup> United Nations Framework Convention on Climate Change, Article 3, para. 3, found in Yearbook of International Law, Volume 3, 1992, Gunther Handl, Editor in Chief.

taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest cost.

By elaborating on “cost-effectiveness” to suggest proportionality of costs among different options and consideration of the attendant benefits, this formulation recognizes that effective precautionary measures must be taken regardless of the specific actions chosen. This is an explicit example of the core element respecting “proportionality of response.” There is no possibility of interpreting the agreement to argue that measures need not be taken because they are “too expensive”. Rather, various measures may be evaluated and the ones that are likely to provide the greatest global climate benefits at lowest cost may be pursued. This is just one example where a precautionary approach includes an assessment of alternatives; see Part III below.

“Cost-effectiveness” needs to be focused on the most cost-efficient way of achieving the needed precaution; it is not to be used as a test whether precaution should be exercised; nor is it to be confused with traditional “cost-benefit” analysis carried out in traditional risk assessment exercises. Furthermore, all of the short and very long term social and economic costs of the environmental damage that will result from not proceeding with the needed precaution must be considered in determining the most cost-efficient manner of proceeding.

Finally, the European Commission’s precautionary principle statement<sup>24</sup> asserts:

Examining costs and benefits entails comparing the overall cost to the Community of action and lack of action, in both the short and long term. This is not simply an economic cost-benefit analysis: its scope is much broader, and includes non-economic considerations, such as the efficacy of possible options and their acceptability to the public. In the conduct of such an examination, account should be taken of the general principle and the case law of the Court that the protection of health takes precedence over economic considerations.

With this last sentence, the Commission thus demonstrates a priority concern that the precautionary principle is specifically designed to address.

There can be little debate, on the basis of its invocation in international agreements, that the precautionary principle is emerging or has emerged as part of international law<sup>25</sup>. There are also probably sufficient examples of precautionary state practice to support the emergence of precaution on that basis as well. How it is implemented becomes the more important question.

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<sup>24</sup> “Communication from the European Commission on the Precautionary Principle” to the Committee on Trade and Environment, World Trade Organization. WT/CTE/W/147; G/TBT/W/137, 27 June 2000, at p. 3.

<sup>25</sup> See related text below on this point.

## Canadian application of the precautionary principle

Examples of application in Canada of precautionary approaches in policy statements, statutory language and judicial interpretation at both the federal and provincial levels date from at least the late eighties<sup>26</sup>. These examples include both principles and operative provisions of laws, and judicial and quasi-judicial decisions. Abouchar discusses the outcomes of both the Canada-US dispute under NAFTA concerning the fuel additive MMT, and the Canada-European Community dispute over hormone-treated meat. She also shows through recent Canadian experience that “harm serious enough to trigger the principle includes: threats to drinking water; threats to vulnerable species; substances that may be toxic or capable of becoming toxic; activities that may have long-term effects on the environment; marine pollution; and pesticide application near populated areas and water bodies.”<sup>27</sup> On this basis, the precautionary principle is triggered on a relatively low threshold of apprehended harm.

In addition to the above examples, the 2001 Expert Panel Report on the Future of Biotechnology “urged Canadian regulatory agencies to adopt the ... precautionary principle as a framework for assessing new technologies, including genetically-modified foods.”<sup>28</sup>

The House of Commons Standing Committee on Environment and Sustainable Development has pressed for strong emphasis on the precautionary principle in at least two reports, on the renewal of the *Canadian Environmental Protection Act*, and pesticides regulation in Canada.<sup>29</sup> In the first case, the Committee followed up its recommendations by adding implementation of the precautionary principle to the overarching “Administrative Duties” section of the *Canadian Environmental Protection Act, 1999* when amendments to the Act were debated at the Committee stage.<sup>30</sup>

Parliament also chose to include precaution in a manner tailored to the needs of the *Oceans Act*<sup>31</sup>, whose Preamble reads in part,

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<sup>26</sup> See Juli Abouchar, “Implementation of the Precautionary Principle in Canada”, Chapter 10 in *Reinterpreting the Precautionary Principle*, O’Riordan, Cameron and Jordan, eds., Cameron May Ltd., 2001.

<sup>27</sup> *Ibid.*, at p. 266.

<sup>28</sup> See “Elements of Precaution: Recommendations for the Regulation of Food Biotechnology in Canada”, Expert Panel on the Future of Food Biotechnology. Royal Society of Canada, 2001. The quotation is from “Expert Panel Raises Serious Questions About the Regulation of GM Food”: Press Release, Royal Society of Canada, February 5, 2001.

<sup>29</sup> See “It’s About Our Health! Towards Pollution Prevention: CEPA Revisited” June 1995, and “Pesticides: Making the Right Choice for the Protection of Health and the Environment,” May 2000.

<sup>30</sup> See Bill C-32, “An Act respecting pollution prevention and the protection of the environment and human health in order to contribute to sustainable development.” First Sess., 36<sup>th</sup> Parliament, as reported to the House of Commons on April 15, 1999, clause 2 (1) (a). The clause added at this stage was modest insofar as it used the “Rio formulation”; however, it omitted the word “cost-effective”. “Cost-effective” was added by a Government amendment at Report Stage.

<sup>31</sup> S.C. 1996, c. 31.

Whereas Canada promotes the wide application of the precautionary approach to the conservation, management and exploitation of marine resources in order to protect these resources and preserve the marine environment; ...

Although the Supreme Court of Canada in the *Hudson* case did not have to rule on the question, L'Heureux-Dubé J., for the majority of the Court, cited a number of authorities favouring the proposition that the precautionary principle has become a principle of customary international law. In reviewing the principle, the Court considered it to be relevant in interpreting domestic Canadian law, and in particular recognized the value of a precautionary approach to issues and decisions involving potential environmental hazards.<sup>32</sup> Other examples of implied or express reference to and application of the precautionary principle are numerous enough to justify a conclusion that Canada, for its part, has already embraced the principle.

The above examples illustrate the growing recognition and acceptance of the precautionary principle both in Canada and internationally. Through its participation in a variety of international agreements and through the assumption of various legislative duties, Canada has acknowledged its responsibility to take more proactive measures in the presence of hazard.

Further context and opportunities for application of the precautionary principle in Canada are discussed in Part IV.

### **PART III: DEFINING ELEMENTS OF PRECAUTION**

The “core elements” and additional measures mentioned in Part I must be considered in ensuring meaningful implementation of the precautionary principle. These core elements should also be considered in the context of our comments, in Part IV, on the shortcomings of the approaches suggested in the Discussion Document.

The Lowell Statement on Science and the Precautionary Principle<sup>33</sup> builds upon the 1998 Wingspread Statement (referred to in Part II, above), and incorporates most of the “core elements”. CELA and other Canadian groups and individuals have formally supported the Statement. Its first paragraph reads:

Growing awareness of the potentially vast scale of human impacts on planetary health has led to a recognition of the need to change the ways in which environmental protection decisions are made and the ways that scientific

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<sup>32</sup> 114957 *Canada Ltée (Spraytech, Société d'arrosage) and Services des espaces verts Ltée/Chemlawn v. Town of Hudson*, 2001 SCC 40 at paras. 31 and 32. In particular, L'Heureux-Dubé cites O. McIntyre and T. Mosedale, “The Precautionary Principle as a Norm of Customary International Law” (1997), 9 J. Env. L. 221, at p. 241 (“the precautionary principle has indeed crystallized into a norm of customary international law”), and the Supreme Court of India in *A.P. Pollution Control Board v. Nayudu*, 1999 S.O.L. Case No. 53 at p. 8 (in which the Court considers the precautionary principle to be “part of the international law”).

<sup>33</sup> Statement from the International Summit on Science and the Precautionary Principle, hosted by the Lowell Center for Sustainable Production, University of Massachusetts Lowell, 20-22 September 2001.

knowledge informs those decisions. As scientists and other professionals committed to improving global health, we therefore call for the recognition of the precautionary principle as a key component of environmental and health policy decision-making, particularly when complex and uncertain threats must be addressed.

The Lowell Statement goes on to describe some elements of the precautionary principle as follows:

We reaffirm the 1998 Wingspread Statement on the Precautionary Principle and believe that effective implementation of this principle requires the following elements:

- Upholding the basic right of each individual (and future generations) to a healthy, life-sustaining environment as called for in the United Nations Declaration on Human Rights;
- Action on early warnings, when there is credible evidence that harm is occurring or likely to occur, even if the exact nature and magnitude of the harm are not fully understood;
- Identification, evaluation and implementation of the safest feasible approaches to meeting social needs;
- Placing responsibility on originators of potentially dangerous activities to thoroughly study and minimize risks, and to evaluate and choose the safest alternatives to meet a particular need, with independent review; and
- Application of transparent and inclusive decision-making processes that increase the participation of all stakeholders and communities, particularly those potentially affected by a policy choice.

The Royal Society of Canada's Expert Panel suggests several "tenets" of the precautionary approach<sup>34</sup>. The tenets that add to and elaborate upon the above list include:

- The Precautionary Principle recognizes scientific uncertainty and fallibility.
- The Precautionary Principle favours erring, or a presumption, in favour of health and environmental values. Put another way, it is better to err on the side of wrongly assuming risk than of wrongly assuming safety. (In terms of science practice, it could favour a "false positive" or Type I error – a false prediction of an adverse effect when there is none – over the traditionally-favoured false negative or Type II error. "Many biologists have advocated abandoning slavish devotion to avoiding the Type I error and paying much more attention to avoiding the Type II error, especially in applied contexts like resource management and

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<sup>34</sup> See "Elements of Precaution: Recommendations for the Regulation of Food Biotechnology in Canada", Expert Panel on the Future of Food Biotechnology. Royal Society of Canada, 2001, in Chapter 8: *The Precautionary Principle and the Regulation of Food Biotechnology*.

conservation. In focusing on the Type II error the Precautionary Principle is, therefore, fully in accord with the current application of statistics in science.”<sup>35</sup>

- The Precautionary Principle tends, in addition to reversing traditional scientific and legal burdens of proof, to relax the standards of evidence demanded for the suspicion of unacceptable risk. Respecting the burden of proof, “there is no need to interpret the principle as requiring “proof of no risk””. Instead, a proponent should have the “burden of establishing that at least the weight of evidence does not support a prima facie case of serious risk.” In terms of standard of evidence, “a more precautionary approach would [demand] that the more serious the magnitude and nature of the potential harm ..., the less demanding should be the levels of confidence (the wider the margin for error) in the assumption of risk”.<sup>36</sup> The effect of these changes, contrary to opponents’ claims, is not “paralysis”, but simply placing the burden of narrowing uncertainty on proponents.
- The Precautionary Principle would change the notion of what is “acceptable” risk or safety. The factors currently used to determine “safety” are extremely subjective; they include the degree of “voluntary choice” and the off-setting benefits; the “familiarity” of the risk and the perceived ability to control it; the “trustworthiness of the risk manager”; and “a whole range of highly subjective attitudes and fears associated with particular groups in particular circumstances”<sup>37</sup>.

Although the PP is not an element “within” risk-based approaches, the two paradigms share a common reality: the existence of “**uncertainty**” (some commentators use the term “ignorance” to reflect how little we know) about the nature of a “**hazard**”<sup>38</sup>. Government and industry sometimes insist on “certainty” and “predictability” of regulatory process and outcomes in resisting this reality. As a consequence, there is a strong resistance to general duties or prohibitions (see Tickner’s comments in this context below).

The existence of uncertainty and the need for precaution call for an integrative, **multidisciplinary inquiry** that includes input from the social sciences and ethics, affected communities and the general public. As Joel Tickner said at Environment Canada’s March 20 consultation meeting, the term “science-based” should be replaced by “science-informed,” reflecting the necessary input to decision-making processes of a wider range of disciplines and populations. The pure and applied sciences have a role to play “within the larger context of precaution”, but decision-making ultimately applies other factors, a fact which must be acknowledged.

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<sup>35</sup> Ibid., at p. 199.

<sup>36</sup> Ibid., at p. 202.

<sup>37</sup> Ibid., at p. 204, citing Fischhoff et al.

<sup>38</sup> “A hazard is a source of potential harm, or a situation with a potential for causing harm in terms of human injury, damage to health, property, the environment and other things of value, or any combination of these.” See Risk Management: Guidelines for Decision-Makers (CAN/CSA-Q850-97). Canadian Standards Association, July 1997. A hazard can also be described as the intrinsic properties of an activity, substance or thing that have the potential to cause harm.

Finally, the process must reflect a greater commitment to **transparency** and openness to the public. The need for external review by experts in diverse fields is consistent with both multidisciplinary inquiry and greater transparency.

### Instruments of precaution

Joel Tickner lists and describes a series of elements of precaution, which he calls components of a precautionary policy framework.<sup>39</sup> This may begin with a broad-based **goal of precaution** in the face of scientific uncertainty. The goal may then be reproduced, verbatim if appropriate, in a **general duty** to use precaution, in any and all environmental or public health legislation. Tickner gives several US examples. In the Canadian context one can consider *CEPA 1999* (a relatively weak articulation), the *Oceans Act* and implicitly (in calling environmental assessment a “planning tool” and the need for early consideration of possible effects), the *Canadian Environmental Assessment Act*.<sup>40</sup>

A general duty to act in a precautionary fashion and a broad articulation of the precautionary principle threaten notions of “certainty” and “predictability” (acknowledging, especially, that precaution is called for in conditions of uncertainty!). Tickner notes

The ill-defined, uncertain outcome of [a] general duty may be critical to its success by creating a certain air of uncertainty in regulation that may lead companies to take action that would normally not be taken if regulatory obligations were clearly defined.<sup>41</sup>

As Ashford<sup>42</sup> notes, uncertainty of cause-and-effect is not the only determination to which the precautionary principle is or can be applied in the context of legal “duty”. Others include rights and duties in right-to-know regimes (duties to generate, retain and provide access to information about possible harm to potential victims, and the duty to warn); the duty to provide funds to mitigate future harm to health or the environment; a duty to compensate victims of unmitigated harm; and the duty to prevent harm.

Next, **aggressive goals** should be set, for example in preventing, eliminating or reducing a specific hazard.<sup>43</sup>

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<sup>39</sup> See “A Map Toward Precautionary Decision-Making”, Chapter 9 in Raffensperger and Tickner, pp. 162-180.

<sup>40</sup> S.C. 1992, c. 37.

<sup>41</sup> See “components of the framework” in Tickner, op. cit., at 167.

<sup>42</sup> Nicholas Ashford, “A Conceptual Framework for the Precautionary Principle in Law”; Chapter 11 in Raffensperger and Tickner, pp. 198-206, at 204. See also “Environmental Bonds” in Chapter 13.

<sup>43</sup> *CEPA 1999* is a missed opportunity in this respect: the federal Cabinet, under fierce industry lobby pressure during the late stages of the legislative process, amended the preambular acknowledgement of “the need to *phase out* the generation and use of the most persistent and bioaccumulative toxic substances” and replaced it with the words “*virtual* elimination” (a less ambitious goal than phase-out), the achievement of which is not mandatory in the Act even for the most dangerous substances. (Also, the goal of “pollution prevention”, touted as the central feature of *CEPA 1999* including in its long title, its “Declaration” that the Act’s “primary purpose is to contribute to sustainable development through pollution prevention”, and the

**Shifting the burden of proof to those undertaking hazardous activities** is the next element. Invoking concepts familiar to advocates of sound environmental assessment practice, Tickner proposes that “the proponent should demonstrate that no harm would occur and that there were no safer alternatives to an activity” (or in light of the impossibility of proving complete safety, the burden could be lightened so as to require the proponent to show either that the activity is safer, or that no safer alternative manner of carrying it out is possible).<sup>44</sup>

**Criteria and structure for decision-making about harm under uncertainty** would include instructions about how to weigh scientific and other evidence about the likelihood of harm. First, decision-making about likelihood of harm “should be based on the “weight-of-evidence” approach, rather than on some quantitative probability of harm”,<sup>45</sup> based on various sources not only from the laboratory, but also from human environments like the work place and other monitoring. Tickner also provides lists of criteria for evaluating cause-and-effect relationships.

**Prevention-based tools** proposed by Tickner and others include bans and phaseouts, clean production/pollution prevention, alternatives assessment (discussed further below), and health-based occupational exposure limits.

**Evaluating alternative activities, technologies and chemicals** is increasingly referred to by others as “**alternatives assessment**”; in fact, the term is even broader in that the inquiry may include the need for and purpose of the activity in question.<sup>46</sup>

**Ongoing monitoring, investigation, and information dissemination** are really extensions of the proponent’s duty to continue providing information on the impugned activity or product over time.

The Stockholm Convention on Persistent Organic Pollutants (the POPs Convention), which Canada signed and ratified on May 23, 2001, offers examples of alternatives assessment (Article 5 (c)), ongoing monitoring (see Articles 8 (5) and (6) respecting

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preambular statement that “the Government of Canada is committed to implementing pollution prevention as a national goal and as the priority approach to environmental protection”, are inaccurate reflections of the actual thrust and content of *CEPA 1999*, as Ministerial orders to companies to produce such pollution prevention plans are totally discretionary, and none have yet been ordered in over two years since the Act came into force.) Another example could be the refusal to register, and/or to phase out, those pesticides subject to the *Pest Control Products Act* that the weight of available evidence indicates are potentially harmful, including to vulnerable populations.

<sup>44</sup> See Tickner, op. cit., at p. 168.

<sup>45</sup> Ibid., at p. 169.

<sup>46</sup> See Katherine Barrett, “Food Fights” in *Alternatives Journal* 28:1, Winter 2002, pp. 30-33 at 30-31; Mary O’Brien, “Alternatives Assessment: Part of Operationalizing and Institutionalizing the Precautionary Principle”: Chapter 12 in Raffensperger and Tickner, at 207-219; and Tickner at p. 172: “Rather than asking the risk-assessment / cost-benefit analysis question of what level of contamination is safe or economically optimal, alternatives assessment asks the question of what activities can be undertaken to reduce or eliminate the hazard.”

“additional consideration” and “further review”), and information-sharing among Parties, the public and decision-makers (Articles 9 and 10).

**Participation and democratic decision-making**, along with **strong enforcement** are the other components. As noted in the previous section, a common and related theme in discussions on the precautionary approach is the need for **transparency**.<sup>47</sup> Here also the POPs Convention is instructive: Article 9 (5) reads in part: “For the purposes of this Convention, information on health and safety of humans and the environment shall not be regarded as confidential.”

In summary, the Precautionary Principle offers an alternative paradigm (not “a distinctive approach within risk management”) for decision-making about potential hazards. Emerging themes include the need to consider alternatives at an early stage, something that is difficult if not impossible within the risk paradigm, and making explicit the value assumptions made in risk-based approaches. The latter is achieved by extending the opportunity to give input to affected communities and the general public, in addition to proponents, “stakeholders” and regulators.

## **PART IV: THE PRECAUTIONARY PRINCIPLE IN THE CANADIAN CONTEXT**

### **Where Canada ought to apply the Precautionary Principle**

The Government of Canada Discussion Document needs to be considered in light of the great variety of functions involving hazards to human and ecosystem health performed by government departments and agencies. The vast scope of application is critical in considering the adoption of a Government-wide approach to precaution.

Government roles and functions can reduce or increase the impact of a hazard. Examples of Government decision points include:

- decisions whether to register a new substance (for example, a pesticide)
- decisions when and how to re-assess and review previously approved substances or activities (e.g. CEPA Priority Substances List, and Domestic Substances List screening processes)
- decisions whether to approve or support, and on what basis, policies, programmes and undertakings having potential adverse impacts on environmental or human health
- decisions whether to regulate consumer product content
- decisions whether and at what level to set standards

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<sup>47</sup> For a discussion of the issues in the preceding two paragraphs see “Issues in the Science-Based Regulation of Biotechnology”, Chapter 9 in the Royal Society’s Expert Panel Report; “Democracy and the Precautionary Principle” by Joel Tickner and Lee Ketelsen in *The Networker* (at [sehn.org/Volume\\_6.3\\_2.html](http://sehn.org/Volume_6.3_2.html)); and “Sustainability Science: Statement of the Friibergh Workshop on Sustainability Science,” Friibergh, Sweden, 11-14 October 2000 (at [sustainabilityscience.org](http://sustainabilityscience.org)).

- regulatory priority-setting (e.g. which substances to declare toxic, and how to regulate them)
- decisions whether and how to enforce environmental or health protection laws

A preliminary list of Government Departments and Agencies with responsibilities related to the precautionary principle includes Environment Canada, Health Canada, Department of Foreign Affairs and International Trade, Fisheries and Oceans Canada, Natural Resources Canada, Agriculture and Agri-Food Canada, the Canadian Environmental Assessment Agency, the Canadian Food Inspection Agency, the Pest Management Regulatory Agency, Finance, Treasury Board, Industry Canada, Justice, Transport Canada, Parks Canada Agency, and the Nuclear Safety Commission. Regulatory conflict of interest and dual mandates should be avoided. The policies and practices of other agencies should reflect the precautionary approach, such as the granting councils (MRC, NSERC and SSHRC) in setting research directions and priorities.

A preliminary list of Government responsibilities (including legislative/regulatory and policy areas) to which a precautionary approach might be applied includes all CEPA functions including pollution prevention; pesticides; biotechnology; defence policy and operations; nuclear safety and energy; climate change; wildlife management; biodiversity including species at risk; fisheries management; aquaculture; environmental assessment; water; agriculture; hazardous (and other) products; pest control products; food and drugs; standard-setting; and treaty implementation.

### The role of other government policies

Some comment on the Government of Canada’s Integrated Risk Management Framework (IRMF)<sup>48</sup> is necessary, as the Discussion Document relies on it as part of the necessary foundation for and approach to the implementation of the Precautionary Principle across Government of Canada policy.

The Framework advocates some positive approaches but they are identified as “within” the risk management paradigm. (Aspects of precaution should be implemented during and applied to a re-designed risk assessment process, but as asserted throughout this submission, a precautionary approach must be applied outside risk assessment as well, and constitutes an alternative paradigm.)

For example, the Framework advocates the need “to approach risk management in a more integrated and systematic way that includes greater emphasis on consultation and communication with stakeholders and the public at large,”<sup>49</sup> and it calls for a

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<sup>48</sup> Treasury Board Secretariat. Date unknown. [www.tbs-sct.gc.ca/pubs\\_pol/dcgpubs/RiskManagement/rmf-cgr01-1\\_e.html](http://www.tbs-sct.gc.ca/pubs_pol/dcgpubs/RiskManagement/rmf-cgr01-1_e.html)

<sup>49</sup> Ibid., p. 3.

“continuous” (i.e. knowledge-improving, iterative) management process<sup>50</sup>: these are elements that would also be part of a more precautionary approach.

However, the Framework pits innovation against protecting the public interest, as though they were necessarily different goals. This is the implication, at least, of the following passage from p. 3: “An essential element of a risk-smart environment is to ensure that the workplace has the capacity and tools to be innovative while recognizing and respecting the need to be prudent in protecting the public interest and maintaining public trust.”

Reference to “performing a “stakeholder analysis” (determining risk tolerances, stakeholder position, attitudes)” implies that “stakeholders” interests are more important than the public interest. In spite of these objections, it must be admitted the IRMF is designed for a broad range of users and applications in the federal government and as a result, is drafted in very general language.

Exhibit 2 of the IRMF further reinforces the presumption that the precautionary principle is “a distinctive approach within risk management” (in spite of assurances from Environment Canada at its March 20 consultation meeting that this was open to discussion and not immutable government policy). The Exhibit positions the Precautionary Approach as embracing the “development of policy options”, “assessment” and “decision” stages, but separate from the “problem/hazard identification” stage, the so-called “empirical context”, “implementation” and “evaluation/review” stages, as well as separate from the “public context”. The narrowness of the government’s vision of the implementation of the precautionary principle is most clear in this context.

The precautionary principle is acknowledged ambiguously as a “key element” in a note to the diagram: “uncertainty in science, together with competing policy interests (including international obligations) has led to increased focus on the precautionary approach”. It does not say that the precautionary approach needs to be implemented.

Although the iterative nature and “continuous learning” approach proposed in the IRMF are somewhat evocative of how the PP should be imagined (and might allow the principle to be implemented throughout the government in a more integrated manner), the Framework is otherwise counter-productive because of its assumptions about the limited role of the precautionary approach in policy-making. It is also counter-productive in its promotion of such concepts as the need to embrace “responsible risk-taking”.

Other government policies, such as the Regulatory Policy<sup>51</sup>, have considerable influence on the assumptions already made in proposing Canada’s preferred approach to implementing the precautionary principle. An investigation and critique of the impact of such policies and practices on sustainable and precautionary decision-making is, however, outside the scope of this response.

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<sup>50</sup> Ibid., p. 11.

<sup>51</sup> Government of Canada Regulatory Policy, Privy Council Office, November 1999.

## The Government of Canada Discussion Document

The Government of Canada's Discussion Document, "A Canadian Perspective on the Precautionary Approach/Principle", proceeds from a number of principles that are objectionable from the point of view of the protection of human health, the environment and other public goods. Fundamentally, it takes a different view of the relationship between precaution and risk-based approaches than is suggested by a growing number of observers and by international practice. Not only is it assumed that the precautionary approach can be subsumed in the "risk" framework, it assumes that the precautionary principle is somehow less scientifically legitimate than a risk-based framework.

From that starting point, it insists on "consistent, credible and predictable policy and regulatory decision making when applying the precautionary approach/principle": all positive objectives, but not always possible given the context of the problems, and not to be placed ahead of environmental and health protection as overarching goals. It assumes the existence of a mythical phenomenon, namely "society's chosen level of protection against risk." It also appears to be based on an underlying assumption that risk-based science is "sound science", and that the precautionary principle by contrast is poor science.

Another fundamental aspect of the Discussion Document is its insistence on taking a "cost-benefit" approach to determining acceptability of risks.<sup>52</sup> This approach does not deal with non-monetary or difficult-to-quantify costs and benefits (for example, erosion of natural and social capital). It does not deal with distributional issues (i.e. who bears what costs?<sup>53</sup>), and it offers no alternative to the tendency of traditional economic theory to "discount" future interests.

Finally, overlaid on these approaches, there is the insistence on selecting "measures that would be "least trade-restrictive"" among different types of measures "that would provide a similar level of response to the risk."<sup>54</sup> This approach takes domestic Canadian decision-making out of Canadian hands. Decisions made on this basis not only subvert the principles of safety, health, fairness, etc.; they will in many cases make such considerations impossible.

Inclusion of a "least trade-restrictive" principle for precautionary measures unduly restricts decisions for protection against risk, since it qualifies the application on an economic measure alone. The evolution of international law and the inclusion of the

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<sup>52</sup> See section 2.3 at page 8 of the Discussion Document.

<sup>53</sup> For example, in the asbestos case study in *Late Lessons*, some illustrative figures are presented, demonstrating some of the costs of failing to take precautionary action respecting asbestos. In the Netherlands alone, it was calculated that a ban in 1965 instead of 1993 would have saved 34,000 victims in that country and NLG 41 billion in building and compensation costs. Estimated total costs still predicted in that country are 52,600 victims and NLG 67 billion in costs between 1969 and 2030 (p. 58, *Late Lessons*).

The asbestos industry bore very few of these health and contamination costs. They have been borne instead by victims: primarily workers, their families, building owners, insurance carriers and health providers (p. 58, *Late Lessons*).

<sup>54</sup> See Discussion Document, p. 19.

principle in recent conventions (the Stockholm Convention on Persistent Organic Pollutants, and the Cartagena Biosafety Protocol) demonstrate a growing international consensus that economic condition-making must be qualified in situations of risk. Further, the WTO agreements permit precautionary actions in situations of risk, regarding Sanitary and Phytosanitary Standards (SPS Art. 5.7), and Technical Barriers to Trade (TBT Art. 2.10), without subordinating these decisions to the “least trade-restrictive” principle.

The following detailed remarks on the Discussion Document should be considered on the basis of the above comments. It should also be noted that in evaluating the Discussion Document, we have measured it against precautionary approaches articulated in international agreements, and against the “core elements” articulated in Part I of this response.

- The document is not sufficiently proactive. It does not reflect the precautionary principle’s mandate for governments to proactively initiate action to prevent environmental harm. It is too embedded in a substance-approval framework. Obligations to act proactively must be recognized in the document. For instance, climate change, biodiversity and ocean dumping are examples of areas calling for greater preventive action by government. These are among the most obvious areas where waiting for additional scientific “proof” of the hazards that are already being experienced removes remaining opportunities for truly preventive action – opportunities that might never be regained as damage continues to occur.
- Furthermore, the precautionary principle imposes on governments the obligation to act proactively to avoid, reduce or eliminate already occurring or existing hazards. There is nothing about the discussion paper that conveys that vulnerable populations, for example, children, would be better protected by government decision-making and regulatory action than they are now.
- The concept of “society’s level of tolerance for risk” is too abstract and is biased toward certain populations and against others. Its application may in turn increase potential harm to the most vulnerable populations and ecosystem values. Risk assessment imposes decisions about who bears the most risk, rather than allowing people exposed to hazard to decide what is acceptable.
- There is little objection to the value of “science-based” decisions and “sound scientific information”; however, there are increasing concerns about the context within which such decisions are made and information managed, and the lack of opportunity for other perspectives feeding into the decision-making process, in order to inform decisions that better reflect the public interest.
- “Precautionary measures should be proportional to the potential severity of the risk”: too often, “potential severity” is an unknown or approximated value, and decisions based on it are therefore potentially flawed. The same can be said for numerous other decision points within risk assessment and management.

- Requiring that precautionary measures be “cost-effective” may inappropriately influence the process of hazard assessment, and have the effect of predetermining the outcome of scientific inquiry. Similarly, mechanisms for determining “overall net benefit for society at least cost” and “efficiency in the choice of measures” need to be examined in terms of whom they are likely to harm, and whom they will benefit, not to mention that “cost” must include environmental and health costs over the long term. (See the second and sixth “core elements” in this respect.)
- The idea that “precautionary measures should be non-discriminatory” needs discussion, as it may imply denying the vulnerability of some populations and ecosystem components. The idea that “precautionary measures should be ... consistent with measures taken in similar circumstances” also needs attention: strict uniformity in the assessment of hazards and the taking of precautionary measures may comprise a systematic rejection of different vulnerabilities.
- In summary, risk assessment as practised makes value judgments that favour some and may impose increased risk of hazard on others, and may be compromised generally by excessive subjectivity and arbitrariness.
- A further concept that needs to be challenged is the idea of the need to “balance” “values, high economic stakes and urgency”. This “balancing” act, like the risk assessment and risk management paradigm, is likely to result in continued damage to human health and the environment.
- The closest the Discussion Document comes to acknowledging these fundamental problems is in the statement that “Precautionary decisions may impose costs on certain segments of society to achieve net benefits for the public good.” How judgments of “net benefit” are arrived at, as well as the definitions of “the public good”, need examination in order to reveal inherent biases.
- The need to take account of “stakeholder interests” should be considered secondary to protection of the public from hazards.
- Contrary to the idea that it may be open to Canada to “decide” whether “precaution should evolve to become a rule of customary international law”<sup>55</sup>, elsewhere the Discussion Document more accurately reflects the fact that customary international law evolves independent of any one country’s “decisions”. In fact, there is growing evidence that the PP is already an emerging part of customary international law.<sup>56</sup>
- The discussion document does not deal adequately with the issue of the onus of proof. It is not sufficient to say that the onus *may* be assigned. The onus of proof should explicitly be assigned, as a general principle, to those whose activities may cause harm or hazard to human and ecosystem health; or in cases of existing activity, to those whose activities are causing harm to human and ecosystem health. It is inappropriate to continue a culture where potentially harmful activities are permitted

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<sup>55</sup> Discussion Document, p. 12.

<sup>56</sup> See Acceptance of precaution in the international context and Canadian application of the precautionary principle in Part II, above.

until some person other than the one engaged in the activity proves that activity to be harmful even on a “balance of probabilities” standard. Actors whose activities cause harm impose unwanted, often involuntary impacts on human health and on the ecosystem, resulting in a massive societal subsidy to those activities.

- The discussion document lacks an adequate statement of the need for alternatives assessment. For example, assessments of whether the activity is needed; whether there are safer alternatives for the objective; or whether there are alternative pollution prevention approaches for the activity in question should be made mandatory.
- The discussion document fails to integrate the precautionary principle with other policy objectives such as pollution prevention and virtual elimination (also found in *CEPA, 1999*).
- The discussion document fails to include requirements for monitoring and collecting information on impacts. The financial burden for these requirements must also be imposed on those whose activities may cause the harm in question, but the results of such monitoring must be publicly available at little or no cost.
- The discussion document must include a plan for Canada to develop “early warning systems” in the various areas of concern, with commitments to take regulatory action on the basis of such early warnings.
- Humans often fail to predict the impact of our actions; where we do attempt prediction, we often miscalculate as to type and quantum. When we try to predict impacts, we often make judgments about the level of assault that human or ecosystem health can bear, and we often explicitly allow levels that approach the limits of that system. This approach leaves no room for error, even though our past experience demonstrates that we make many such errors, often with catastrophic consequences. A precautionary approach would allow room for human error in failing to predict the type, level and geographic extent of consequences, both to humans and to the rest of the ecosystem.
- A precautionary approach would also attempt not to overstress resources, so as to leave flexibility in the ecosystem, leave better ability to rebound from the assaults from human activity, allow for future generations of human activity, allow wide margins for lack of knowledge and quantification errors, and avoid all actions whose adverse consequences would be irreversible. The approach proposed by the discussion document fails to make adequate provision for these various types of margins of error, and fails to reflect the requirements of long-term sustainability in government decision-making. (See the third “core element”.)
- A precautionary approach would recognize that some types of human activity pose such an unacceptable threat that they may justifiably be prohibited, without the need for an evaluation process, on the basis of current knowledge. Examples include introduction of new persistent organic pollutants, new nuclear power, and any activity

supporting biological, chemical or nuclear weapons. Unacceptable impacts (for example, as displayed by endocrine disrupting chemicals) should also be defined, and activities or substances prohibited where there is evidence that they may contribute to such impacts.

## **PART V: SUMMARY AND CONCLUSIONS**

The Precautionary Principle should be applied wherever a decision to address *uncertainty* may serve to eliminate or reduce a *hazard*. It should be applied both in preventing hazards and in restoring past or ongoing damage to human health and ecological health, where there are reasonable grounds to believe that harm may result.

As demonstrated by the list of government functions in Part 4, the range of possible applications of the precautionary principle in Canada is very broad. Accordingly, the principle cannot be viewed as a prescriptive list of steps that can be applied in the same manner to every hazard. Precautionary approaches concern not merely the definition of a process; they define a new paradigm for decision-making.

A precautionary approach should, therefore, have certain features as described by the “core elements” and additional measures described in Part I, and as promoted by the Wingspread and Lowell Statements.

The “Late Lessons” report, referred to in Parts II and IV of this Response, draws common conclusions from case studies in areas such as fisheries management, radiation, the use of substances such as benzene, asbestos, PCBs and tributyltin, the fuel additive MTBE, ozone depletion, and growth hormones in the food supply. The twelve “late lessons” synthesized from these case studies offer clear alternatives to current approaches. These “late lessons”<sup>57</sup> assert the need to:

- Acknowledge and respond to ignorance, as well as uncertainty and risk, in technology appraisal and public policy-making.
- Provide adequate long-term environmental and health monitoring and research into early warnings.
- Identify and work to reduce blind spots and gaps in scientific knowledge.
- Identify and reduce interdisciplinary obstacles to learning.
- Ensure that real world conditions are adequately accounted for in regulatory appraisal.
- Systematically scrutinize the claimed justifications and benefits alongside the potential risks.
- Evaluate a range of alternative options for meeting needs alongside the option under appraisal, and promote more robust, diverse and adaptable technologies so as to minimize the costs of surprises and maximize the benefits of innovation.
- Ensure use of “lay” and local knowledge, as well as relevant specialist expertise in the appraisal.

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<sup>57</sup> Late Lessons, pp. 193-194.

- Take full account of the assumptions and values of different social groups.
- Maintain regulatory independence from interested parties while retaining an inclusive approach to information and opinion gathering.
- Identify and reduce institutional obstacles to learning and action.
- Avoid “paralysis by analysis” by acting to reduce potential harm when there are reasonable grounds for concern.

These and other tools for implementing the precautionary principle are not available only at the conceptual stages; in fact, they have been used extensively in real-life situations<sup>58</sup>.

In Canada, rhetorical claims to precaution have sometimes got in the way of implementation. For example, the government’s decision to ban the import and interprovincial trade of the fuel additive MMT was declared at the time as taken in exercise of the precautionary principle.<sup>59</sup> Today, MMT is still in use because of the primacy of trade rules. A very recent ban on the use of human brain-tissue patches for post-surgery repair was called a “precautionary measure” by Health Canada, yet the World Health Organization warned as early as 1997 that the patches could transmit Creutzfeldt-Jacob disease.<sup>60</sup>

Future application of the precautionary principle in measures taken to protect Canadians and the environment are likely to be more successful if, rather than merely invoking the words, they incorporate the following approaches as described in this Response:

- Recognition and treatment of uncertainty
- Presumption in favour of health and environmental values
- Assessment of alternatives
- A shift in burden of proof, and adjusted standards of proof
- Greater openness, transparency and external review
- Approaches to “acceptability” of hazards based on distributional issues, potential loss of social and ecological capital, and other non-monetary values.

Rather than continuing to rely on failed approaches, the Government of Canada should seize the opportunities for protecting the environment and human health in Canada.

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<sup>58</sup> See, for example, Late Lessons, including Table 1.1: “Some examples of “precautionary prevention” in the United States”.

<sup>59</sup> See Abouchar 2001.

<sup>60</sup> See “Ottawa orders brain patches off the market: Ban on human-derived tissue implants comes 5 years after WHO warned of risks” by Carolyn Abraham. Globe and Mail newspaper, April 12, 2002, p. A6.

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