

Trans-Atlantic Consumer Dialogue (TACD) Briefing Paper on the Precautionary Principle Draft

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The precautionary principle arose in the 1970s as a response to the limitations of public policies based on a notion of assimilative capacity, i.e. that humans and the environment can tolerate a certain amount of contamination or disturbance, and that this amount can be calculated and controlled. Current attention to precaution is the result of a growing understanding of the limits of science to predict complex environmental and health risks or provide clear-cut answers, and an understanding of the duty of government to protect its citizenry from harm. Contemporary global threats, such as climate change, genetically modified organisms, and endocrine disrupting chemicals pose even greater challenges to science -- e.g. addressing cumulative and interactive effects; understanding low-dose and delayed effects of chemicals or other activities; and identifying highly susceptible sub-populations. The limitations in current decision-making tools can result in high costs to health, the environment, and the economy (see European Environment Agency, 2000).

The precautionary principle became an explicit tenet of environmental policy in West Germany during the early 1970s. At the core of the German concept of "*Vorsorgeprinzip*" (literally, "foresight" or "forecaring" principle) was the belief that society should seek to avoid environmental and health damage by careful forward planning, blocking the flow of potentially harmful activities (von Moltke, 1988, 1996). It is critical to note that the Germans viewed *Vorsorge* as a *means of stimulating innovation and social planning for sustainability, rather than simply a tool to block potentially dangerous activities* (Boehmer-Christiansen, 1994).

The principle was first introduced internationally in 1984 at the First International Convention on Protection of the North Sea, designed to protect the fragile North Sea ecosystem from further degradation due to the input of persistent toxic substances. It has since been integrated into several international conventions and agreements, becoming an established principle of international health and environmental law (O'Riordan and Cameron). It is also considered a central principle of consumer and environmental protection policy in the European Union and its member states. The Maastricht Treaty on the European Union, states: "Community policy on the environment...should be based on the Precautionary Principle and on the principles that preventive actions should be taken, that environmental damage should as a priority be rectified at source and that the polluter shall pay" (see Raffensperger and Tickner, 1999 for a detailed list of treaties and agreements in which the precautionary principle is invoked). The standard international definition of the precautionary principle, signed by most of the world's nations, is the Rio Declaration on Environment and Development:

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

A more comprehensive definition of the precautionary principle is the Wingspread Statement, developed by a group of 35 scientists, advocates, and policy-makers in 1998 (See Appendix A). The Wingspread Statement goes further by calling for shifting the burden of avoiding harm to proponents of harmful activities; obliging proponents and governments to examine alternatives to

potentially harmful existing activities; and establishing open, informed, and democratic decision-making processes. These provisions ensure that *precaution is not only a principle to anticipate and stop potentially harmful activities but is also a principle to stimulate innovation and democratic involvement in seeking the safest alternatives to meet our needs and plan for sustainability.*

Components of Precautionary Measures

A broad reorganization of both science and policy to more effectively anticipate hazards and promote cost-effective alternatives to hazardous products, processes, and other activities is the goal of precaution. "Precautionary thinking" should be infused through the entire decision-making process: problem formulation, data collection, assessment of alternatives, weighing of evidence, decision-making, implementation of those decisions.

Below we present a set of components to guide the application of precaution.

1. Goal setting and alternatives assessment. The precautionary principle calls for setting broad goals for environmental and health policies, evaluating the role of specific technologies in achieving those goals, and proposing harmful, less uncertain alternatives. The precautionary principle asks: How much contamination can be avoided?; What safer alternatives might achieve the desired goal?; and Do we need this activity in the first place?. This approach permits a broader range of questions and considerations about activities, than does the traditional expert-driven process of risk assessment which asks: What level of risk is acceptable; How much contamination can a human (usually a healthy adult male) assimilate without showing any obvious adverse effects? *Reasonable risk must be a function of both the evidence of risk, the degree of uncertainty, and the availability of alternatives to prevent harm.*

2. Recognizing potential harm. The process for defining “potential harm” will bear significantly on the study of and conclusions regarding the safety of a particular technology. Both the *nature* and *extent* of harm, as well as the standards or baselines against which harm is measured are critical parameters. Recognition that our actions may result in serious harm is widely cited as reason for implementing a precautionary approach. Here we are dealing with hazards that have already been identified, and for which we have some evidence, while bearing in mind that additional harms may be unforeseen (as discussed below). Guidelines for defining parameters of harm are outlined in Table 1.

Table 1. Parameters for Defining Harm

Nature of Harm: What is impacted? <i>Consider harms at the level of:</i>	Extent of Harm: How “Serious” Is the Impact? <i>Considered harms that are:</i>
Biological components	Not reversible
Individual organisms	Widespread
Populations	Cumulative
Systems (e.g. ecosystems, social systems)	Involuntary
Interaction of systems	Unfairly distributed
	Portentous
	Restrictive
	Avoidable

3. Analyzing uncertainty. The above parameters address important questions about the type and extent of potential harm. However, because the precautionary principle applies under conditions

of uncertainty, answers to these questions are necessarily provisional and incomplete; they alert us to the potential for known harms to occur but cannot comprehensively identify or predict the impacts of technologies or our actions. Under the precautionary principle, we must further probe the limits of our knowledge through broadly defined *uncertainty analysis*: What evidence do we have for potential harms and benefits? Why do we not have more evidence? What questions have not yet been asked, and why? What are the sources of uncertainty and how can they be addressed? These considerations can be grouped under two broad headings: (1) types of uncertainty and (2) standards of evidence.

Types of Uncertainty. Many scientific studies and risk assessments examine a specific, limited, type of "technical uncertainty". Summarized as "inexactness", technical uncertainty derives from incomplete data, ambiguous results or variability of the experimental system (see Funtowicz and Ravetz, 1994). It is usually expressed as confidence intervals or distributions around a mean, and can often be reduced through further scientific investigation. There are, however, several additional types and sources of uncertainty that must be taken into account under the precautionary principle. For example:

- Methodological or model uncertainty refers to the "unreliability" of chosen methods to accurately represent the system under study, and can be addressed in part by modifying the spatial and temporal scales of inquiry, ensuring that experimental design is appropriate to the questions at hand, and by acknowledging and accounting for the necessary limitations of test systems.
- Political uncertainty arises from decisions *not* to examine a particular hazard, not to examine or develop adequate alternatives, or through deliberate efforts to conceal or downplay the extent of hazards or uncertainty.
- Greater uncertainty or indeterminacy arises from the confluence of biological, ecological, socio-cultural and political systems, and hence from the inevitable gap between the closed conditions of experimental research, and the open-ended and contingent circumstances in which the results of scientific research are applied (Wynne, 1992). This type of uncertainty signals the limits of our predictive capabilities and therefore "borders on ignorance".

Standards of Evidence. Standards of evidence refer to the degree of certainty necessary to substantiate a particular claim. In much scientific research, as in criminal court cases, the standard of evidence demanded to "prove" a claim or substantiate a hypothesis is very high: beyond reasonable doubt in court, and with a chance of error less than one in twenty ($p=0.05$) in quantitative scientific studies. Such a strict standard aims to avoid false positives, i.e. stating falsely that an experimental effect was observed. This error bias makes sense when maintaining conservative assumptions in science, establishing theories or adhering to the legal maxim of "innocent until proven guilty".

However, these standards are not appropriate when making policy decisions about health and environmental safety. This is because it is relatively easy to demonstrate "no effect" in highly complex and variable conditions, especially when investigating low frequency or low probability events. Detecting an adverse effect requires carefully planned and monitored experiments. Negative conclusions (no effect) may simply indicate that tests are not robust enough to *detect* an effect. Employing a strict standard of evidence, therefore, is likely to favor risky activities over environmental and health protection (see Shrader-Frechette, 1991).

Under a precautionary approach we should adopt a weight-of-evidence standard, and shift error biases to avoid false negatives, i.e., avoid claiming erroneously that a technology or activity has

no adverse effects. In a weight-of-evidence approach, information from numerous, diverse sources is weighed in a deliberative style of decision-making. It should also include more explicit discussion about the range and types of uncertainties and potential errors (what is known, not known, and can be known). When quantitative studies are used, the probability of false negatives, as well as false positives should be made explicit, i.e. through statistical power calculations (Peterman and M'Gonigle, 1992).

4. Altering presumptions and shifting burdens. Rather than assume that specific technologies or activities are safe until proven dangerous, the precautionary principle *adopts a presumption in favor of protecting the environment and public health*. This shifts the onus or “burden” to those who are proposing to market or export a potentially hazardous technology. Such burden-shifting already exists in some consumer protection policies. For example, drugs are not allowed on the market until the manufacturer can demonstrate safety and efficacy. Under the precautionary principle, the burden of proof could encompass a range of responsibilities including: funding and/or performing tests on potential impacts; demonstrating that there are no less harmful alternatives; ensuring open third-party review of all data and testing procedures; ensuring notification of potential hazards; adopting measures to prevent known negative impacts; and assuming financial responsibility for adverse impacts through mechanisms such as performance bonds (see Cornwell and Constanza, 1999). The principle also facilitates government action to prevent harm by lowering standards of proof and permitting agencies to issue deterrent signals about potentially harmful activities.

5. Improving democratic methods of participation. Precaution demands that those potentially affected by substances and activities participate in the decision-making process. *Decision-making processes should be transparent, and structures must be provided for increasing citizen control in all phases of decisions regarding science and technology*. More participatory processes, such as consensus conferences and scenario workshops, would likely improve the ability of decision-makers to anticipate and prevent harm to health and the environment for several reasons: Non-experts see problems, issues and solutions that experts miss by thinking more broadly and not being bound by disciplinary constraints; lay judgments reflect a sensitivity to social and political values and commonsense that expert models do not acknowledge; and the lay public may have a better capacity than experts alone accommodating uncertainty and correcting errors (See Fiorino, 1990; Sclove and Scammel, 1999; Sclove, 1999). Broader democratic participation processes can increase the quality, legitimacy and accountability of complex decisions.

6. Precautionary action. Precautionary action can range from interim restrictions or moratoria while further study is conducted to bans on, or phase-outs of products or processes. A variety of tools can be used for instituting precautionary action to protect consumers and the environment including clean production methods, “best available technology” provisions, right-to-know legislation, pre-market approval systems, health or environmental impact statements, and producer responsibility. The objectives of these tools are threefold: (1) preventing, reducing and eliminating exposures to potentially harmful substances and activities; (2) redesigning production processes and final products to avoid harm from occurring; and (3) establishing goals for protecting and restoring human and ecosystem health. Such policy tools need to be supplemented with a research agenda designed to provide “early warnings” to make possible rapid interventions to prevent damage to health as knowledge accumulated. This requires flexible, adaptive institutions that search for and respond to new information and feedback from prior decisions. *While it would be impossible to achieve a risk free world, precautionary consumer protection policies should as a priority focus on continuously finding ways to reduce environmental and health risks rather than settling for a non-negotiated, non-explicit, and often poorly understood*

level of “acceptable risk”.

The relationship of the precautionary principle to risk assessment

Many debates about the precautionary principle have focused on the distinction between precaution and risk assessment. Risk assessment is frequently characterized as the “science-based” approach to decision-making, while precaution is characterized simply as a conservative risk management tool that is implemented after “objective” risk assessment is complete. In contrast, we argue that risk assessment is *one, limited tool* that needs to be placed under a broader decision-making framework in which precaution guides the collection and weighing of evidence, the selection of tools, and preventive policies. *The precautionary principle is not a derivative of risk assessment, nor will incorporating more conservative assumptions in risk assessment necessarily implement precaution.* Reasons for this position are outlined below.

The technique of risk assessment has evolved over the years, but the general framework for conducting risk assessments remains the same: hazard identification, dose-response assessment, exposure assessment, and risk characterization (National Research Council, 1983). Risk assessment can be a useful tool for predicting outcomes in data rich circumstances, when the nature of the harm is specific and well-characterized and probabilities are well established. It provides a standardized, structured methodology for decision-making that has its foundations in science. It provides an aura of repeatability, objectivity, and precision.

However, over-reliance on risk assessment as the sole analytical technique in environmental and health decision-making can limit the ability of decision-makers to anticipate and prevent consumer risks (see O’Brien, 2000 and Tickner, 1996). Specific limitations of risk assessment include:

- Risk assessments are generally used for quantifying and analyzing problems rather than trying to solve or prevent them. Quantitative risk assessments are generally used to set “safe” levels of exposure that correspond to an agency (not societally) pre-defined “acceptable” level of risk, and assume that a population or individual has a certain assimilative capacity.
- Risk assessments tend to limit the type of information used in examining environmental and health hazards. Decision-making is often expert-driven, and does not include public perceptions and priorities, multidisciplinary perspectives, and cumulative effects. This approach tends to exclude information that is important when dealing with complex systems and interactions.
- To fit models, risk assessments limit consideration of uncertainty. When uncertainty is described, it often includes only “technical uncertainties” (described above). Model uncertainty, political uncertainty and indeterminacy are rarely acknowledged.
- Risk assessments are based on numerous -- often implicit and non-scientific C risk management assumptions, for example about exposures, human behavior, and chemical effects. While the process of risk assessment is considered formulaic, due to these assumptions, the outcomes of risk assessments on the same problem (and using similar data sets) can differ by several orders of magnitude (Bailar and Bailar, 1999). Thus, the processes of risk assessment and risk management cannot easily be separated.

While government agencies have begun to recognize and respond to these criticisms, risk assessment, as currently practiced policy-making, remains a limited, often costly decision-making tool that can tie up limited resources and delay precautionary actions in the name of resolving more uncertainty.

The relationship of precaution to international trade regimes

Much of the growing international debate about the precautionary principle has stemmed from trade controversies involving beef hormones, genetically modified foods, and food safety. The World Trade Organization (WTO) and other trade regimes such as the North American Free Trade Agreement (NAFTA) are defining legitimate standards of science and decision-making for environmental and health policies (Walker, 1999). However, the main objective of the WTO (and most other international trade regimes) is to reduce barriers to trade, ensuring fair and equal competitive conditions for market access and predictability of access for all traded goods and services (thus lowering costs). The goal of these rules is not to protect public health or the environment per se (IISD, 2000), and can in fact operate in tension with government authority to take precautionary measures (CIEL 2000). Further, WTO decision-making and dispute processes can constrain democratic discourse in determining national consumer and environmental policy. Three WTO agreements can adversely affect implementation of the precautionary principle.

- *The Agreement on Sanitary and Phytosanitary Measures (SPS)*. The SPS agreement was established to guide the establishment of national health and safety regulations regarding protection of human, animal, and plant life or health from risks due to diseases, pests, additives, contaminants, and toxicants in foods or feedstuffs. It permits members to adopt SPS measures to achieve "a chosen level of protection" but only to the extent necessary to protect health and as long as they are *least trade restrictive*. Members must promulgate or maintain SPS measures based on risk assessment and available scientific evidence, "taking into account risk assessment techniques developed by the relevant international organizations" (Article 5.1) and may include "relevant economic factors" (Article 5.3). In all cases, *the burden is on the importing country to develop the risk assessment to defend a regulation* (IISD, 2000; CIEL, 2000; WTO, 2000). A provision (Article 5.7), which some call precautionary, allows members to establish temporary measures in the absence of sufficient scientific evidence.
- *The Technical Barriers to Trade Agreement*. The TBT Agreement is intended to ensure that WTO members do not use measures relating to product characteristics, labeling, and packaging as disguised measures to protect domestic industries. It applies to national laws and policies, as well as local and state governments. Measures must not be more trade restrictive than necessary, i.e., the measure least invasive of trade objectives, to achieve their purpose. Moreover, members must use international standards as a basis for regulation unless they can demonstrate that the relevant standard "would be an ineffective or inappropriate means for the fulfillment of a legitimate objective." The Agreement also requires that national governments take all reasonable measures to ensure that entities within their borders comply with the Agreement (IISD, 2000; CIEL, 2000).
- *The General Agreement on Tariffs and Trade*. The GATT is an overarching agreement that applies when more specific WTO agreements are not in place. Central to the GATT are the most-favored-nation obligation, which prohibits members from giving an advantage to products imported from one country over another; and the non-discrimination requirement, which forbids members from treating foreign products less favorably than domestic like products. The GATT does, however, include provisions (Article XX) that allow nations to take actions necessary to protect human, animal, or plant health; but these must not constitute arbitrary or unjustifiable discrimination or disguised restrictions to trade (CIEL, 2000; IISD, 2000; WTO, 2000).

These agreements can adversely affect implementation of the precautionary principle in three fundamental ways:

1. Narrowing the basis of decision-making. Under the SPS Agreement, countries must justify health and environmental measures in terms of scientific risk assessment (allowing for some economic considerations) and must "take into account the objective of minimizing negative trade effects" (Article 5.4). Measures that are not based on hard scientific evidence must be "provisional" (Article 5.7). The details of these assessment procedures are being established through other international organizations such as the Codex Alimentarius Commission. While the role of "other [non-scientific] factors" is currently being negotiated, Codex general principles emphasize the use of quantitative scientific information. This emphasis can *instill unrealistic expectations about the ability of science to provide answers to complex health and environmental questions*. It can also result in an underappreciation of uncertainties and overly precise answers to the wrong questions (i.e. type III errors (Schwartz and Carpenter, 1999)).
2. Limiting opportunities for innovation, alternatives, and prevention opportunities. Countries, or even states and localities, could open themselves to trade barrier challenges if they institute precautionary environmental policies that require changes in production process or product design, such as demands that computers be produced without lead. This could potentially limit regulatory or voluntary clean production and pollution prevention programs, which have a proven track record of reducing environmental pollution while stimulating innovation and cost-reduction for firms.
3. Limiting the ability of nations to go beyond international standards. Trade rules attempt to achieve an international harmonization of standards -- a ceiling rather than a foundation for policies -- which can prevent countries or localities from taking precautionary actions that go beyond them. The burden is on those countries that want to go beyond international standards of reference to justify the need for additional health or environmental protections.

The impact of international trade regimes can be observed in the statements and actions of both the United States and the European Union. The February 2000 European Commission Communication on the Precautionary Principle reflects the priority given to the WTO and other trade harmonization schemes (Commission of the European Communities, 2000). The Communication asserts that the EU will take precautionary action even if it is seen as a barrier to trade, and EU actions on issues such as beef hormones and genetically modified foods bear that out. However, in the statement, precaution is described as a risk management tool, that is, as part of a risk analysis framework rather than the overall guide to its implementation. This means that precautionary action should be taken only after experts prepare an "objective" risk assessment. Moreover, precaution is discussed in terms of containing risk, not preventing harm or finding safer alternatives.

The influence of international trade is even more evident in U.S. positions. The U.S. government has traditionally opposed the precautionary principle, partly on the premise that it is being used as a barrier to trade, and partly because it is seen to be against "science-based" regulation. U.S. positions on the precautionary principle have not come from agencies with direct responsibility for environmental and health matters but from the U.S. Department of State, the U.S. Trade Representative, and the U.S. Department of Commerce, the latter two representing mainly economic and industrial interests. The trade-related U.S. agencies have argued that a separate precautionary principle is unnecessary because the WTO requires risk assessment, "conservative"

assumptions are already built into risk assessment, and the WTO and other international regimes already provide for emergency protective measures. Recent comments by the U.S. Food and Drug Administration and the U.S. Department of Agriculture also downplay the role of precaution stating that even least-trade-restrictive precautionary measures should not be invoked until quantitative evidence of a likely risk is established (U.S. Food Safety and Inspection Service, 2000).

Conclusions

Half a century of health and environmental policies has demonstrated that strong precautionary and prevention-oriented policies can reduce costs to both industry and society over the long run (See Ashford and Caldart, 1997; Massachusetts Toxics Use Reduction Institute, 1997). *This necessitates governmental and industrial innovators who can implement state-of-the-art policies and technologies that serve as a model for other nations and industries.* Similarly, there are many cases in which not taking precaution, and not acting when scientific evidence [predicted harm] has resulted in costs to society. The health costs and unnecessary suffering due to exposure to lead, asbestos, and numerous pesticides provide a case in point. A Dutch firm has estimated that more than 34,000 lives and 44 billion guilders would have been saved if the Dutch government had acted to remove asbestos from commerce when the first epidemiological studies appeared in the mid 1960s (even after evidence of health risks from the late 1800s) (Heerings, 1999). More recently the decision-making fiasco of Mad Cow disease -- in part due to a narrow reliance on expert-driven risk assessment -- has resulted in lives lost, high costs to farmers, and a "crisis" in science.

While international environmental and health agreements have provided a powerful impetus for states to implement precautionary policies, international trade rules have the potential to remove this impetus as well as the incentive for innovations in science, policy, and technologies that support implementation of the precautionary principle. International trade rules have instituted a uniform, formulaic approach to the use of science and policy in environmental and health decision-making: risk assessment and risk management. But we must question whether this is the best approach for addressing global environmental and health concerns.

To more effectively implement the precautionary principle, *it is critical that we reexamine the roles of science and policy in environmental health and international trade so that decision-making better reflects the need for prevention, the limitations of our knowledge, and the rights of nations to protect their citizenry even when risks cannot be conclusively proven.* As such, precaution must not be viewed as simply "another factor" in decision-making. It is an action principle, focusing on both anticipating and preventing harm. It is one overarching principle, that, combined with other principles such as sustainable development, social and economic justice, and human rights can move us toward a safer, cleaner, more equitable, and just world.

Appendix A

Recommendations

TACD should build on the work of international NGOs, as well as citizens' groups and governments in Europe where precaution is recognized as a sound and prudent policy framework. Through a Trans-Atlantic NGO network, TACD can support countries that are instituting precautionary policies and develop campaigns to expose and critique attempts to undermine precautionary measures. TACD can provide leadership in promoting a "strong" version of precaution that is consistent with its foundations in Vorsorgeprinzip and in many international treaties.

Defining precaution in narrow terms of "acceptable risk", or allowing precaution to be defined as such in debates will work against a strong version of precaution. Levels of acceptable risk are rarely defined by those who experience them (i.e. the public) and furthermore suggest that some level of risk is always necessary. The arguments for precaution outlined by an international group of consumer and environmental advocates and academics in June 2000 (see Appendix B) provide one basis for TACD responses to attempts to weaken the precautionary principle and/or make it subservient to narrow risk-based principles. As incorporated in the document, TACD should adopt assessment of alternatives and democratic participation in decision-making as two essential elements of health and environmental policies.

To better support implementation of the precautionary principle in protecting health and ecosystems, we recommend that the Trans-Atlantic Consumer Dialogue call upon governments to undertake the following:

1. **TACD should call upon the US and EU governments to discuss and implement a "strong" vision for precaution, based on alternatives assessment, rigorous science and democratic participation.**

TACD should advocate that the US and EU governments re-orient health and environmental policies from establishing "safe" levels of risk to incorporating a precautionary framework to prevent harm.

2. **TACD should call upon the US and EU governments to ensure that precautionary policies instituted at the international, national, and local levels are not challenged as barriers to trade.**

It is clear that implementation of precautionary policies in one country can set precedents and provide leverage for implementation elsewhere. In addition to demanding that governments not challenge precautionary health and environmental policies, TACD members should work at the international, national, regional, and local level to establish precautionary health measures that can serve as models elsewhere, and to acknowledge and applaud those undertaking such measures.

3. **TACD should call upon the US and EU governments to find new and appropriate venues for broad discussion and implementation of the precautionary principle.**

While discussions about precaution in the context of trade and international standards should continue, discussion and debate on the precautionary principle must also include

academic, professional and policy communities. For example, public health and medical professionals are potentially strong allies in attempts to promote precautionary policies. One specific venue for promoting precaution is in national and international environmental health initiatives, such as the WHO/EC European Environment and Health process initiated in London in 1999.

4. TACD should propose the establishment of a broad international agreement that establishes a *general duty of governments and producers to prevent harm to consumer and ecological health.*

Such an agreement would establish precaution as the principle underlying consumer health protection (a basic consumer right) in addition to particular protection standards and place a responsibility on governments and those who create risks to take preventive actions in the face of uncertain information.

Appendix B

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Appendix C: THE WINGSPREAD STATEMENT ON THE PRECAUTIONARY PRINCIPLE

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 with toxic substances and nuclear materials.

We believe existing environmental regulations and other decisions, particularly those based on risk assessment, have failed to protect adequately human health and the environment - the larger system of which humans are but a part.

We believe 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 we realize that 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 endeavors.

Therefore, it is necessary to implement the Precautionary Principle: 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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Sue Maret, Union Institute

Dr. Michael M'Gonigle, University of Victoria, British Columbia, Canada

Dr. Peter Montague, Environmental Research Foundation

Dr. John Peterson Myers, W. Alton Jones Foundation

Dr. Mary O'Brien, environmental consultant
Dr. David Ozonoff, Boston University
Carolyn Raffensperger, Science and Environmental Health Network
Hon. Pamela Resor, Massachusetts House of Representatives
Florence Robinson, Louisiana Environmental Network
Dr. Ted Schettler, Physicians for Social Responsibility
Ted Smith, Silicon Valley Toxics Coalition
Dr. Klaus-Richard Sperling, Alfred-Wegener- Institut, Hamburg, Germany
Dr. Sandra Steingraber, author
Diane Takvorian, Environmental Health Coalition
Joel Tickner, University of Mass., Lowell
Dr. Konrad von Moltke, Dartmouth College
Dr. Bo Wahlstrom, KEMI (National Chemical Inspectorate), Sweden
Jackie Warledo, Indigenous Environmental Network

Appendix D: "THE CALL": A CALL FOR GLOBAL PRECAUTION

We endorse the precautionary principle: When an activity raises threats of serious harm to human health or the environment, precautionary measures should be taken even if the nature of harm and its causes are not fully established.

We claim, as individuals and communities, the right to a healthy and life-sustaining environment. The task of protecting human health and the environment is a general duty of all governments, corporations, and international regimes as well as nongovernmental organizations and the public at large.

The current signs of severe and irreversible damage to the earth and its people call for more care and foresight in the conduct of human activities than we have taken in the past. Such trends as unsustainable timber trade, fishing, and agriculture; loss of biodiversity; and global warming threaten future generations. Even current populations suffer from increasing rates of disease and disorders triggered by toxic pollution and other environmental factors.

We therefore urge governments and international regimes to adopt a comprehensive precautionary approach to protecting human health and the environment.

Precaution is a recognized legal principle as well as a more general way of planning, regulating, and making decisions about technologies, processes, products, and other activities. It is based on the following norms:

1. **Vigilance and prompt action.** The goal of precaution is to anticipate and prevent harm. We must pay attention to and act upon warning signs of harm to human health and the environment, even when scientific studies do not give complete information. Warning signs come in many forms--scientific evidence; scientific opinion, often contradictory, sometimes minority; past experience; and our knowledge of similar systems and substances. Precautionary action may take many forms--for example, setting the goal of eliminating contaminants, substituting safer chemicals for more harmful ones, introducing clean production methods, preserving biodiversity, farming organically, banning or delaying a new technology, labeling, or monitoring.
2. **Burden of safety on proponents of a technology.** It is the general duty of proponents of products, activities, and technologies to examine alternatives; to put forth the most effective and least harmful options; and to assume responsibility for harm. This includes a continuing duty to test new technologies, monitor those in use, and make results available to the public.
3. **Alternatives assessment.** We must ask whether we need potentially harmful products and technologies at all, or whether there are safer, more beneficial alternatives. Civil society must have many more opportunities to make these choices than it does at present, especially in the research and regulatory arenas and in the early stages of a technology's development.
4. **Transparency.** Potentially harmful activities and alternatives to them must be evaluated openly. Information on these technologies must be provided to all who may be affected, especially to those who may suffer harm, and significant deliberations and decisions on such activities must be open to all concerned. Public participation in such decisions must be supported by access to all relevant information and resources.

These norms have been set forth fully or partially in many arenas, such as the 1992 Rio Declaration on Environment and Development; the Maastricht Treaty establishing the European Union; the policies of governments in Sweden, Germany, Brazil, and elsewhere; and aspects of U.S. food, drug, and environmental laws.

However, we are alarmed that the pressures of global corporate expansion are rapidly undermining both the rights of governments and communities to exercise precaution and the rights of individuals to a healthy and life-sustaining environment. These pressures are enhanced and enforced by international trade regimes such as the WTO, NAFTA, and Codex Alimentarius.

We protest the following trends in international trade:

1. Lowering protective standards through harmonization. In the effort to smooth the way for corporations, local and national laws protecting public health and the environment are being harmonized to international standards. Communities, regions, and nations wishing to participate in international commerce are being deprived of the right to set protective standards that are higher than those dictated by international regulations and that are responsive to local values, cultures, and ecological circumstances.

It is important to recognize that there is often no single right way to deal with threats of significant harm in the face of scientific uncertainty or to weigh the full range of benefits and costs of various courses of action. So long as national protective standards are applied equally to domestic and foreign products and activities, those standards must be honored.

2. Secrecy. International standards of protection are being set without full and timely participation by the public. Deliberations, including challenges to standards, are often hasty and cursory or conducted in secret or with little public notice. Other negotiations are more open but are greatly protracted, requiring resources unavailable to representatives of civil society. All are subject to manipulation by well-funded, closely connected corporate interests.

3. Misuse of risk assessment. A narrow and limited version of "risk assessment" is being imposed as the sole method for determining the probability of harm. This process attempts to quantitatively estimate the likelihood of known harms but seldom takes into account the full range of possible harms, multiple interactions, or cumulative effects. Risk assessment lends a false aura of scientific authority to decisions that are heavily influenced by economic and political interests. It often serves as a delaying tactic, making timely, preventive intervention impossible; allows corporate interests to take precedence over the health and safety of people and the environment; and deprives communities and nations of the right to protect themselves from social and cultural forms of harm.

4. Burden of proof on protective nations. Under current trade rules, nations may be challenged and required to justify any standards that are more protective than the international norms. To do so, they are required to use the often inappropriate and inadequate tools of risk assessment. According to some current rules, preventive measures may be taken before a quantitative risk assessment is performed but these are considered temporary. Nations with lower standards may not be challenged. We call for these and related harmful practices to be set aside in order to allow local communities, nations, and the international community to debate and adopt a comprehensive precautionary approach to protecting human health and the natural world.

We reject the notion that people must trade away health and a healthful environment in exchange for the economic security to which we all aspire. Development must be accompanied by measures that protect public health and the environment. We call for the most protective standards to prevail at local, national, and international levels, with the full support, assistance, and financial backing of international commerce and the wealthiest nations. We declare our intention to press for adoption of the precautionary principle at all levels of society.

Science and Environmental Health Network
Public Citizen
Community Nutrition Institute
Defenders of Wildlife
Institute for Agriculture and Trade Policy