

Debating the Precautionary Principle

By Nancy Myers

The precautionary principle has taken center stage in a number of recent international discussions on trade, the environment, and human health. As a result, it has stirred criticism as well as interest. In these discussions and in a growing number of media reports on the principle, certain criticisms and qualifications, enumerated below, have been repeated with some frequency.

The Science and Environmental Health Network offers the following responses to stimulate the thinking of others on these statements and on the precautionary principle. Many of these ideas were articulated in a January 2000 meeting of precautionary principle advocates and in discussions following the meeting.

"The precautionary principle is vague and has conflicting definitions."

The precautionary principle is worded differently each time it is articulated. This is not uncommon in international customary law. Although some statements of the principle are more detailed than others, there are no major conflicts among them. At the core of each statement is the idea that action should be taken to prevent harm to the environment and human health, even if scientific evidence is inconclusive.

For example, the 1998 Wingspread Statement on the Precautionary Principle summarizes the principle this way: "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." (The Wingspread Conference on the Precautionary Principle was convened by the Science and Environmental Health Network.)

The February 2, 2000 European Commission Communication on the Precautionary Principle notes: "The precautionary principle applies where scientific evidence is insufficient, inconclusive or uncertain and preliminary scientific evaluation indicates that there are reasonable grounds for concern that the potentially dangerous effects on the environment, human, animal or plant health may be inconsistent with the high level of protection chosen by the EU."

The January 29, 2000 Cartagena Protocol on Biosafety says: "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."

(The negatives in this last statement echo the 1992 Rio Declaration on Environment and Development: "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.")

As the principle has been elaborated recently, it nearly always implies three additional ideas, beyond "harm" and "scientific uncertainty":

- the notion of seeking alternatives to harmful technologies;
- the idea of shifting to proponents of a technology the responsibility for demonstrating its safety; and
- the goal of transparency and democracy in making decisions about technologies.

Taken together, these concepts provide what we believe is a sound overarching approach to assessing and making decisions on products and technologies and other human activities that may impact health or the environment. That is how "precaution" operates at the broadest level.

On this level it is something like the common-sense attitude we take in conducting our own lives and making decisions: We consider whether we need or want something, try to learn as much as we can about risks and benefits, consider alternatives, choose the best and (most likely) safest route, and hold responsible those who provide the services we choose. And when something we value is threatened, we tend to err on the side of caution.

But the precautionary principle, especially as articulated in international treaties and agreements, is also a specific justification for action in cases of likely harm and scientific uncertainty.

"If precaution applies to everything, precaution would stop all technology in its tracks."

This criticism confuses the broad, common-sense precautionary approach to decision-making with specific precautionary action. It is wrong on two counts. In the first place, precautionary action does not always mean calling a halt or implementing a ban. It can also mean imposing a moratorium while further research is conducted, calling for monitoring of technologies and products already in use, adopting safer alternatives, and so forth. In the second place, a broad precautionary approach will encourage the development of better technologies. Using this approach, society will say "yes" to some technologies while it says "no" to others. Making uncertainty explicit, considering alternatives, and increasing transparency and the responsibility of proponents and manufacturers to demonstrate safety should lead to cleaner products and production methods.

"Precaution calls for zero risk, which is impossible to achieve."

Any debate over the possibility of "zero risk" is pointless. Our real goal must be to impose far less risk and harm on the environment and on human health than we have in the past. We must harness human ingenuity to reduce the harmful effects of our activities.

The precautionary principle is based on the assumption that people have the right to know as much as possible about risks they are taking on, in exchange for what benefits, and to make choices accordingly. With food and other products, such choices are often played out in the marketplace. A major factor in the controversy over genetically engineered food is the consumer understanding that benefits of these products (which accrue more to producers than to consumers) do not outweigh the risk of harm to themselves or the environment.

Increasingly, manufacturers are choosing to reduce risk themselves by substituting safer alternatives in response to consumer uneasiness, the threat of liability, and market pressures. For example, a number of toy manufacturers have voluntarily stopped using phthalates in soft plastics. Such actions are in the spirit of the precautionary principle.

A key to making those choices is transparency - about what products contain, and about the testing and monitoring of those ingredients. Another is support, by government and industry, for the exploration of - and rigorous research on - alternatives.

Sometimes it makes sense to eliminate even questionable risks if it is easy to do so. For example, most airlines forbid passengers to use electronic devices during takeoff and landing, even though studies have not confirmed that they pose a danger.

In other cases the risk will be small but the consequences severe. An example of this kind of precautionary action is the U.S. "zero-tolerance" standard for *Listeria monocytogenes* in ready-to-eat foods. *Listeria* infections are rare, but they are extremely dangerous. (See Edward Groth III, "Science, Precaution, and Food Safety: How Can We Do Better?" Consumers Union of the U.S., Inc., February 2000.)

Market and voluntary action is not enough, especially on issues that go beyond individual and corporate choice. It is the responsibility of communities, governments, and international bodies to

make far-reaching decisions that greatly reduce the risks we now impose on the Earth and all its inhabitants.

"We don't need the precautionary principle: we have risk assessment."

Risk assessment is the prevalent tool used to make decisions about technologies and products. Its proponents argue that because conservative assumptions are built into these assessments, they are sufficiently precautionary.

Too often, however, risk assessment has been used to delay precautionary action: decision-makers wait to get enough information and then attempt to "manage" rather than prevent risks. 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 already 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.

Under the precautionary principle, uncertainty is also given due weight. The nature of the uncertainties about a technology can suggest such things as whether short-term testing can provide adequate answers; and if not, whether longer-term testing and monitoring can do so; and whether the benefits of the technology warrant that investment. The precautionary principle calls for the examination of a wider range of harms - including social and economic ones - than traditional risk analysis provides. It points to the need to examine not only single, linear risks but also complex interactions among multiple factors, and the broadest possible range of harmful effects.

This broad, probing consideration of harm - including the identification of uncertainty - should begin as early as possible in the conception of a technology and should continue through its release and use. That is, a precautionary approach should begin before the regulatory phase of decision-making and should be built into the research agenda.

What is not consistent with the precautionary principle is the misleading certainty often implied by quantitative risk assessments - that precise numbers can be assigned to the possibility of harm, that these numbers are usually a sufficient basis for deciding whether the substance or technology is "safe," and that lack of numbers means there is no reason to take action. The assumptions behind risk assessments - what "risks" are evaluated and how comparisons are made - are easily manipulated by those with a stake in their outcome.

"The precautionary principle is a tool of risk assessment."

This statement implies that the precautionary principle only applies to risk management, rather than a comprehensive approach to preventing harm. It implies that uncertainty will eventually be resolved through more research or trial and error. Related to the above arguments, this one assumes a narrow definition (and use) of the precautionary principle - a stop or holding action when scientific evidence is uncertain. We argue that this is only one aspect of the precautionary principle, and that, on the contrary, risk assessment as it is currently practiced may be a useful - but narrow - tool of a broader approach to precautionary decision-making.

"Precaution itself is risky: it will prevent us from adopting technologies that are actually safer."

This consideration is built into the precautionary principle. Current and prospective alternatives to harmful technologies (such as genetic modification to reduce pesticide use) must be scrutinized as carefully as the technologies they replace. It does not make sense to replace one set of harms with another.

"The precautionary principle is anti-science."

On the contrary, the precautionary principle calls for more and better science, especially investigations of complex interactions over longer periods of time. The assertion that the principle is "anti-science" is based on any or all of the following faulty assumptions:

- Those who advocate precaution urge action on the basis of vague fears, regardless of whether there is scientific evidence to support their fears. Most statements of the precautionary principle say it applies when there is reason to believe serious or irreversible harm may occur. Those reasons are based on scientific evidence of various kinds: studies, observations, precedents, experience, professional judgment, and so forth. They are based on what we know about how processes work and might be affected by a technology. However, precautionary decisions also take into account what we know we do not know. The more we know, scientifically, the greater will be our ability to prevent disasters based on ignorance. But we must be much more cautious than we have been in the past about moving forward in ignorance.
- Taking action in advance of full scientific proof undermines science. Scientific standards of proof are high in experimental science or for accepting or refuting a hypothesis, and well they should be. Waiting to take action before a substance or technology is proven harmful, or even until plausible cause-and-effect relationships can be established, may mean allowing irreversible harm to occur - deaths, extinctions, poisoning, and the like. Humans and the environment become the unwitting testing grounds for these technologies. Precaution says this is no longer acceptable. Moreover, science should serve society, not vice versa. Any decision to take action - before or after scientific proof - is a decision of society, not science.
- Quantitative risk assessment is more scientific than other kinds of evaluation.

Risk assessment is only one evaluation method and provides only partial answers. It does not take into account many unknowns and seldom accounts for complex interactions.

"The precautionary principle is a cover for trade protectionism."

The precautionary principle was created to protect public health and the environment, not to restrict valid trade. North American, Argentinian, and other representatives in trade talks have leveled this accusation against the European Union in response to EU action on beef containing growth hormones and on genetically modified foods and crops. Recent EU statements on the precautionary principle have emphasized that the principle should be applied fairly and without discrimination.

However, the real issue is not protectionism but whether a nation has the sovereign right to impose standards that exceed the standards of international regimes. The recent European Commission statement on the precautionary principle and Cartagena Biosafety Protocol both assert that right.

"Precautionary actions must be proportionate, cost-effective, and temporary (subjected to further research)."

These qualifications (along with "fairness") have been included in recent statements, no doubt partly to make the precautionary principle more palatable to U.S. officials. While it is difficult to argue against any of them, they could dilute the effectiveness of the principle. For example:

Action should indeed be generally proportionate to the severity of a threat and standards of protection. But (as noted above) sometimes the availability of alternatives or the ease of taking action makes decisive action appropriate even if the threat is not severe or imminent.

"Cost-effectiveness" and "cost-benefit analysis" have been used in the past to stop regulatory action. Cost considerations, like risk assessments, are easily manipulated: whose costs and whose benefits are considered? The European Commission precautionary principle statement makes the useful assertion that "protection of health takes precedence over economic

considerations." If "cost-effectiveness" is defined in this way, then of course precautionary decisions are cost-effective, directing us to the least costly choices.

All decisions about technology, positive and negative, should be temporary - that is, open to review and revision based on new knowledge and experience. A precautionary approach has many feedback loops. As uncertainty is reduced, we may say "yes" to some things to which we previously said "no, " and vice versa. This implies that all stakeholders should have access to relevant information. But sometimes the judicious decision will be to turn away from technologies that pose too many uncertainties and offer too few benefits. It will not always make sense to invest limited government resources into continuing research into those technologies.

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March 2000

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