

Where there are threats of serious or irreversible damage, lack of scientific certainty shall not be used as a reason for postponing cost effective measures to prevent environmental degradation.

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Summary of **Taking Externalities Seriously: An Economic Analysis of the Precautionary Principle**

Ann Maria Bell

Yellow smog hanging low over the horizon. Bumper to bumper rush hour traffic . Plumes of smoke rising from the stacks of a waste incinerator. Drain pipes emptying the effluvia of a sewage processing plant into local waterways. These are easily observable examples of what economists call "negative externalities."

Negative externalities occur when individuals or organizations takes an action that benefits themselves while forcing some of the costs on to other people. One person's decision to drive to the beach gives him or her a day in the sun but it also increases air pollution and highway congestion for everyone else. A new waste processing plant might be a profitable venture for investors but it releases irritating particles and noxious gasses into the air, causing health problems and lowering local property values. The existence of externalities has long been one of the key rationales for government intervention in the economy.

Externalities like pollution and traffic congestion are nothing new. But the increasing impact of human activity on the global environment and the unique risks posed by some new technologies have raised the stakes significantly.

We can see the smog over the highway and measure the particulate matter in the air. We can watch sewage effluvia pour into the bay and measure the resulting bacteria levels. But the smokestacks of a medical waste incineration facility have more than just smoke coming out of them---they also release extremely small, but potentially dangerous, amounts of dioxin and other persistent organic pollutants into the air. The effects of even low levels of these pollutants on biological organisms are difficult to understand and predict. A growing body of scientific literature that documents adverse effects of chemicals at levels that just a few years ago were below our detection threshold. We may not know what the true stakes are until after technologies have inflicted significant health and social costs.

Unfortunately, while our scientific knowledge about the effects of dioxin and related compounds continues to evolve, more and more of these compounds are released into the environment everyday, where they persist and accumulate. Yet viable alternative technologies exist and have existed for reducing the release of dioxin into the environment. For example, medical waste incineration, one of the primary sources of dioxin, could be replaced with alternative disposal methods. Wouldn't it make sense to take action to prevent possible harm to human health and the environment before conclusive cause and effect scientific proof is established?

The Precautionary Principle

The precautionary principle represents a new approach to anticipating and dealing with the potentially harmful side effects of human activity. It directly addresses some of the reasons that negative externalities exist in the first place. The precautionary principle states that:

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.

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At its most basic level, the precautionary principle calls for preventative action to protect human health and the environment even in the absence of scientific certainty. It also mandates serious consideration of all the alternatives to a proposed activity, including the alternative of no action, and calls for democratic representation of all affected parties in the decision-making process.

The precautionary principle forms an important part of recent international treaties on the environment, many of which the United States has ratified and is legally bound by. Yet politicians have been resistant to implementing the precautionary principle, and continue to pursue policies that actively undermine a precautionary approach.

Critics argue that application of the precautionary principle will damage the economy and reduce innovation. Careful application of economic reasoning shows just the opposite: a precautionary approach helps to address the well-known economic problem of negative externalities. Overall economic well being increases when all of the costs of an activity are accounted for---allowing people or organizations to offload their costs onto third parties distorts incentives and decreases efficiency.

When the effects of industrial production were confined to a local area and a short time horizon a "wait and see" attitude towards externalities might have been justified. Now, however, we are learning some painful and costly lessons about the long term and unanticipated consequences of human activity. The shift to prevention embodied in the precautionary principle is a necessary and timely response to the increasingly severe environmental hazards that we collectively face.

Smokescreen Uncertainty

Instead of taking a pro-active, forward-looking approach to environmental hazards, businesses and government officials often use "scientific uncertainty" to delay action on critical issues. For example, President Bush justifies his administration's inaction on global warming and its withdrawal from the Kyoto accord by claiming that the scientific evidence is still "incomplete." Similarly, Bush defended backtracking and stalling on new standards for arsenic in drinking water with the claim that "scientific indicators are unclear." His actions exemplify both how current policies give the benefit of the doubt to potentially catastrophic actions and how spurious claims of "scientific uncertainty" are often used as a trump card to stall protective measures.

Bush is not the first to use these tactics. Nor will he be the last. The individuals who stand to benefit the most from an action have large incentives to withhold, downplay, or distort

information that reveals the extent of the harms to other parties. The tobacco industry used "scientific uncertainty" to support its long standing claim that nicotine is not addictive and cigarette smoking does not cause cancer. Unfortunately, the tactic of claiming "inconclusive scientific evidence" to justify harmful actions has become so common that it has its own nickname: "smokescreen uncertainty."

To an economist, these types of behavior are not aberrations resulting from the incompetence or mendacity of a few individuals. Rather, they are rational responses to the existing incentive structure. Withholding information about negative externalities and using scientific research strategically to create spurious or "smokescreen uncertainty" are predictable responses to the incentives that individuals and organizations face.

Precaution Makes Economic Sense.

Negative externalities create hidden costs and lower economic efficiency. Allowing polluters to threaten people's health and the earth's environment without compensation leads to a lower standard of living. Incorporating the precautionary principle into environmental policy will help counteract the existing incentives to create and disguise negative externalities in several important ways.

- Precaution requires that potential side effects be considered before an action is taken. This forward-looking perspective helps to identify and prevent negative externalities before they occur. The process of disclosure also makes it more difficult to withhold information or hide the existence of the externality.
- The precautionary principle requires preventative action when a serious threat to human health and the environment is identified, even in the absence of scientific certainty. This reduces the incentives to strategically create spurious "smokescreen uncertainty".
- The precautionary principle makes scientific uncertainty and the exposure to risk a central focus of the decision making process. This approach acknowledges that exposure to risk is a cost to most people and a source of economic inefficiency.
- A precautionary approach considers alternative technologies and means of achieving the desired outcome. This helps society identify the alternative that generates the fewest negative externalities. It also provides incentives to develop cleaner, more efficient technologies that lead to real economic progress.

The mounting threats to human health and the environment demand that we start taking externalities seriously. It's time to rethink our approach to managing the potential side effects of new technologies and industrial production. The precautionary principle looks at the problem of externalities from a common sense, prevention-oriented viewpoint. It considers all of the different facets of a problem and searches for the alternative with the fewest costly externalities. Rather than asking how much toxic pollution we can live with, the precautionary principle asks what kind of a world we want to live in, and provides a decision making framework for getting us there.