The Precautionary Principle Asks "How Much Harm Is Avoidable?" Rather Than "How Much Harm Is Acceptable?"

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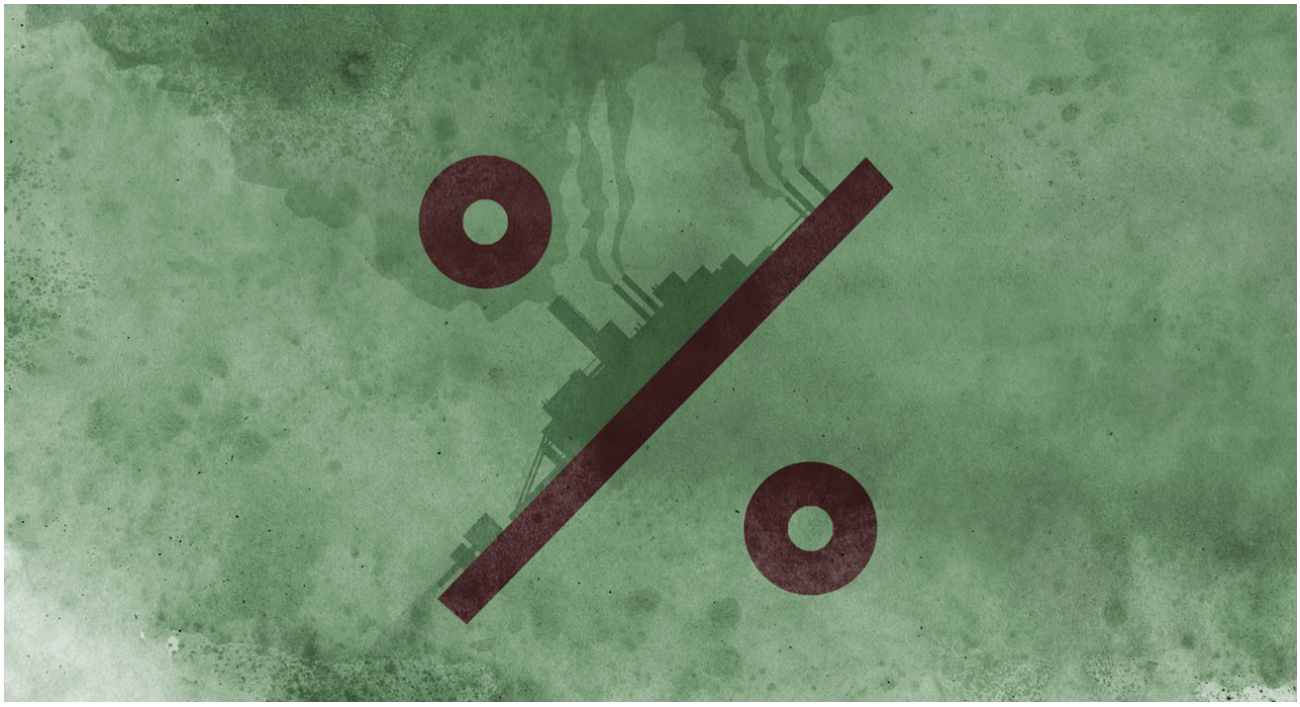

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In 1980, a government scientist discovered that breast milk in the US was so contaminated with DDT, PCBs and other industrial poisons that, if it were cow's milk, it would be subject to ban by the US Food and Drug Administration. After two more decades of failed "chemical regulation," a 2001 study showed that babies everywhere in the world were drinking industrial toxicants in breast milk. Worse, in 2005 a small study of the umbilical cord blood from 10 randomly chosen newborns in the US showed that babies are now coming into this world "pre-polluted" with 200 industrial compounds. (Despite all this bad news, breast feeding is still by far the best way to nourish a baby.)

Perhaps not surprisingly, in the US, children's health is deteriorating. The incidence of childhood cancers has risen 27 percent since 1974. In the 12 years between 1994 and 2006, childhood chronic conditions (asthma, obesity, learning and behavior problems) doubled (from 13 percent of all kids in 1994 to 27 percent in 2006).

Why Can't Chemical Pollution Be Controlled?

In 1991, scientists at Oak Ridge National Laboratory identified the reason why industrial poisons have spread everywhere, worldwide. It's because regulators have relied on a decision-making technique called quantitative (or numerical) risk assessment to determine which chemical releases are "safe." By releasing "safe" amounts of 80,000 different chemicals, corporations have contaminated the entire planet, so now no one is safe from chemical harm.

A numerical risk assessment is an estimate of the probability of something bad happening. Numerical risk assessment was invented hundreds of years ago to reduce losses in games of chance. With the rise of the chemical industry during the early 20th century, risk assessment began to dominate all kinds of decisions. In the 1980s, the US government adopted numerical risk assessment for "environmental protection." Since then, risk assessment has been used to estimate the probability of a catastrophic meltdown at a nuclear power plant, or the probability of a population of grizzly bears becoming locally extinct because too many roads were cut into their forest home, or the probability of children having their IQ lowered by exposure to toxic lead and PCBs in the soil near schools built on a toxic waste dump.

In its early years (1970-1974), the Environmental Protection Agency (EPA) was attacked by corporate polluters who claimed the agency's decisions were arbitrary and unscientific. To beef up its credibility, in 1975, the EPA produced its first numerical risk assessment, estimating the number of people who would get cancer from exposure to the toxic chemical vinyl chloride. By 1983, other federal agencies were basing decisions on numerical risk assessment and the National Academy of Sciences published its first "how to" manual for federal risk assessors. Since then, risk assessment has totally dominated government decisions. This has kept corporate polluters very happy.

Why Corporate Polluters Can't Let Go of Risk Assessment

Corporate polluters love numerical risk assessment for many reasons.

Risk assessment is complex and mathematical, so most of the public can't understand it, much less challenge its conclusions. Therefore, risk assessment diminishes democratic participation and even undermines the legitimacy of government itself. By definition, people cannot give their informed consent to something they do not understand. Weaker government creates more wiggle room for corporate polluters.

Additionally, risk assessment is easily manipulated. Two groups of fully qualified risk assessors, given identical data, can reach wildly different estimates of risk. Therefore, numerical risk assessment fails the acid test of science -- reproducible results -- and does not qualify as "science" or "scientific." Risk assessment is a political art that uses some scientific data. As EPA administrator William Ruckelshaus wrote in 1984, "We should remember that risk assessment can be like the captured spy: If you torture it long enough, it will tell you anything you want to know."

Moreover, all biological systems (whether a human body or a forest) are extremely complex and can never be fully understood, so risk assessments are always based on incomplete data, which gets filled in by assumptions and guesstimates (often labeled "best professional judgment.") As the National Academy of Sciences wrote in 1991, "Risk Assessment techniques are highly speculative, and almost all rely on multiple assumptions of fact -- some of which are entirely untestable." Change the

assumptions and you change the conclusion. Therefore, risk assessments can be endlessly debated, revised, opposed and challenged in court.

Because it is a mathematical exercise, numerical risk assessment omits everything that can't be represented by a number. Risk assessment assigns a value of zero to historical knowledge, local customs and preferences, sacred places, spiritual values, ethical perspectives about right and wrong, fairness and injustice. In numerical risk assessment, these things simply don't count.

Finally, all humans (and all ecosystems) are subjected to multiple stresses most of the time. In the example of chemicals, most people are routinely exposed to automobile exhaust, vapors from carpets, glues, flooring, furniture, paint, household cleaners, pesticides, disinfectants in drinking water and so on. Risk assessments have no reliable way to evaluate simultaneous exposures to multiple chemicals. Therefore, they create an imaginary world with a single-chemical exposure. In this imaginary world, a chemical exposure can be declared "safe" even though it actually may be quite harmful when combined with other exposures.

An Alternative Decision Rule: The Precautionary Principle

By the early 1990s, harms from risk assessment were becoming obvious. In 1992, forward-looking governments in Europe began to spell out a different way of making decisions about environmental questions. They called it the "precautionary principle," and it was written into the Maastricht Treaty that created the European Union: "Community policy on the environment shall aim at a high level of protection.... It shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay."

That same year, the United Nations published the Rio Declaration on Environment & Development; in it, Principle 15 says, "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."

In a nutshell, risk assessment asks, "How much harm is acceptable?" The precautionary principle asks, "How much harm is avoidable?"

The Wingspread Statement on Precaution

The earliest statements of precaution failed to gain much notice until January, 1998, when the Wingspread Statement was published. Suddenly, there was a real alternative to traditional risk assessments. Faced with a new garbage incinerator, a new source of diesel pollution or a fracking proposal, community activists could demand a precautionary approach to protect people and their local environment.

The Wingspread Statement was hammered out by 32 grassroots activists, labor organizers, scholars and scientists from the United States, Canada and Europe during an intense weekend meeting at the Wingspread Center in Racine, Wisconsin. The meeting was convened by the Science & Environmental Health Network (SEHN) and the Lowell Center for Sustainable Production at the University of Massachusetts Lowell, and sponsored by the Johnson Foundation, the W. Alton Jones Foundation and the CS Fund. (Disclosure: I attended the meeting, and am now a fellow with SEHN.)

The Wingspread statement reads,

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.

This simple statement contained four fundamental challenges to the dogma of numerical risk assessment:

1. The burden of proof of safety gets shifted onto the proponent of a project or action. In a world where ecosystems and human health are under severe threat, industrial chemicals and other intrusions into the natural world are assumed to be harmful unless shown otherwise.

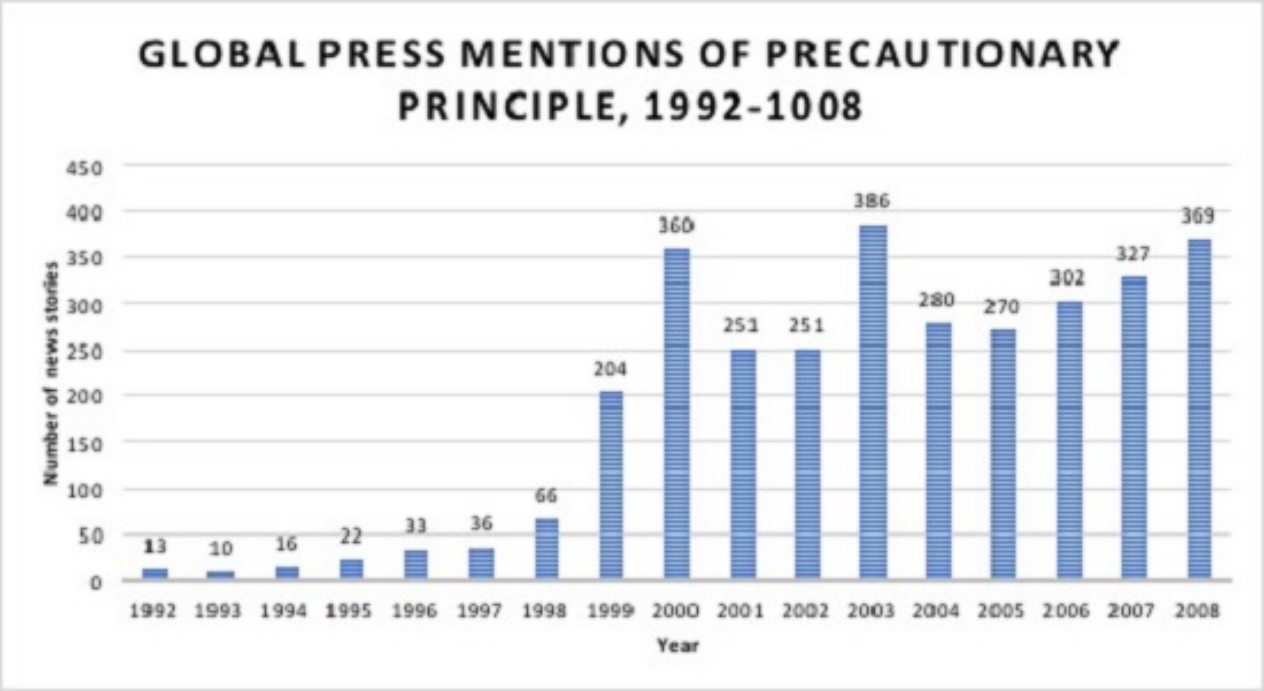
2. Decisions should not be made by experts behind closed doors. The affected public should be fully informed and engaged in decisions.

3. Decision-makers should not wait for scientific certainty of harm before taking preventive action. Scientific certainty is likely to arrive only after widespread harm has occurred.

4. Decision-makers should consider a full range of alternatives, including the alternative of doing nothing.

After Wingspread

Less than a month after the Wisconsin meeting, Bette Hileman reported on the Wingspread statement in the widely read Chemical & Engineering News, calling it "a new guide to US environmental policy." Then the precautionary principle began to travel like a prairie fire. A search of the Newsbank database reveals a steep rise in worldwide news stories mentioning the precautionary principle after Wingspread in 1998 (Figure 1).



Corporate polluters and their hired guns soon mounted a campaign of misinformation against the Wingspread formulation of precaution, claiming that it's unscientific, emotional, reckless, ill-defined, unworkable and a danger to Western civilization. So far, thanks to dark money corrupting our political system, the anti-precaution campaign has been effective in Washington, where federal precautionary policies are still rare. At the local level, however, it's a different story. Grassroots activists have seized upon precaution as a sling to slay Goliath.

In 1999, Carolyn Raffensperger and Joel Tickner published their first book introducing precaution. (Raffensperger and Nancy Myers published a second, "how-to" book on precaution for communities in 2005.) In 1999, the Los Angeles Unified School District adopted the precautionary principle to guide its pest management programs. In 2001, Michael Pollan wrote about precaution in The New York Times Magazine. That same year, the city and county of San Francisco began the process of adopting the precautionary principle, which it did in 2003. In sum, the truth is now out there for communities to advocate and adopt: There is another way to make environment-and-health decisions besides numerical risk assessment.

Traditional Risk Assessment Is Losing Its Luster

Even at the federal level in the US, sole reliance on numerical risk assessment is slowly fading. For example, the EPA has a small "design for the environment" program advocating selection of least-harmful chemicals, which is a precautionary approach.

Most importantly, in 2009, the National Academy of Sciences published Science and Decisions, subtitled "Advancing Risk Assessment." Despite that subtitle, the Academy didn't "advance" risk assessment; it demoted it. The Academy said modern decisions begin with an assessment of alternatives, asking, "What are the options for achieving our goal (whatever it may be) and which option seems least harmful?" *This is the essence of a precautionary approach*. After a range of options has been described, only then should risk assessment be used as one tool for evaluating each of the options to help find the least harmful, the Academy said. And of course, many other evaluation tools are now available. The Academy's 2009 report delivered a crushing blow to old-style risk decisions.

Still, the precautionary principle -- better safe than sorry -- is now under renewed attack in Europe, the UK and the US. The far-right behemoth that now owns the Republican Party (and which Nancy MacLean describes as a "fifth column" intent on permanently subverting democracy,) has set its sights on eliminating the precautionary approach. Abandoning the Paris Agreement on global warming is but one example.

As global ecosystems deteriorate and global warming alters water patterns -- making economic growth ever more precarious -- far-right global elites are counting on new technologies to spur economic growth: geo-engineering (to modify the entire planet to counteract global warming), nanotechnology (to manipulate the world at the molecular level to create novel materials) and synthetic biology (to create entirely new life-forms previously unknown in nature). These technologies are potentially far more powerful than even atomic energy, so they cry out for a prudent, precautionary approach to their testing and possible deployment. Unfortunately, so long as corporate polluters enjoy a nearly-unlimited capacity to inject corrupting money into political decisions -- especially in the US -- old-style risk

assessment will continue to dominate because it serves corporate purposes so well.

Nevertheless, 20 years after Wingspread, it is now crystal clear that a livable future for humanity absolutely requires a precautionary approach. The choice is stark and fateful.

Peter Montague

Peter Montague is a historian and journalist whose work has appeared in Counterpunch, Huffington Post, the Nation and many other publications. He has co-authored two books on toxic heavy metals.

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