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## FOURTEEN REASONS FOR PRECAUTION

In Rachel's #789 and #790, we offered responses to the critics of precaution. Here we take a positive approach and offer 14 basic arguments FOR precaution.

Probably the strongest argument for precaution is that the old risk-based approach has harmed large numbers of people and has badly damaged the environment.

For example, many millions of children have been hurt by the old risk-based approach. Consider just toxic lead. As early as 1897, some paint companies knew enough about the dangers of lead to advertise that their paints were NOT made with toxic lead. (See the 1897 paint label at <http://www.rachel.org/library/getfile.cfm?ID=263>.) Obviously, if one paint company knew it, all paint companies knew it -- or should have. A least-harmful alternative was clear in 1897.

But from 1897 to 1976, risk assessment was used to justify the continued use of toxic lead in paint and many paint companies continued to use it. First the risk assessors said 60 micrograms in a tenth of a liter of blood was "safe" for children. Large numbers of children were severely poisoned by this assessment, and so a new "risk assessment" established that 40 micrograms was "safe." More children were badly poisoned by this "safe" amount, so a new risk assessment was undertaken: "Twenty micrograms is safe -- and this time we've got it RIGHT," said the risk assessors -- but more children were poisoned, their IQs diminished, their ability to concentrate ruined, their capacity to cope with stress destroyed -- they became aggressive, even violent, they dropped out of school and headed for life in prison or permanent low-wage hell, or they committed suicide. All thanks to mistaken risk assessments. Today risk assessors claim 10 micrograms of lead is "safe," but many scientists and doctors know this isn't true and wonder if even 2 micrograms of lead in a tenth of a liter of blood deserves to be called "safe." (For more of this shameful history, see Rachel's #189, #213, #214, #294, #376, #686, #688, #689.)

The old risk-based approach to decisions asked, "How much harm is acceptable?" or "How much harm can we get away with?" The newer precautionary approach asks, "How much harm can we avoid?" The difference is profound.

Here (once again) is the basic statement of the precautionary principle[1]:

If we have reasonable suspicion of harm even in the face of some scientific uncertainty we all have a duty to take action to avert harm. We can take four kinds of precautionary action:

1. Set and state our goals (including implicit ones, such as justice and democratic participation). Different parties may have different goals, and it's good to acknowledge this.
2. Assess available alternatives for achieving the goals.
3. Gather and consider complete and accurate information -- and the proponent bears the burden of providing it. This is what we mean by "shifting the burden of proof" onto the proponent of a new technology.

4. Involve affected parties in decisions (beginning at the earliest possible stages when questions are being asked and goals set). Provide them the wherewithal to participate in a sustained way and respect their values, knowledge, experience and preferences.

#### OBSTACLES TO PRECAUTION

My observation, from living in New Jersey, is that the major obstacle to a precautionary approach is the refusal of decision-makers to consider all available information.

Somehow we need to establish a "duty to consider" all available information. This will not be easy because some government officials advance their careers by NOT examining available information. Just two examples will illustrate the point:

New Jersey recently issued a license to a garbage incinerator to spew 10,000 pounds of toxic lead, in the form of a fine, breathable dust into a predominantly black, Hispanic and low-income community during the next 5 years. The state's top environmental official, Dr. Bradley Campbell, argues that this poses an "acceptable risk" to the affected children because his "risk assessment" shows that the lead would only cause an "acceptable" number of cancers -- conveniently ignoring 100 years of data showing that the greatest danger from lead is not cancer but is damage to the central nervous system, reduced IQ, and destruction of a child's life possibilities. By restricting the risk assessment to cancer, and ignoring the main toxic effect of lead, the state is able to keep an incinerator owner happy. Will N.J. governor James McGreevey's re-election campaign be rewarded by lawyers and consultants close to the incinerator company?

Example number two: Recently the state of New Jersey refused to examine the toxic chemicals in sewage sludge -- arguing that they didn't need to know what was in sludge today because their previous risk assessment (which they cannot locate in their files) had determined that sludge was "safe" to use as fertilizer on soil. The state's top environmental official, Dr.

Bradley Campbell, says flatly that sludge-as-fertilizer will not release troublesome amounts of toxins into soils, water or air. He says that criticisms of his sludge policy "have no basis in the science and data."

Without any testing, Dr. Campbell and his colleagues claim to know to a scientific certainty that sludge does not contain worrisome amounts of perfluorooctanes; phthalates; phenols (e.g., nonylphenol); polybrominated flame retardants, including hexabromocyclododecane (HBCD); DDE; tributyl tin; fenvalerate; cesium-137; strontium-90; radium; antidepressants; birth-control hormones; pain relievers; insect repellents; antibiotics; sun block; disinfectants and antimicrobials; deodorant fragrances; perfumes; anti-cholesterol drugs; growth hormones; caffeine; nicotine; aspirin; fluoxetine and norfluoxetine (the active ingredients in Prozac); and sertraline and nortriptyline (found in Zoloft), Viagra, and other pharmaceutical and personal care products. It is worth noting that fish living downstream from sewage treatment plants in New Jersey contain most or all of these substances.[2]

There's no end to the scientific information that can be ignored by dedicated risk assessors when they set out to shore up a political decision.

Yes, we need somehow to establish a "duty to consider" all available information -- to prevent sleazy bureaucrats from cherry-picking data and phonying up "risk assessments" to support decisions that have been made for political purposes.

(Readers' thoughts on how to establish a "duty to consider" all available information would be welcome at erf@rachel.org.)

But scientific information is not the only kind of information needed for decisions. Complete and accurate information means more than just scientific knowledge (which is, of course, essential). It includes

historical knowledge, spiritual knowledge, local knowledge, business knowledge, community preferences, cultural values, artistic perceptions, and so on.

This is not anti-science; it merely acknowledges that there are other valid ways of knowing about the world. As the European Environment Agency is fond of saying, "Science should be on tap, not on top."

Sometimes non-scientific information is characterized as "emotional" and "emotional" is then equated with "irrational."

However, we should recognize that emotions -- including fear -- have served humans well for eons, so there is nothing wrong with an "emotional" response. When you're operating in the dark, it's smart to be cautious -- and somewhat fearful -- so being "emotional" can be entirely rational. Emotional does not equal irrational.

#### FOURTEEN ARGUMENTS for PRECAUTION

#1: Past practices have failed us: As noted above, many past practices have damaged the environment and public health. The old risk-assessment-based approach has been harmful, so we need a new way of making decisions. As a result of past practices, many kinds of chronic diseases are now increasing: childhood cancers, breast cancer, cancers of the testicles and prostate, nervous system disorders (Parkinson's Disease, Lou Gehrig's disease), immune system disorders (diabetes, asthma), are all increasing.[3]

Birth defect rates are steadily increasing. The federal Centers for Disease Control in 1990 summarized the trends in 38 types of birth defects; they found 29 increasing, 2 decreasing, and 7 remaining unchanged.[4]

In 1987, about 45% of Americans were living with one or more chronic conditions (a term that includes chronic diseases and impairments). In 1935, the proportion was 22%, so chronic conditions have approximately doubled during the last 60 years.

The majority of people with chronic conditions are not disabled, nor are they elderly. In fact, one out of every four children in the U.S. (25%) now lives with a chronic condition.[5]

#2: The world is now full: On a global scale, there is abundant evidence that the world is no longer empty but is now full -- of humans and their artifacts.

Examples: Humans are now appropriating for their own use 40% of all terrestrial net primary product of photosynthesis; within one doubling of human population (40 to 45 years), this number will rise to 80%.[6] In other words, humans are appropriating 40% of ALL the biological activity that creates the bottom of the food chain for ALL land-based creatures. We are squeezing other life-forms out of existence.

Some consequences of a full world: Worldwide, topsoil is being depleted at least 10 times as fast as nature can create it.[7] Species are being driven to extinction at rates somewhere between 100 and 1000 times as fast as historical rates of extinction.[8] The earth's capacity to absorb or assimilate wastes has been exceeded -- the evidence for this is unmistakable: global warming, depletion of the Earth's ozone shield, the presence of toxic chemicals in salmon and other fish, and industrial poisons in breast milk, for example. There is no longer any place called "away" where it is safe to throw our discards. Living in a full world means that we have new responsibilities to be careful, to try hard to avoid causing further harm, and to give the benefit of the doubt to the environment and human health.

Our current ways of making decisions evolved when the world was thought to be "empty." Now the world is a different kind of place -- it is full, and new conditions demand new ways of making decisions.

#3: Early warnings: When traveling in the dark, we naturally move cautiously and keep all our senses attuned for signs of danger. When flying blind, we pay close attention to the first sign of shapes emerging in the clouds ahead and take action to avert harm at our earliest opportunity. In other words, we look for, and heed, early warnings. In the recent past, we as a society have failed to heed early warnings.

Evidence: asbestos, lead in paint, lead in gasoline, PCBs [polychlorinated biphenyls], phthalates, polybrominated diphenyls, and many pesticides, for example.[9] Precaution tells us to look for, pay close attention to, and ACT upon, early warnings.

#4: Benefit of the doubt: When we're not sure what the effects of our actions will be (uncertainty), we should give the benefit of the doubt to public health and the environment.

#5: Natural rights: We all have a right to a clean, healthful environment. To avoid breaching this right, we all have a responsibility to anticipate harm and take steps to avert it.

#6: Responsibility for our behavior: We are all responsible for the consequences of our behavior, and we all have a responsibility to prevent impending harm.

#7 Our role as trustees: We are all trustees of the world that we inherited. We have a responsibility to preserve it, and pass it along to the next generation undamaged. This is a traditional "conservative" view, as espoused by, for example, Edmund Burke (1727-1797).

Once we accept the responsibility to try to prevent harm, then the rest follows: the way to protect the future is to set goals, examine alternative ways of achieving those goals, consider all information (which entails democratic participation by affected parties) -- and give consideration, too, to the information that is missing -- and choose the least-harmful alternative.

#8: Local Precedents: In most locales, we already have precautionary language and behavior in some of our laws and practices. As San Francisco has done (see Rachel's #765), we can catalog these and organize them into a coherent "environmental code," which can begin with a preamble that asserts everyone's right to a clean environment, everyone's responsibility to protect the environment and avert harm, and the need for an anticipatory, precautionary approach to stewardship.

At the federal level, we have precaution built into the pre-market testing of pharmaceutical products, and the U.S.

Food and Drug Administration's (FDA's) monitoring program that aims to identify unexpected reactions to pharmaceutical products. The European Union is trying to establish pre-market testing as the norm for all industrial chemicals -- a proposal known as REACH (Registration, Evaluation and Authorization of Chemicals). The Europeans have a slogan that captures the essence of REACH: No data, no market. In other words, if a chemical has not been thoroughly tested for effects on human health and the environment, it cannot be marketed. Needless to say, REACH is being opposed bitterly and vociferously by the Bush Administration and the chemical industry world-wide, who favor the "flying blind" approach because it has made them hugely wealthy (at enormous cost to the public).

Surely it's only a matter of time before pre-market testing becomes standard procedure and "No data, no market" is widely applied to products far beyond mere chemicals.

#9: Public decision-making process: Precaution establishes a decision-making process where perhaps there was none before. In many locales, decisions are made ad hoc ("by the seat of your pants"), not by any systematic procedure. Precaution offers a systematic way to make decisions, and thus rationalizes governmental decision-making.

#10: Redefining the Role of Governmental Decision-makers: The precautionary approach redefines several key questions for governmental decision-makers. It is no longer sufficient to ask, "Is it legal?" and "Is it safe?" Government must now also ask, "Is it necessary?" That raises the question, "How do we determine what's necessary?" Can necessity be tied to goals -- can our goals define what is "necessary" and what is not?

Another way to approach it: If there are alternatives, then a thing is not "necessary."

Governmental decision-makers can also now say with confidence, "We acknowledge that our world will never be free from risk.

However, any risk that is unnecessary or not freely chosen is not acceptable." This highlights the point that government decisions are only legitimate if they are made with the informed consent of those affected. (As the Declaration of Independence says, governments derive their "just powers" from "the consent of the governed.") Precaution revitalizes and strengthens democracy.

The precautionary approach also gives governmental decision-makers permission (and an obligation) to consider the full range of costs including costs beyond the original price.

#11: Religious: The Earth belongs to God and we have a duty to protect it from harm. In trying to protect God's creation, we have a duty to try to foresee and forestall harm because if we wait for proof of harm before acting, harm will occur and we will have failed in our duty. If harm becomes evident, we have a duty to stop the harmful activity (and to look around and find and stop similarly harmful activities elsewhere) and to take restorative action.

#12: Economic arguments:

1) Publicly-traded corporations are severely restricted in what they can do. Under law, they have a fiduciary duty to return a modest, more-or-less steady profit to investors, and any goal that conflicts with that duty is, as a matter of law, of secondary importance. This gives corporations a powerful incentive to externalize their costs -- dumping wastes into the environment (usually legally, thanks to pliant governments), harming and disrespecting their workers, avoiding and evading their fair share of taxes, and so on.) It's not that corporations are run by bad people -- it's that the law that creates every corporation requires good people to do bad things.

2) We should note that precaution is fundamental to the insurance industry -- anticipating harm and taking steps to mitigate its effects (partly by sharing the costs, partly by agreeing to avoid risky behavior). Often insured parties are required to take steps to avert foreseeable harm (install smoke detectors; minimize the use of radioactive or highly reactive chemicals; maintain and inspect equipment such as elevators, etc.) So precaution is built in to some businesses.

3) Precaution stimulates innovation, creating satisfying and long-term (sustainable) jobs.[10]

4) Waste is evidence of design failure. We pay to produce, process, and dispose of something that we don't even want.

Avoiding waste is precautionary and makes economic sense.

#13: Medical: Medical practitioners take precautionary action all the time. They rarely have full information, but they take action to avert harm, giving the benefit of the doubt to the well being of their patient. Public health practitioners have taken "primary prevention" as the starting point of public health policy since about 1850.

#14: Media: Reporters (and more importantly editors) could take a precautionary approach by asking what alternatives were considered in any unfolding story that has ramifications for public health or the environment. They could also ask the three basic precautionary questions:

1) Has anyone found less harmful alternatives? (Has anyone looked?)

2) How much harm is preventable?

3) Do we know enough to act to prevent harm?

--Peter Montague =====

[1] Article 15 of the Rio Declaration (1992) contains an early statement of the precautionary principle and can be found here:

<http://www.rachel.org/library/getfile.cfm?ID=201> . The Wingspread Statement on the Precautionary Principle (1998) can be found here: <http://www.rachel.org/library/getfile.cfm?ID=189>

[2] See the eight articles on N.J. groundwater contamination by Matthew Brown and Jan Barry published in the Bergen Record Sept. 22, 23 and 24, 2002. And see Alex Nussbaum, "NJ Water Contains Traces of Daily Life," Bergen Record March 5, 2003.

And see Chris Gosier, "Water Detectives Search for Poisons," Daily Record March 3, 2003. And see "Analyzing the Ignored Environmental Contaminants," Environmental Science and Technology [ES&T] April 1, 2002, pgs. 140A-145A. The N.J. newspaper articles can be found by searching [www.gsenet.org](http://www.gsenet.org).

[3] Rising rates of many kinds of diseases were documented in Rachel's #417, available at [http://www.rachel.org/bulletin/index.cfm?issue\\_ID=708](http://www.rachel.org/bulletin/index.cfm?issue_ID=708) .

[4] Larry D. Edmonds and others, "Temporal Trends in the Prevalence of Congenital Malformations at Birth Based on the Birth Defects Monitoring Program, United States, 1979-1987," MMWR [Morbidity and Mortality Weekly Report] CDC SURVEILLANCE SUMMARIES Vol. 39, No. SS-4 (December 1990), pg. 22.

[5] Catherine Hoffman and others, "Persons With Chronic Conditions," Journal of the American Medical Association (JAMA) Vol. 276, No. 18 (November 13, 1996), pgs. 1473-1479. The data describe the non-institutionalized population.

[6] Peter M. Vitousek, and others. "Human Appropriation of the Products of Photosynthesis," Bioscience Vol. 36 No. 6 (June, 1986), pgs. 368-373. Available at: <http://www.rachel.org/library/getfile.cfm?ID=376>

For additional evidence supporting the "full world" hypothesis, see Peter M. Vitousek and others, "Human Domination of Earth's Ecosystems," Science Vol. 277 (July 25, 1997), pgs. 494-499; available at <http://www.rachel.org/library/getfile.cfm?ID=200> .

And see Jane Lubchenco, "Entering the Century of the Environment: A New Social Contract for Science," Science Vol. 279 (Jan. 23, 1998), pgs. 491-497, available at <http://www.rachel.org/library/getfile.cfm?ID=203>

[7] David Pimentel and others, "Environmental and Economic Costs of Soil Erosion and Conservation Benefits," Science, Vol. 267, No. 5201. (Feb. 24, 1995), pp. 1117-1123, available at <http://www.rachel.org/library/getfile.cfm?ID=381>

[8] Stuart L. Pimm and others, "The Future of Biodiversity," Science Vol. 269 (July 21, 1995), pgs. 347-350, available at <http://www.rachel.org/library/getfile.cfm?ID=382>

[9] Poul Harremoës and others, Late lessons from early warnings: the precautionary principle 1896-2000 [Environmental Issue Report No. 22] (Copenhagen, Denmark: European Environment Agency, 2001). This report is available free at <http://www.rachel.org/library/getfile.cfm?ID=301> but be aware that it's a couple of megabytes in size.

[10] Frank Ackerman and Rachel Massey, Prospering With Precaution. This short report, published during 2002 by the Global Development and Environment Institute at Tufts University, argues that precautionary policies promote industrial innovation and create jobs. Available at <http://www.rachel.org/library/getfile.cfm?ID=218>

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