SCIENCE

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Information for Contributors appears on pages 40–42 of the 1 January 1993 issue. Editorial correspondence, including requests for permission to reprint and reprint orders, should be sent to 1333 H Street, NW, Washington, DC 20005.

LETTERS

Protecting the Environment: EPA's Role

Philip H. Abelson's editorial "Pathological growth of regulations" (25 June, p. 1859) presents several generally valid and widely shared views about the way the United States strives to protect humans and ecosystems. However, in highlighting its shortcomings, he offers only passing acknowledgement of the many strengths and achievements that make the U.S. environmental protection effort the best in the world. And, in focusing on environmental regulations, he paints a distorted picture of the role of the U.S. Environmental Protection Agency (EPA).

Before the 1960s, environmental protection was primarily the province of conservation advocates. The general public paid little attention to potential health hazards associated with environmental pollutants or to the ecological consequences of anthropogenic stresses. Even within the scientific community, few other than ecologists addressed these issues in a disciplined, comprehensive manner.

By the 1960s, people no longer could ignore the numerous reminders of environmental degradation: for example, bodies of water polluted by human and industrial wastes, cities blanketed by smog, and wildlife poisoned by pesticides. The problems and the public response inspired a succession of congresses and presidents to enact a series of laws keyed specifically to cleaning up water, air, or land. In most instances, the environmental degradation being addressed was so significant that remediation through a medium-specific, command-and-control, one-standard-fits-all approach was appropriate. Until recently, the scientific community did far more to develop and refine this orientation than to oppose it or offer alternatives.

Now, and for the foreseeable future, environmental protection presents new and more complex challenges, especially in settings where traditional strategies have gone as far as they can. That is why EPA has made a commitment to foster pollution prevention rather than to rely exclusively on end-of-pipe controls. At the same time, EPA is reshaping its environmental protection efforts to reflect ecosystem-wide approaches. We are committed to emphasizing public-private partnerships for voluntary efforts *outside* regulatory frameworks. Also among our new concerns is environmental justice, so that minorities and other disadvantaged populations will no longer face disproportionately large risks from environmental hazards. And, to catalyze progress in all these areas, we are promoting a much more aggressive agenda to enhance the public's understanding of environmental issues and of the associated science.

Science clearly is central to all of these issues. Indeed, the needs and opportunities for scientists to make a difference—in refining short-term regulatory requirements and in pursing long-term strategic goals—are almost unlimited. The Science Advisory Board of EPA has shown invaluable leadership in this regard, especially through its advocacy for quality science and risk-based priority setting. I look forward to the increasing participation of the scientific community in the quest for cost-effective environmental stewardship.

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Abelson adds his voice to the growing chorus of opposition to environmental regulation in his editorial "Pathological growth of regulations." After throwing around a host of large numbers of questionable relevance, he concludes that "easy, cost-effective changes have largely been made, and additional federal requirements will result in diminishing returns." This conclusion is presented without supporting arguments, evidence, or studies. Does Abelson truly believe (to take the environment as an example) that there is no more room in this country for environmental improvements? Or that these improvements cannot be achieved through regulation? Or that there is no possibility of cost-effective regulation? I find nothing in the environmental literature (including *Science*'s special report "Environment and the Economy" in the same issue) to support any of these conjectures.

Abelson implies that environmental regulations are economically strangling both cities and small businesses. Once again, he provides no real evidence to show that either cities or businesses have been hurt, especially in a way that might offset the tangible benefits of, say, requiring adequate wastewater treatment or ensuring workplace safety.

Finally, I doubt that most of the general public would agree with Abelson's implication that the imposition of "huge fines and jail sentences" for violating environmental law is somehow a symptom of regulatory pathology.

As more and more scientists venture into the arena of public policy they are proving a valuable point: scientists, no matter how expert at their craft, are no wiser than anyone else when it comes to public policy.

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As an EPA scientist involved in the development of regulations, I can sympathize with the concerns that Abelson refers to in his editorial on the "pathological growth of regulations." His series of editorials on EPA-related topics are usually posted on the wall in the office and are widely circulated. Many of his comments are on the mark and well received. In at least one respect, however, I find that this editorial reflects an unscientific attitude.

Quoting a frustrated urban official bemoaning that "EPA rules are written in Latin with Greek footnotes," Abelson notes, as presumably an illustrative example, that over 130 chemicals must be monitored in the drinking water supply, "some of them in the part per billion or lower range"!

If the standards are too stringent or too many, they should be reevaluated and revised. But this ought to be done on scientific or at least rational grounds. Most average issues of *Science* probably contain more Latin and Greek than most EPA rules. It would be ironic if a movement to reduce regulations on the grounds that they are too many or the levels too tiny found inspiration from an association with the aim of advancing science. *Verbum sapientiae sat.*

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I think most people agree that federal environmental regulations are lengthy, complex, burdensome, and expensive. Most also agree that death, taxes, sin, and high dietary fat are loathsome. Wouldn't it be nice if corporations, small business, and people in general respected each other and the environment and we didn't need any regulations.

To the extent that regulations, like roads and bridges, new automobiles, or the latest computer software are imperfect, perhaps they are reflections of the human condition. I don't think it is particularly helpful to complain about the problem without offering constructive solutions.

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As a reformed regulator and former state natural resources director, I found Abelson's editorial on EPA regulations curiously lacking in vision. The current U.S. approach to environmental protection, a product of the early 1970s, is no match for the environmental and economic challenges that we now face.

Just because cities and towns do not have sophisticated monitoring systems, should we ignore chemicals in drinking water, the most direct route of human exposure? Just because small businesses do not like to keep track of the chemicals they use, should communities not have the right to know about their exposure to chemicals? EPA's regulations have been strict and comprehensive because that is what the law requires. They have done

much to protect our health and environment.

Is a new paradigm needed for environmental governance in the United States, one reflecting a basic shift in emphasis from restriction to incentives and from reacting after the fact to anticipating future needs and opportunities? As co-chair of the President's Council on Sustainable Development, I believe the timing is right to bring diverse resources together as we stake out new directions. Many in the environmental and industrial communities agree that the next generation of environmental policy must achieve greater results and do so more efficiently. From now on, our goal must be to prevent pollution by motivating potential polluters to adopt new techniques and technologies. This new approach would harness technology as an environmental ally, stress least-cost solutions, and encourage companies to go beyond the minimum required to meet standards. As it proves itself, this new model should replace the old command-and-control regulation.

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Corrections and Clarifications

A table in the article "Science elites envy American cohesion" in the special section on Science in Europe (18 June, p. 1738) incorrectly ranked the National Institute of Standards and Technology (NIST) second among U.S. institutions in terms of citations per chemistry paper. The table was compiled by the Institute for Scientific Information (ISI), which inadvertently used only older papers by authors identified as being from the National Bureau of Standards, NIST's former name, to calculate NIST's citation rate from 1988 to 1992. When more recent NIST papers, which have had less time to be cited, are included, NIST's citation rate drops from 8.94 to 5.27 cites per paper.

An asterisk indicating that he was a corresponding author should have appeared next to Mark D. Bednarski's name in the list of authors of the report "Direct colorimetric detection of a receptor-ligand interaction by a polymerized bilayer assembly" by D. H. Charych *et al.* (30 July, p. 585).

In the table in the article "Can sustainable farming win the battle of the bottom line?" by Bob Holmes (Environment & the Economy, 25 June, p. 1893), the second and third lines in the legend should have read, "Alt. #1: conventional corn-soybean rotation with reduced tillage. Alt. #2: organic corn-beans-(wheat+clover)-clover-corn rotation with reduced tillage."