

Reinventing Environmental Regulation: Back to the Past by Way of the Future

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*Editors' Summary: Considerable debate over the efficacy of modern environmental regulation has resulted in recent reports by Enterprise for the Environment, Yale University, and the National Academy of Public Administration aimed at reinventing EPA and environmental regulation. This Dialogue discusses the three reports and considers whether they will fulfill their stated goals. It examines whether the reports' conclusions are relevant, whether their initiatives are practical, and whether their suggestions are wise. It notes that implementing the performance-based system the three reports recommend has the potential to effect profound changes, but it concludes that without expanding regulatory resources and challenging sources to track emissions and research their toxicological effects, severe environmental degradation is likely to occur. In addition, it finds that the market-based incentives the reports encourage are unacceptably weak in comparison to the liability that serves as a deterrent under the existing command-and-control system. To support these conclusions, the author examines the relevance, wisdom, and practicality of the reports' conclusions in light of three of the most difficult problems now facing federal and state governments: revision of NAAQS for particulate matter and ozone, control of *Pfiesteria piscicida*, and reauthorization of the Superfund program.*

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In a widely read article lamenting the political pendulum that destabilizes environmental policy, former U.S. Environmental Protection Agency (EPA) Administrator William Ruckelshaus observed that EPA suffers as much from the gifts of its friends as it does from the blows of its enemies.¹ Since the turn of the decade, the national debate over environmental policy has been dominated by pronouncements that EPA is fatally ill and only radical surgery will save its soul, with friends and enemies alike joining the campaign to reinvent the Agency. Three of the leading efforts to reinvent EPA were completed within the last six months, and it is no small irony that the most prestigious one was spearheaded by Ruckelshaus himself.

Known as Enterprise for the Environment (E4E), it involved a group of carefully selected, high-level stakeholder representatives who attempted to reach consensus, only to have one flank peel off right before issuance of the final report.² A second effort, *Thinking Ecologically*, sponsored by Yale University, avoided such aggravation by convening conferences among a similar group, but confining its ultimate work product to a collection of free-wheeling essays [28 ELR 10362] authored primarily by academics and private consultants.³ The third effort, produced by the congressionally funded National Academy of Public Administration (NAPA), followed a more traditional model, commissioning a small team of policy analysts to produce recommendations on how EPA should conduct business over the short and long term.⁴

This Dialogue considers the likelihood that these initiatives will fulfill their stated goals of reforming domestic environmental policy,⁵ or whether they will breathe new life into Ruckelshaus' mournful observation. With Congress gridlocked on every piece of environmental legislation that does not enjoy such broad support as to be politically failsafe,⁶ some may dismiss the three reports as unlikely to produce fundamental statutory reforms any time soon. On the other hand, to the extent that the reports provoke subtle but far-reaching changes in the substance of administrative decisions, a myopic focus on their legislative impact could leave us dangerously uninformed.

So, what is the bottom line of these analyses? Are they relevant? Are they practical? Are they wise?

This Dialogue concludes that the three reports have the potential to instigate profound changes because they embrace a dramatically different approach to environmental protection, replacing detailed "command-and-control" regulation with a system of information disclosure, self-regulation, and market-based incentives. To the extent that "performance-based" systems are implemented in lieu of command-and-control regulation without dramatically expanding the resources available to federal and state regulators, and without placing challenging, new demands on pollution sources to track emissions and research their toxicological effects, the shift to the "next generation" of regulatory policy is likely to result in severe degradation of environmental quality. This tragic outcome certainly will occur if federal and state regulators are forced by limited resources to choose between implementing current programs and developing performance standards with no alternative method of enforcement. Standing alone, the market-based incentives embraced by the reports are unacceptably weak in comparison to the liability that serves as a deterrent under the existing system.

This Dialogue substantiates these admittedly harsh conclusions by testing the relevance, wisdom, and practicality of the reports' conclusions in the laboratories provided by three of the most difficult problems now facing federal and state governments: revision of ambient air quality standards for particulate matter and ozone, control of *Pfiesteria piscicida*, and reauthorization of the Superfund program. Before beginning that inquiry, however, it is worth summarizing their central recommendations in order to provide the full context of the reinvented system they envision.

Common Themes and Significant Omissions

The most important, overriding theme of the three reports is that the nation should replace the detailed mandates of command-and-control regulation with a performance-based system.⁷ This next generation of environmental law would establish goals for environmental protection (also known as "indicators" of environmental quality), but would leave the countless decisions necessary to meet those targets largely to the discretion of regulated industries.⁸

The reports produced by E4E and NAPA are the most aggressive in advocating performance-based regulation, proposing a framework in which Congress and other, presumably elected, government bodies would set goals in "clear, *qualitative* language" (e.g., "water systems will provide consistently safe drinking water").⁹ Government would translate goals into *quantitative* standards "when possible" (e.g., "consistently safe drinking water will not contain more than x parts per million of bacteria").¹⁰

As a practical matter, of course, there is a world of difference between the two approaches because compliance with qualitative standards is so much easier to fudge. But neither report acknowledges the implications of that distinction. Nor do they address the critical question of how to set meaningfully specific goals in the absence of definitive science regarding the nature, scope, and cause of environmental problems. To its credit, NAPA acknowledges that critical information is unavailable (e.g., human exposure data),¹¹ and that "today's performance indicators" are "uncertain" and "imprecise," but contends, for reasons that are not clear, that these problems are not "an argument against using environmental indicators."¹²

The significance of the distinction between qualitative and quantitative goals is emphasized by history. The first generation of modern environmental statutes was organized around similarly indisputable qualitative goals, pledging, for example, to "eliminate the discharge of pollutants into navigable waters" by 1985 and, as an "interim" goal, to make such waters fishable and swimmable by 1983.¹³ Indeed, the existing system of command-and-control regulation was constructed to ensure steady progress toward those ideals. Along the way, we realized that the euphemistic and [28 ELR 10363] unrealistic goals the nation was striving to achieve had negligible relevance for the decisions that must be made on a daily basis, and the statutes became far more detailed and prescriptive. While there may be a better way to keep moving toward those goals, it is far from clear what useful purpose would be served by returning to core principles as the vehicle for replacing the system that has evolved for three decades.

In any event, assuming that goals of more or less specificity could be established, the E4E report recommends that regulators work with industry and other interest groups to further define "milestones" for achieving progress toward such targets, noting that "[a] goal should not incorporate cost analysis; rather, cost considerations should influence milestones and reassessment."¹⁴ By segregating decisions about goals from the inevitable haggling over "equity, cost, severity of risk, and feasibility," E4E asserts that progress will be more "feasible," and will reduce "the economic consequences of making a mistake."¹⁵ However, the report does not consider in any detail the crucial questions of what should happen when milestones are missed and how to punish those who obstruct such achievements.

Precisely because debates over cost, feasibility, and benefits are the sticking points in the current system, frequently producing regulatory paralysis that lasts for years, missed milestones are inevitable. Defining criteria for penalizing those responsible and for changing milestones is not just a second-level administrative task but the gist of whether the new system will prove more effective — and at least as protective — as the old.

Obviously recognizing that the nation must find a way to organize the efforts of industry and other pollution sources to meet the new performance-based standards, all three reports enthusiastically embrace market-based mechanisms.¹⁶ Their favored remedies run the gamut from eliminating subsidies and imposing taxes on environmentally undesirable activities, to self-audit systems implemented by "independent" private-sector auditors, to the widespread use of pollution credit trading systems, including those that permit cross-media and cross-pollutant exchanges within imaginary "bubbles" drawn over geographic areas and facilities.¹⁷

Once again, however, the reports do not suggest any specific criteria for designing effective market-based remedies and do not identify promising tax or subsidy candidates. Instead, E4E urges the appointment of a Federal Tax Commission and a Federal Subsidy Commission to absorb the political heat that the group apparently found so forbidding.¹⁸ NAPA uses a national carbon tax as its lone example of "an effective catalyst for broad innovation and increased efficiency."¹⁹ And the editors of *Thinking Ecologically* endorse replacement of the income tax with a "consumption tax" adjusted to avoid regressive effects for low-income families.²⁰ The authors of the NAPA report must be aware that the Clinton Administration refused to even propose a carbon tax in 1993, instead endorsing an energy output tax that failed spectacularly in Congress.²¹ Similarly, the editors of *Thinking Ecologically* undoubtedly recognize the political impossibility of repealing the income tax in favor of a sales tax any time soon. At some point that we have arguably passed, it is fair to demand that proponents of such market-based remedies acknowledge the pragmatic and political realities of actually implementing such alternatives.²²

The three reports decry the "fragmentation" of the current, media-specific system, urging EPA to accelerate its efforts to develop "multimedia" regulation.²³ The essayists in *Thinking Ecologically* are emphatic about the importance of comprehensive "ecosystem management," "industrial ecology," and "sustainable development," while E4E's battleweary participants express similar concepts as "product stewardship," to be accomplished by industry on a voluntary basis.²⁴ NAPA articulates these concepts by endorsing the "integration" of EPA programs, a concept it defines as "the capacity to manage simultaneously all aspects of an environmental problem."²⁵

The E4E report is particularly salient in its recommendation that industry "develop tools to calculate the full costs associated with poor environmental stewardship and the cost savings associated with environmental improvement."²⁶ The focus on developing an integrated understanding of pollution costs is the most valuable contribution made by the three reports, especially the one produced by E4E, because it implies significant industry, and not just academic, endorsement of such concepts.

Another common theme of the three reports is the desirability of devolving decisionmaking to the state and local level. The reports endorse devolution of regulatory authority, as well as the involvement of local citizens in a "place-based" system of decisionmaking, also known as "civic environmentalism."²⁷ The E4E report recognizes the need for "national environmental standards" in order to "ensure a 'level playing field' among states and to avoid backsliding,"²⁸ [28 ELR 10364] but omits discussion of the difficulties EPA faces when states appear unable to meet those standards with any regularity.

Each report embraces the concept of information disclosure as the foundation for next generation policies, acknowledging that performance-based systems are gluttons for data that can provide the basis for setting goals and measuring the achievement of milestones.²⁹ However, E4E, the only effort that involved negotiations with high-level representatives of regulated industries, emphasizes that "participants did not agree on whether reporting should be mandatory."³⁰ The absence of any specific commitments to expanded monitoring, modeling, and toxicological research is troubling because it suggests either that we are far from ready to launch such reforms or that the next generation system will inevitably be undermined by data gaps.

Perhaps the most noticeable omission in the three reports is their failure to discuss the resources necessary to provide reliable foundation for a "trust but verify" approach to regulation.³¹ None acknowledge the severe fiscal constraints that hobble regulators or the implications of requiring regulators to assume the burden of expansive new environmental monitoring at the same time that they are struggling to implement existing statutory mandates.³² At their most benign, such omissions give the reports an otherworldly quality, as if they were written by theoreticians who remain deliberately ignorant of the true state of affairs in the regulatory trenches. A more cynical interpretation suggests, however, that the authors of the reports anticipate that federal and state regulators will relieve the pressure of such intense and conflicting demands by falling further behind in enforcement of the current regulatory structure.

Lately, the states have been heavily criticized for their lackluster enforcement of traditional regulations.³³ Several states are so overwhelmed by the demands of implementing federally delegated programs that they even have threatened to return their authority to EPA.³⁴ Finding themselves under fire for doing a poor job, state regulators may well succumb to the temptation to change the subject of the public debate by focusing on the development of next generation performance indicators. Quite apart from the corrosive effects of leaving requirements on the books when regulators have given up on their implementation, the implications of this method of change

deserve to be debated as openly and explicitly as the merits of the policies that would replace the current system.

The reports hedge their bets on the timing of the changes they recommend, generally urging an "incremental" or "stepping stone" approach to implementation of the new system.³⁵ However, NAPA urges acceleration of the transition by enactment of authorizing legislation.³⁶ Given the gridlock that now afflicts Congress, the next generation of environmental policy is more likely to be developed by EPA and the states, as illustrated by the three high-profile problems now considered.

The Clean Air Act

Goals, Milestones, and the New NAAQS

How to weigh costs when developing environmental standards necessary to protect public health is among the most contentious issues facing the next generation of environmental policymakers. Because the public recoils from cost considerations that appear to ignore or override adverse health effects, the most prominent reaction to widespread dissatisfaction with the status quo is the movement to assess, compare, and rank risks, both within the context of environmental problems and across society as a whole. The recent debate over new Clean Air Act (CAA) standards for particulate matter and ozone illustrates the difficulty of achieving consensus on both fronts.

E4E offers a silver bullet to resolve the cost/benefit debate: a system of goals and milestones that would separate concerns about public health and the environment from cost constraints while ostensibly giving both factors equal billing in the regulatory process. E4E envisions people of good will from the full range of affected interest groups identifying scientific truths, debating scientific uncertainty, and arriving at judgments regarding ultimate goals that would remain unsullied by practical economic considerations.³⁷ Those stakeholders would then tackle the ticklish question of how fast the nation is willing to make progress toward those goals by establishing milestones that incorporate "cost, equity, the severity of the risk, benefits, feasibility, and other factors."³⁸ At the same time that they develop milestones, stakeholders would identify the "policy tools" (e.g., "regulations, economic incentives, and information disclosure requirements") that should be used to achieve them.³⁹ Finally, both milestones and policy tools would be subject to periodic "reassessment" in order to ensure that regulation remains "adaptive."⁴⁰

E4E uses expansive rhetoric to describe the advantages of its new system. First and foremost, establishing goals will give policymakers "a way of explaining to the public, in terms it can relate to, where the nation is going and how to measure its progress in getting there."⁴¹ To persuade environmentalists [28 ELR 10365] and regulators, the group asserts that regulated entities who must bear the burden of meeting a purely health-based goal will find it easier to accept if they know that cost and risk would be considered before the goal was implemented.⁴² To reassure business, the group argues that bifurcating the process also "reduces the economic consequences of making a mistake in the early stages of addressing a problem" because it ensures that "[i]nitial decisions are not frozen in place."⁴³ Lastly, the group describes the new system as a "medium- and long-term road map" that will allow the regulated community to undertake rational "business planning" and "capital allocation."⁴⁴ Given E4E's emphasis on continual reassessment, it is unclear how milestones will provide this certainty for business planners or resolve current tensions between companies that proactively invest in pollution control and those that do not.

E4E was launched in early 1996 and took two years to complete its work.⁴⁵ During the second half of this period, while the group was meeting behind closed doors, EPA Administrator Carol Browner was engaged in an epic battle to implement stronger national ambient air quality standards (NAAQS) for particulate matter and ozone.⁴⁶ This initiative faced a vigorous campaign by one of the largest and best funded industry coalitions ever assembled to fight environmental regulation, including several of the companies whose senior executives participated in E4E.⁴⁷ In fact, the Natural Resources Defense Council's (NRDC's) decision to walk out of the talks was motivated by the contradiction between the "spirit" of the E4E dialogue and "irresponsible" corporate behavior in the context of that campaign and international global warming negotiations.⁴⁸ For weeks, the rumor mill in Washington, D.C., buzzed with speculation about the NRDC's departure, most often characterizing it as a matter of political pique, rather than a decision directly related to the substance of E4E recommendations.

Objectively, which was it? Were national environmental organizations once again sidelining themselves by taking an extreme stand that had nothing to do with the merits of E4E's vision? Or does the debate over new CAA standards provide a telling test of the viability of E4E's goals and milestone approach?

Industry arguments against the new NAAQS should undermine our confidence that the goals and milestones approach would prove more effective than the current system. Those arguments also underscore the crucial issues that E4E, NAPA, and the essayists of *Thinking Ecologically* left unaddressed. The simple truth is that Browner's decision followed a next generation blueprint: EPA set

health-based standards "with an adequate margin of safety," as required by the statute, and then considered cost and feasibility in determining the pace and methodology of implementation.⁴⁹ The Agency encountered fierce resistance at all stages. When the dust settled, the standards were set, but implementation had been delayed for several years and could easily extend to 2012 for ozone and 2016 for particulate matter.⁵⁰

At the risk of oversimplifying, industry objections to the new NAAQS break down into two fundamental categories: (1) challenges to the relevance, quality, and therefore reliability of the scientific information EPA used to justify the rules, and (2) challenges to the social policies the Agency applied in assessing their costs and benefits. Much of the scientific debate focused primarily on the new standard for particulate matter, while disputes over costs and benefits targeted the ozone standard.

Fine Particles and Sound Science

The scientific information EPA used in setting the new standard for particulate matter was epidemiological; the Agency and its scientific advisory board reviewed all available data and concluded that studies of actual human populations documented a strong connection between exposure to particulate matter and adverse health effects ranging from reduced lung function to death.⁵¹ Opponents argued that EPA should not act until definitive cellular research had explained the mechanism by which fine particulate matter causes such symptoms.⁵²

Distinctions between the relevance of epidemiological versus cellular research and their significance for environmental policy are not addressed in the E4E report and it is arguably unrealistic to expect such a prestigious group to delve into this level of detail. But on second thought, this aspect of the debate is not nearly as technical as it sounds. For years, policymakers have been preoccupied by the absence of evidence that any given pollutant actually causes wide-spread harm. Even where there is ample evidence from animal studies concerning how a pollutant can damage health [28 ELR 10366] and the environment, opponents of regulatory action frequently argue that we should await the development of sound epidemiological data in order to document the magnitude — and not just the existence — of the risk. Thus, it could not help but have struck NRDC representatives as ironic that the lack of animal data was the sticking point in this case.

Of course, if cellular data would make a significant difference in compliance costs by allowing us to target the sources that emit the components of the particles causing harm, the wait might be worth it, although the desirability of such data arguably should be considered in setting milestones, not overall goals.⁵³ In any event, to make real progress toward a more effective system, the issue of what information we need must be addressed in detail at the highest levels of decisionmaking.

While all three reports acknowledge the data gaps that must be filled to facilitate reinvention, they do not discuss in any meaningful detail what steps federal and state governments should take to develop crucial information, how much that effort will cost, the role private industry must play in assisting the government, or the timing of the transition from traditional regulation to the new system. Instead, NAPA takes a micromanagerial approach to the problem, urging EPA to "reconstitute" its Center for Environmental Information and Statistics "outside" its Office of Policy, Planning, and Evaluation in order to "endow" the Center with "statute, independence, and resources."⁵⁴ In a far more expansive discussion, the editors of *Thinking Ecologically* suggest the consolidation of all the federal agencies that deal with health and safety issues into one massive federal bureaucracy to be known as the Public Health, Environment, and Resources Department (PHER or Fair), which would have as its primary mission "evaluating and putting a price on public health and ecological harms."⁵⁵ Asking next generationists to push their analysis beyond the creation of new bureaucracies and general endorsements of the value of information is a reasonable quid pro quo for serious consideration of performance-based regulation.

As for industry challenges to EPA's interpretation of the CAA's precautionary principle that public health be protected by an "adequate margin," it is difficult to identify what EPA could have done to satisfy its critics, short of abandoning the new rules. The Clean Air Scientific Advisory Committee (CASAC), a board of senior scientists that advises EPA on standard setting, reviewed literally thousands of studies and agreed overwhelmingly to recommend that the particulate standard be tightened, although they disagreed on precisely how tight it should become.⁵⁶ The Agency attempted to get the best possible advice in the manner suggested by some of its most prominent critics, only to have this process dismissed because the scientists were not unanimous.⁵⁷

While it is clearly fair to question the precise standard Browner chose, in essence her critics disagree with the determinations she made in the face of scientific uncertainty, arguably the most important dilemma facing health and safety regulators today. When science indicates the existence of a serious problem, but does not provide definitive proof of its nature and scope, how should regulators interpret the precautionary principle that underlies the CAA's adequate margin mandate and similar language in other statutes? Further, what should be done to expand the scientific information available to inform such decisions? By characterizing EPA's new CAA

standards as unsupported by "sound" science, EPA's critics avoid debating the wisdom of this principle, which is arguably at the heart of the regulated community's objections to traditional regulation. A shift to the "new" system of goals and milestones in the absence of a robust debate on these crucial subjects might change the semantics of the process but is unlikely to affect its outcome.

Ozone and the Social Policy of Assessing Costs and Benefits

As thoughtful commentators have pointed out, it is often very difficult for regulators and the regulated to agree on the place where science ends and social policy begins.⁵⁸ In theory, the goals and milestones system would require stakeholders to draw a bright line in the sand between the worlds of pure science and pragmatic social policy, leaving resolution of the second set of issues to the process of setting milestones and choosing policy tools that would be continuously reassessed. Indeed, the E4E report argues that the mutability of such decisions is the key to eliminating the friction and inefficiencies that immobilize EPA, allowing industry and environmentalists to address each other's needs with more flexibility, living to fight the issue, if necessary, on another day.⁵⁹ Unfortunately, the public debate over the new NAAQS standard for particulate matter demonstrates that disputes over the factors to be addressed by such decisions would not be resolved by bifurcating the regulatory process. Until and unless these fundamental disagreements are addressed, a system allowing stakeholders to continually revisit such issues could prove at least as enervating and counterproductive as traditional command and control.

Three aspects of the debate provide particularly telling insight into the significance of these disagreements: whether temporarily impaired lung function for vulnerable subpopulations constitutes a health effect that should be factored into a cost/benefit analysis; whether calculations of regulatory costs fairly include the possibility that low-income Americans will be unable to afford other necessities; and whether it is fair game to use absolute worst-case scenarios in projecting the impact of a regulation.

[] *What Is a Health Effect?* In recent years, environmental health experts have emphasized that our view of the adverse health effects caused by pollution may well be myopic. Because we focus on carcinogens to the exclusion of neurotoxins, teratogens, and mutagens, we tend to define the benefits of reducing pollution exclusively in terms of deaths avoided rather than the impairment of other aspects of human life.

[28 ELR 10367]

A key health effect targeted by the new NAAQS for ozone was the reduced lung function experienced by athletes, the elderly, children, and asthmatics of all ages on smoggy days.⁶⁰ Industry opponents of the new rules clearly did not accept such a temporary condition as a significant factor in assessing the benefits of the new rules. At its most contentious, the debate featured the comments of one hapless oil company lobbyist to the effect that vulnerable populations should know better than to venture outdoors on bad days⁶¹ juxtaposed against a child with asthma appearing at a press conference sponsored by public health groups to ask why he could not play outdoors.⁶²

Would the goal-setting suggested by E4E or the environmental indicators proposed by NAPA include adverse health effects other than death? What criteria would the new system use in determining which health effects to quantify on the benefits side of a regulatory decision? If a condition is reversible, does it count? How far should we go in protecting vulnerable groups? What are the implications of such criteria for the choice of appropriate policy tools? Is issuance of a public health warning that certain groups should stay inside on bad days an acceptable option, or should the presumption be that Americans have a fundamental right to walk outdoors freely? All of these questions must be addressed to make performance-based regulation the silver bullet claimed by next generationists.

[] *The Definition of Regulatory "Costs."* Conservative economists have argued for many years that the costs of environmental protection have a regressive effect, with the poor spending a disproportionate share of their income on costs passed through by industry. During the clean air debate, two prominent critics of EPA carried this argument to its logical conclusion, asserting that the new standards would cause more harm than good, depriving poor children of health care and other necessities of life in exchange for the small benefits of marginally cleaner air.⁶³

How far should we go in expanding the scope of our assessments of regulatory costs? Is it necessary to develop complicated economic models that project the trade offs between higher prices and the choices people make in allocating their limited individual resources? Assuming that it even would be possible to develop such elaborate models capable of predicting human behavior to that degree, what criteria should we use in deciding whether these trade offs are worth it? How do we choose between clean air and health care, better nutrition or the long-term effects of contaminated drinking water? In short, are we ready to abandon the core principle of all our major environmental laws that costs and benefits of regulation must be confined to the aspects of the human condition that are within the ambit of the regulatory decision at issue? Again, these issues are at the heart of the debate over the efficacy of the current system and

cannot be sidestepped if we are to make real progress in reinventing it.

[] *Worst-Case Scenarios: The Future of the Backyard Barbecue.* In an effort to demonize the potential impact of the new NAAQS, industry spokespeople used the example of outdoor barbecues, predicting that in the most polluted cities, EPA would ban their use.⁶⁴ Environmentalists countered that the industry coalition was "crying wolf" about this and other costs of the new rules, and charged that industry's past track record of grossly overestimating the costs of such popular initiatives as the acid rain allowance trading program should destroy its credibility regarding such projections.⁶⁵

While it is tempting to characterize this dispute as the inevitable and, in a democracy, harmless byproduct of any spirited public debate, the controversy over how to predict the costs of new regulations has more profound implications. The environmentalists' distrust of industry cost projections has risen to the same level of importance as industry's distrust of EPA-generated science. If the distrust of EPA science requires the establishment of an elite corps of experts to determine the substance and the limits of available data, distrust of industry's worst-case cost projections should demand that the debate be informed by an equally objective effort to predict short- and long-term economic effects. And if the key advantage of E4E's flexible milestones or NAPA's indicators is the opportunity to make midcourse corrections in regulatory policy because costs turn out to be too high, then the same rationale should embolden us to act more aggressively on the basis of the precautionary principle, curtailing standards if necessary as more scientific research comes in.

[] The upshot of the CAA debate is that performance-based regulation begs many questions that must be addressed before we are able to conclude that goals and milestones mark a new route to regulatory salvation, as opposed to a journey back along the road we have already traveled.

Pfiesteria

Nonpoint Runoff and the "Cell From Hell"

As illustrated by the CAA example, perceptions that science is uncertain are at the heart of most disagreements about what benefits are worth which costs. As illustrated by the next example, such disputes especially can be hard to resolve at the state and local levels. There is danger in embracing devolution when both industry and pollution can cross jurisdictional boundaries, especially in the context of a regulatory system that depends on the commitment of substantial resources to monitoring, analysis, and research.

Pfiesteria piscicida, or the "cell from hell," has emerged with a vengeance in the last decade as a result of an unfortunate confluence of nutrient loading in surface water, wetlands loss, and global climate changes.⁶⁶ The toxic form of [28 ELR 10368] this tiny dinoflagellate⁶⁷ is the stuff of which science fiction horror films are made: millions of cells multiply and start feeding on fish, stripping their skin and flesh down to the bone, and in the process becoming airborne over the water.⁶⁸ People exposed dermally or through inhalation develop crippling neurological disorders that lead to acute memory loss and physical discomfort, in the worst cases, rendering them virtually unable to function.⁶⁹ As terrifying as the ecological and human consequences may be, the economic consequences are also daunting; outbreaks have devastated coastal tourism and the seafood industry.⁷⁰

Although the issue of what causes *Pfiesteria* to become toxic is not without controversy, nonpoint runoff from large farms that raise chickens and hogs is the major culprit fingered in outbreaks in states such as North Carolina and Maryland.⁷¹ The runoff loads surface waters with nitrogen and phosphorus, creating conditions favorable to algal blooms and the growth of *Pfiesteria*.⁷² Other sources of nutrient loading, such as urban runoff and discharges by publicly owned treatment works, undoubtedly contribute to the conditions in which *Pfiesteria* thrives.⁷³ But improper management of animal waste is not only the largest source in sheer volumetric terms, it remains largely unregulated as an environmental problem. American farms produce 130 times more waste than the entire human population, a problem compounded by the fact that animal raising is increasingly concentrated in only a few states.⁷⁴ Federal and state efforts to control such pollution have been restricted to voluntary programs and subsidies for good behavior, or to mandatory programs that are not effectively enforced.⁷⁵

In March 1998, EPA announced a draft strategy that promises to use an amalgam of regulatory strategies, especially permitting under the Federal Water Pollution Control Act (FWPCA),⁷⁶ to cope with the problem.⁷⁷ EPA is circulating those recommendations among interested stakeholders for comment. It is too soon to determine what universe of animal feeding operations the strategy will cover, the level of funding it will receive, and the strength of the resistance it will inevitably provoke among farmers. Given the considerable work EPA must do before it is ready to implement actual controls, the draft strategy is unlikely to relieve the states of the burden of responding to the problem any time soon.

Nonpoint runoff from agricultural sources is the only specific environmental problem tackled by the E4E report. Because the blue ribbon group that developed its recommendations did not include a chief executive of an agricultural business, this section of the report has a shameless quality; the credibility of the E4E recommendations would have been served far better by a test case involving the direct economic interests of the group's industry members.

E4E urges the development of water-quality goals to guide the reduction of nonpoint pollution, suggesting that the states pursue "watershed management activities, with extensive stakeholder participation" to "facilitate" such progress.⁷⁸ The design and implementation of such activities should be done exclusively at the state or local level, with EPA's role limited to the "deploy[ment]" of a "range of incentives and disincentives" if states fail to develop effective programs.⁷⁹ States should be held accountable through the establishment of goals and "ambitious" milestones that would have as their foundation the total maximum daily load (TMDL) program required by § 303(d) of the FWPCA.⁸⁰ For example, the report urges that milestones be expressed as the percentage of impaired watersheds that meet their designated water-quality standards within "x" years.⁸¹

E4E advises states to use economic incentives such as nutrient credit trading plans and tax incentives whenever possible to achieve milestones.⁸² To its credit, the group also acknowledges the importance of requiring the agricultural version of technology-based controls, known as best management practices (BMPs), with guidelines provided by EPA and the states asked to "ensure" that BMPs or their "performance equivalent" are in fact implemented.⁸³ However, the report conspicuously omits any discussion of how EPA should punish states that fail to meet goals and milestones or, for that matter, how the states themselves should proceed against those who ignore incentives and continue to pollute at unacceptable levels.

The relationship between agriculture and the environment also warrants its own chapter in Yale's *Thinking Ecologically*. Written by C. Ford Runge, professor of applied economics at the University of Minnesota, the essay essentially agrees with E4E's focus on market-based incentives and the devolution of nonpoint source control programs to the state and local levels. But Runge is far more rigorous in prescribing the conditions that will make such programs more than just another vehicle for "bribing the polluter," a policy that he says has dominated America's "agro-environmental policy" since its inception.⁸⁴

Thus, Runge applauds the gradual, seven-year phaseout of farm subsidies required by the Federal Agricultural Improvement [28 ELR 10369] Act of 1996, but warns that while market-based incentives may prove a promising alternative to paying farmers for conserving soil and water, there are real limits on the effectiveness of such approaches.⁸⁵ For example, tax incentives must be "several orders of magnitude larger than those that have been tried" to reduce fertilizer use.⁸⁶ Runge also endorses nutrient trading schemes, but adds that these programs also require "careful implementation to avoid simply 'paying the polluter'" and that their success in protecting the environment will depend on the development of scientific standards that establish the levels of pollution permitted by the trading regime.⁸⁷ In many contexts, establishing such standards and defining the "rights" of farmers to pollute within such limits will prove both costly and controversial. Runge asks rhetorically: "What rights do farmers have to reduce the population of native grasses? And who should decide this?"⁸⁸ Trading schemes also are unlikely to address "hot spot" contamination of particular segments of water and thus may need regulatory backup even when implemented on a regional basis.

Runge concludes that establishment of "measurable and enforceable goals" or "measurable nutrient balances" must be a continuing component of efforts to control agricultural pollution, urging that such limits be "scientific in nature," as opposed to the "qualitative and unmeasurable" use of best management practices.⁸⁹ He endorses "accountable" standard setting at "each level of administrative enforcement," clearly envisioning a system that would do more than offer incentives or disincentives for failures to meet such requirements.⁹⁰

Although Runge is considerably more specific and realistic than E4E, taken as a whole, next generation recommendations fail to address the most difficult and important issues that confront policymakers on the front line of the battle to prevent further outbreaks. At the risk of oversimplifying, these issues are captured by four distinct questions. How soon and at what cost will we be able to develop sufficient information regarding the impact of nutrient loading from agricultural and other sources in order to develop meaningful water quality-based standards? Which level of government is best-suited to impose the pollution reductions that will enable us to meet those standards? What enforcement regime will ensure adequate progress toward meeting such standards? And which entities should be penalized for what offenses and in what way?

Standard Setting at the State Level: The TMDL Fable

Reliable information about at least nine topics is a quid pro quo to the development of the environmental indicators that are the foundation of a performance-based system, especially if we are committed to a preventive and not merely a reactive approach to *Pfiesteria* outbreaks. These topics include: (1) the conditions that breed *Pfiesteria* (e.g., temperature, salinity, depth, algae growth,

number and type of fish populations); (2) the causes of such conditions, whether natural or man-made; (3) the location of surface waters that exhibit such conditions; (4) the levels of *Pfiesteria* that pose a threat to human health; and (5) the levels of nutrient reductions necessary to reduce the risk of such conditions. To establish milestones that incorporate considerations of cost and feasibility, we need to know: (6) the number, types, and amounts of nutrients produced by all the man-made sources of pollution that contribute to dangerous conditions; (7) the levels of control that can be achieved by those sources; (8) the levels of control that are actually achieved by those sources; and (9) the incremental costs of achieving additional controls. We must consider the likely impact of market-based disincentives, including existing subsidies that compound the problem. Even after this information is assembled and appropriate standards are set, we either have to impose costs across-the-board or assume the burden of monitoring potentially vulnerable waters to determine when to impose such controls.

As Oliver Houck reminds us in two recent articles on the history of TMDLs, the FWPCA has embraced technology-based controls for more than three decades precisely because Congress was concerned about the feasibility of compiling sufficient information to develop a credible system of water quality standards.⁹¹ Indeed, the sorry plight of the TMDL program underscores that concern and should make us cautious about staking future environmental policy exclusively on such a technically demanding approach. After nearly three decades, 20 lawsuits against recalcitrant states, and rising public anxiety about clean water, we are many years away from meaningful progress in developing integrated standards for cumulative pollutant loads, and many more years away from actually implementing the programs that will give us a decent chance of meeting such standards.⁹² Further, as Houck points out, agribusiness representatives on an advisory committee convened by EPA to develop better strategies for implementing the program have been adamant in their insistence that the TMDL program does not apply to nonpoint sources as a legal matter, raising the specter of distracting litigation if EPA tries to draw them into the network of permits that will implement the reductions required by TMDL standards.⁹³

What could E4E have been thinking, then, in embracing the TMDL program as the foundation for reinventing command and control? Because its report does not acknowledge the legal, practical, fiscal, and technical constraints that have restricted, even crippled, federal and state monitoring programs, the group must either foresee a very long leadtime in implementing its new approaches or it has in effect offered EPA and the states the gifts of which Ruckelshaus spoke.

It is certainly debatable whether we would be better off under a system that offers incentives to achieve water quality [28 ELR 10370] standards than we will be if we continue to enforce technology-based controls. It is not debatable that the current system lacks the resources to do both well. To the extent that regulators try to make the shift without dramatically expanding the resources they have available — and there are early indications that EPA and several prominent states have embraced such an impossible challenge — environmental quality will suffer severely.⁹⁴

Devolution and Appropriate Roles

Advocates of "place-based" management acknowledge that federal, state, and local governments have continuing roles to play in protecting the environment without suggesting any criteria for sorting out their responsibilities.⁹⁵ Despite such caveats, they express buoyant enthusiasm for a significantly reduced federal role. Voicing the by-now familiar battle cry against "one-size-fits-all" regulation, next generationists urge us to defer to stakeholder dialogue at the regional, state, and local levels to address our toughest problems.⁹⁶

Historically, environmental policymakers have justified a strong federal role on the basis of four considerations: (1) the implications of interstate, or "transboundary" pollution; (2) the fear that states competing for economic development will engage in a "race to the bottom" if left to their own devices; (3) the economies of scale that can be achieved by developing complex technical standards at the national level; and (4) the need to ensure justice for minority groups that have suffered discrimination by state or local governments.⁹⁷ Maryland's dilemma in responding to *Pfiesteria* illustrates the perils of overlooking these principles.

Maryland's poultry industry, the primary contributor of nutrients to the Chesapeake Bay in the areas affected by last summer's *Pfiesteria* outbreaks,⁹⁸ is composed of hundreds of small farmers growing chickens under contracts with large poultry "integrators" that slaughter the birds and deliver them to market.⁹⁹ The farmers operate on a razor-thin profit margin and compete vigorously with counterparts in Delaware and Virginia.¹⁰⁰

Despite concerted efforts by Governor Parris Glendening, Maryland's sister states lag far behind it in efforts to regulate management of chicken waste, and Maryland faces the probability that integrators will relocate their business to neighboring states if it cracks down too hard.¹⁰¹ Thus, while it is certainly true that an intimate knowledge of Maryland waterways is helpful in targeting efforts to control nonpoint runoff, the euphemism of place-based management is unlikely to be realized unless Maryland either provides sufficient subsidies to cushion the farmers against competitive aftershocks or accepts a substantial economic loss.

Maryland will also be hard-pressed to develop its own comprehensive monitoring program, much less the extensive body of data necessary to develop effective water quality standards for vulnerable surface waters. The state will find it difficult to use economic incentives; taxing chicken producers might well drive them out-of-state and Maryland's neighbors have not indicated any interest in a pollution credit trading system.

Enforcement: Theory Versus Practice

Last but not least is the problem of enforcement, so carefully avoided by E4E. On this sensitive subject, the plight of yet another *Pfiesteria*-plagued state is revealing. North Carolina is the largest and fastest-growing hog producer in the United States, and waste management for such facilities is an expensive and difficult proposition given the dearth of effective treatment technologies.¹⁰² In 1993, the state legislature adopted a law to implement the FWPCA's permitting requirements for "concentrated animal feeding operations," which apply only to the largest farms, expressly forbidding its environmental agency to craft more stringent standards, as many states had done.¹⁰³ In 1995, several months after new regulations were issued, the first lagoon to receive a permit spilled 25 million gallons of animal waste into the Neuse River, triggering a *Pfiesteria* outbreak that slaughtered 10 million fish.¹⁰⁴ A subsequent investigation by state regulators found widespread noncompliance with the new standards.¹⁰⁵ Since then, North Carolina has adopted even tougher laws, including one that imposes a moratorium on new hog farms.¹⁰⁶

Would a system of market-based incentives be more effective than unenforced traditional regulation? Perhaps, but as Runge points out, the incentives — or disincentives — would have to be considerable enough to become a major factor in determining profit and loss. It is far from clear that affected states have either the funds necessary to provide meaningful incentives or the political will necessary to impose taxes that could fund such programs or at least affect market behavior.¹⁰⁷ As for the hog farming industry, [28 ELR 10371] it has turned to the federal government for relief from the "patchwork" of state regulations on the subject.¹⁰⁸

The upshot of the *Pfiesteria* crisis is that unless we are willing to wait many years, development of a database sufficient to breathe life into crippled efforts like state TMDLs will not occur without very large increases in government spending, or will occur at the expense of ongoing efforts to control nutrient loading. The implications of this trade off are not acknowledged by next generationists, and federal and state regulators have much to lose by endorsing new approaches they can ill afford to implement.

Superfund

The threshold assumption of market-based remedies is that desirable conduct can be motivated by the prospect of significant economic gain or loss, eliminating the need for regulators to police the private sector. Even assuming it is possible to attain such a utopia, it will clearly take us many decades to accomplish the transition and, with respect to certain problems such as the creation of localized pollution "hot spots," we will always need a safety net of government standards and enforcement. Thus, it is fair to ask next generationists how they plan to address residual pollution and to evaluate their responses in the context of the ultimate safety valve in modern federal environmental law: strict, joint, and several liability for hazardous releases into the environment.

Congress has struggled to enact legislation to reauthorize the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)¹⁰⁹ since 1990. In 1994, a minor miracle produced as close to consensus legislation as CERCLA is ever likely to see, but the 104th Congress narrowly missed the opportunity to enact it into law.¹¹⁰ The Republican capture of Congress cancelled that fragile ceasefire, and Superfund stakeholders returned to the enervating process of aggressively advancing their mutually inconsistent, individual interests, while at the same time admitting that they must once again achieve a global compromise to pass comprehensive reform.¹¹¹ The tax authority that primarily supports the program ran out in 1995 and it has limped along ever since, but even the specter of stalled cleanups in many congressional districts has not been enough to jump start the legislative process.¹¹²

The fault lines that produce the gridlock of the Superfund debate are as obvious as they are intractable. Companies that paid substantial sums in the two decades since enactment of the statute's stringent liability scheme resent the prospect that Congress will amend the law to hold their competitors harmless, and their competitors are equally adamant about obtaining such relief. The insurance industry, panicked at the prospect of large recoveries awarded against unreserved funds, has found it less expensive to block congressional action and defend against policyholder litigation than to embrace any of the numerous compromises Congress and the Administration have developed. The Clinton Administration and the environmental community have proved equally dogged in defending Superfund's powerful liability scheme. The technical issues at stake in negotiating Superfund cleanup standards further have mired congressional committees in controversies they only dimly understand.

Meanwhile, the states have not been idle, and the largely unacknowledged reality is that virtually all aspects of the Superfund program other than the cleanup of national priorities list sites are in the process of being subsumed by state "brownfields" or "voluntary cleanup" legislation.¹¹³ Such programs offer potentially responsible parties, as well as "innocent" prospective purchasers wishing to reuse contaminated property, the opportunity to negotiate deals with state agencies. The cleanup standards that apply to such projects are significantly less ambitious and complex than Superfund's, and voluntary participants receive valuable protection from future enforcement.

While it is too soon to gauge the effectiveness of state programs from either an environmental, an economic, or an administrative perspective, it is absolutely clear that they will eventually replace Superfund as the primary vehicle for both cleaning up contamination and limiting prospective liability. And because only the naive and uninformed would believe that we will ever devise regulations effective enough to eliminate environmental contamination, state programs, reenforced by Superfund's prospective liability provisions, will remain an integral part of the regulatory system for the foreseeable future.

Given the role liability is likely to continue to play as the fail-safe mechanism for future regulation, what guidance on that subject do the three reports offer to federal and state legislators and regulators and Superfund's numerous outside constituencies? The stunning answer is that they duck that question with a determination that borders on amusing. While *Thinking Ecologically* and the NAPA report take passing swipes at the Superfund program, the three reports never address directly the issue of legal responsibility for the damages caused by industrial activity, conspicuously omitting liability from their lists of market-based mechanisms that should be used to meet performance-based goals and milestones.¹¹⁴

It is perhaps fair to conclude that the authors of the reports disapprove of prospective liability as a method for protecting the environment, especially Superfund's admittedly harsh liability scheme. However, given the continuing importance of liability as an issue for federal and state legislatures and regulators, remaining silent on this question can only serve to undermine the credibility and the relevance of the three reports.

It is possible that the authors believe that such market-based mechanisms as pollution taxes and fees will provide adequate public resources to mop up what will be substantially [28 ELR 10372] diminished contamination, eliminating the need to use liability as a funding mechanism for cleanup, as opposed to a deterrent for future contamination. Yet the three reports do not grapple with the difficult problems that accompany implementation of large-scale environmental public works programs. Given the relatively recent demise of federal sewage treatment grant funding and Superfund's ongoing difficulties, it is reasonable to demand that next generationists explicitly address those implications.

Finally, it is possible that the three reports duck the liability issue because their authors wished to maintain industry support and involvement, and there is no faster way to alienate corporate participants than to demand that they take positions on the desirability and design of prospective liability schemes. While it is certainly understandable why leaders of the three efforts, especially E4E and NAPA, were committed to a broad range of support for their proposals among the powerful community of regulated interests, liability is too large an issue to be shoved off the table in the service of superficial harmony and a civil dialogue. In fact, Superfund is not the only environmental program that raises the very difficult issue of ensuring equity between those who have invested in the existing system and those who have not. Whether we elect to step from stone to stone, or embrace more ambitious and accelerated transitions to the next generation of environmental law, those issues must be addressed sooner rather than later.

Whatever their real motivation for avoiding the subject, the question remains whether prospective liability, under Superfund or state voluntary cleanup laws, is a useful market-based mechanism for ensuring compliance with the next generation of performance-based environmental law? Assuming that overall goals and milestones could be set for the complicated problem of environmental contamination that escapes the preventive aspects of the new system, would a system that compelled specific sources to pay damages be as effective as such market mechanisms as across-the-board fees and taxes on undesirable behavior?

Industrywide fees and taxes arguably create the same "free rider" inertia as advocates of reinvention condemn in the existing system of command-and-control, technology-based regulation. That is, if a firm knows that its competitors also will be compelled to pay a tax on its emissions, the tax must be high to give the firm an adequate incentive to make the long-term investments necessary to avoid such pollution. Especially when the invention of new technology is necessary to avoid the tax, the assurance that the firm will not suffer a competitive disadvantage may prove sufficient to make payment of the tax the route of least effort and expense.

In contrast, raising the specter that individual firms will be held accountable for the damages caused by their discharges on land or into water, with no assurance that their competitors will be compelled to pay as much or at the same time, provides a significantly more compelling incentive to develop new technology. The most significant industry objection to liability schemes — that their implications

are so uncertain as to make coherent business planning impossible — is also the attribute that makes them effective in motivating the development of new technology to prevent pollution or, in the lexicon of reinvention, to adopt product stewardship as a method of doing business.

Of course, relatively consistent enforcement is an indispensable attribute of effective liability schemes, and it is interesting to contemplate who would be responsible for enforcement in a next generation system. Arguably, to be consistent with the overall purpose of eliminating government micromanagement and giving regulated entities the flexibility to determine how to meet goals and milestones, responsibility for assessing damages would be delegated to an even broader group of private-sector actors than it is at present. To avoid triggering an outburst of new litigation over basic ground rules that would satisfy no one but the legal profession, federal and state regulators should craft goals and milestones that define cleanup levels and liability standards with clarity and specificity, a task that is admittedly far easier said than done.

Conclusion

In his introduction to the E4E report, William Ruckelshaus explains that some participants were restless because the group's "consensus vision" did not go "far enough," omitting "blockbuster recommendations" that would accomplish real reform. He responds that the E4E process was hard work precisely because it was carefully calibrated to achieve support from such a broad range of stakeholders, observing wisely that "one person's 'bolder' is another person's 'worse.'"¹⁵ One can easily imagine his irritation at reading this Dialogue and similar critiques: after all, it is far easier to take pot shots than to negotiate the framework of promising new approaches.

The problem, of course, is that the weaknesses of the current system also reflect compromises of extremely difficult problems negotiated by men and women of equally good faith who could not find a single silver bullet solution. E4E's fatal flaw is not the scope of its recommendations, but its hubris about what it did in fact accomplish.

In the end, we will undoubtedly return to the one consistent lesson of the last 30 years: there are no shortcuts to effective pollution prevention. Controls without enforcement, performance-based systems without meaningful standards, and devolution without funding, will only cause us to step back further than we stride forward.

1. See William D. Ruckelshaus, *Stopping the Pendulum*, ENVTL. F., Nov./Dec. 1995, at 25.

2. See ENTERPRISE FOR THE ENVIRONMENT, THE ENVIRONMENTAL PROTECTIONS SYSTEM IN TRANSITION, TOWARD A MORE DESIRABLE FUTURE 1, 2 (1998) [hereinafter E4E REPORT]. The voting members of the group included four former EPA administrators (William Ruckelshaus, Douglas Costle, Lee Thomas, and William Reilly), a senator (Dirk Kempthorne (R-Idaho)), two senior House members (Robert Borski (D-Pa.) and Sherwood Boehlert (R-N.Y.)), two governors (Roy Romer (D-Colo.) and Tommy Thompson (R-Wis.)), one mayor of a major city (Dennis Archer (D-Detroit)), and seven senior executive officers of Fortune 100 corporations, as well as senior officials from state government, environmental think tanks, and regional environmental organizations. For an explanation of the departure of that flank, see Linda E. Greer, *Why We Didn't Sign*, ENVTL. F., Mar./Apr. 1998, at 37. The group also lost members from a second flank, although their departure was noticed less because this category of participants had more representation within the group. See David Clarke, *What Went Right*, ENVTL. F., Mar./Apr. 1998, at 39 (describing the departure of Exxon, which thought that the report did not sufficiently emphasize cost/benefit analysis and the Reason Foundation, which believed the report was too "Washington-centric").

3. See THINKING ECOLOGICALLY, THE NEXT GENERATION OF ENVIRONMENTAL POLICY ix-xi (Marian R. Chertow & Daniel C. Esty eds., 1997) [hereinafter THINKING ECOLOGICALLY].

4. See NATIONAL ACADEMY OF PUBLIC ADMINISTRATION, RESOLVING THE PARADOX OF ENVIRONMENTAL PROTECTION, AN AGENDA FOR CONGRESS, EPA, & THE STATES ix (1997) [hereinafter NAPA REPORT]. NAPA states that its work was "cross-fertilized" with the work of E4E, with key NAPA project staff sitting in on E4E deliberations. See *id.*

5. For the sake of space and coherence, this Dialogue does not tackle international issues.

6. The only two environmental laws reauthorized by the 104th Congress were the Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. §§ 136-136y, ELR STAT. FIFRA §§ 2-31 (1994), amended by Pub. L. No. 104-170, 110 Stat. 1489, and the Safe Drinking Water Act, 42 U.S.C. §§ 300f-300j, ELR STAT. SDWA §§ 1401-1465 (1994), amended by Pub. L. No. 104-182, 110 Stat. 888. Both

pieces of legislation were passed only after the negotiation of broad, bipartisan compromises.

[7.](#) The three reports did not invent the concept of performance-based regulation. Since 1993, with passage of the Government Performance and Results Act of 1993, 31 U.S.C. § 1115, the entire federal government has been working on methods to evaluate the effectiveness of programs on the basis of empirical measures of performance.

[8.](#) See, e.g., E4E REPORT, *supra* note 2, at 12-18, 25; E. Donald Elliott, *Toward Ecological Law and Policy*, in THINKING ECOLOGICALLY, *supra* note 3, at 183-85; NAPA REPORT, *supra* note 4, at 71-74.

[9.](#) E4E REPORT, *supra* note 2, at 13 (emphasis added).

[10.](#) *Id.* (emphasis added).

[11.](#) See NAPA REPORT, *supra* note 4, at 53.

[12.](#) *Id.* at 45.

[13.](#) Federal Water Pollution Control Act Amendments of 1972, Pub. L. No. 92-500, 86 Stat. 816 (codified in scattered sections of 33 U.S.C.); see also Air Quality Act of 1967, Pub. L. 90-148, 81 Stat. 485 (codified in scattered sections of 42 U.S.C.).

[14.](#) E4E REPORT, *supra* note 2, at 13.

[15.](#) *Id.* at 15.

[16.](#) See, e.g., *id.* at 34-40; Robert Stavins & Bradley Whitehead, *Market-Based Environmental Policies*, in THINKING ECOLOGICALLY, *supra* note 3, at 105-17; Elliott, *supra* note 8, at 179-85; NAPA REPORT, *supra* note 4, at 25-32.

[17.](#) See, e.g., E4E REPORT, *supra* note 2, at 29-31; Charles W. Powers & Marian R. Chertow, *Industrial Ecology*, in THINKING ECOLOGICALLY, *supra* note 3, at 30-33; NAPA REPORT, *supra* note 4, at 3-4.

[18.](#) See E4E REPORT, *supra* note 2, at 38.

[19.](#) NAPA REPORT, *supra* note 4, at 37.

[20.](#) See Daniel C. Esty & Marian R. Chertow, *A Vision for the Future*, in THINKING ECOLOGICALLY, *supra* note 3, at 236.

[21.](#) See Marilyn M. Hamilton & Clay Chandler, *Cures That Involve a World of Pain*, WASH. POST, Nov. 13, 1997, at A1 (explaining the demise of the energy tax); *Society and Politics — White House: Clinton Puts Energy Tax on Table*, 2 AM. POL. NETWORK, GREENWIRE 194 (Feb. 18, 1993) (explaining why the Administration never proposed a carbon tax); Jon Healey, *Energy: Energy Taxes Offer Clinton a Choice of Enemies*, 51 CONG. Q. 214-15 (1993) (explaining the political dynamics of various forms of energy taxes).

[22.](#) For an insightful and appropriately caustic discussion of this issue, see Frank S. Arnold, *Why There Are No Pollution Taxes*, ENVTL. F., Mar./Apr. 1998, at 14.

[23.](#) See, e.g., Daniel C. Esty & Marian R. Chertow, *Introduction*, in THINKING ECOLOGICALLY, *supra* note 3, at 4-6; Powers & Chertow, *supra* note 17, at 20-25.

[24.](#) See, e.g., E4E REPORT, *supra* note 2, at 51-60.

[25.](#) NAPA REPORT, *supra* note 4, at 10 (defining "integration"), at 71-72, 74 (calling for the integration of EPA programs into multimedia organizations).

[26.](#) E4E REPORT, *supra* note 2, at 56.

[27.](#) *See, e.g.*, E4E REPORT, *supra* note 2, at 41-45; John Turner & Jason Rylander, *Land Use*, in THINKING ECOLOGICALLY, *supra* note 3, at 60-75; C. Ford Runge, *Environmental Protection From Farm to Market*, in THINKING ECOLOGICALLY, *supra* note 3, at 212; NAPA REPORT, *supra* note 4, at 20-25.

[28.](#) *See, e.g.*, E4E REPORT, *supra* note 2, at 43.

[29.](#) *See id.* at 19-24; Bruce Guile & Jared Cohon, *Sorting Out a Service-Based Economy*, in THINKING ECOLOGICALLY, *supra* note 3, at 85, 88; Stephan Schmidheiny & Bradford Gentry, *Privately Financed Sustainable Development*, in THINKING ECOLOGICALLY, *supra* note 3, at 131-32; NAPA REPORT, *supra* note 4, at 53-59, 72-73.

[30.](#) *See, e.g.*, E4E REPORT, *supra* note 2, at 24.

[31.](#) Credit for this catchy application of nuclear disarmament terminology belongs to Donald Elliott. *See* Elliott, *supra* note 8, at 184.

[32.](#) The discrepancy between EPA's statutory mandates and the resources it receives to carry them out is a staggering problem for the Agency. E4E's chairman and former EPA Administrator Ruckelshaus once described Congress' failure to adequately fund EPA as "a little like cheering the launch of an airplane bound from New York to Los Angeles while only giving it the gas to reach Chicago, and then decrying the crash as further evidence of pilot ineptitude." Ruckelshaus, *supra* note 1, at 25.

[33.](#) *See, e.g.*, Steven A. Herman, *It Takes a Partnership*, ENVTL. F., May/June 1997, at 26.

[34.](#) *See, e.g.*, U.S. EPA, TECHNICAL AND ECONOMIC CAPACITY OF STATES AND PUBLIC WATER SYSTEMS TO IMPLEMENT DRINKING WATER REGULATIONS, Pub. No. 810-R-93-001, at ii (1993).

[35.](#) *See, e.g.*, E4E REPORT, *supra* note 2, at 5; Esty & Chertow, *supra* note 23, at 14; NAPA REPORT, *supra* note 4, at 2-4.

[36.](#) *See* NAPA REPORT, *supra* note 4, at 65.

[37.](#) *See* E4E REPORT, *supra* note 2, at 13.

[38.](#) *Id.* at 14.

[39.](#) *Id.* at 16.

[40.](#) *Id.* at 15.

[41.](#) *Id.* at 17.

[42.](#) *See id.*

[43.](#) *Id.*

[44.](#) *Id.*

[45.](#) *See* Enterprise for the Environment, *Bi-Partisan Group Announces Recommendations to Improve Protection of the Environment* (visited Apr. 30, 1998) <http://www.csis.org/e4e/advisory.html> (on file with author).

[46.](#) EPA is required to set, review, and revise NAAQS standards pursuant to 42 U.S.C. § 7409, ELR STAT. CAA § 109. Browner proposed new standards for particulate matter and ozone on December 13, 1996. National Ambient Air Quality Standards for Ozone:

Proposed Decision, 61 Fed. Reg. 65716 (Dec. 13, 1996) (to be codified at 40 C.F.R. pt. 50); National Ambient Air Quality Standards for Particulates: Proposed Decision, 61 Fed. Reg. 65780 (Dec. 13, 1996) (to be codified at 40 C.F.R. pts. 53 and 58).

[47.](#) See, e.g., Joby Warrick, *A Dust-Up Over Air Pollution Standards*, WASH. POST, June 17, 1997, at A1; Margaret Kriz, *Heavy Breathing*, 29 NAT'L J. 8 (1997). E4E companies include Amoco Corporation, Browning-Ferris Industries, Inc., Duke Energy Corporation, Eastman Kodak Company, FMC Corporation, General Motors Corporation, Georgia-Pacific Corporation, Monsanto Company, and Procter & Gamble Company.

[48.](#) See Greer, *supra* note 2, at 38:

[M]any leadership companies represented in E4E began acting in other forums in ways that made it increasingly difficult for us to work in constructive ways with them Several companies and many trade associations began sponsoring a series of ad campaigns that both flew in the face of our view of responsible debate and ran counter to the spirit and goals of the E4E process.

[49.](#) 42 U.S.C. § 7409(b)(1), ELR STAT. CAA § 109(b)(1). Browner repeatedly described her decision as following this two-step process in testimony justifying the rules before congressional committees. See, e.g., *EPA Proposed Clean Air Act Regulations: Hearing Before the Subcomm. on Health and Environment of the House Comm. on Commerce, Health, and Environment*, 105th Cong., 1st Sess. 357-423, 446-53 (1997) (testimony of Carol M. Browner) [hereinafter *Browner House Testimony*].

[50.](#) See, e.g., JAMES E. McCARTHY, CONGRESSIONAL RESEARCH SERVICE, IB970007, CRS ISSUE BRIEF: CLEAN AIR ACT ISSUES 4 (1997).

[51.](#) See, e.g., *Browner House Testimony*, *supra* note 49, at 373-78.

[52.](#) See *id.*; see also Marla Cone, *Experts Split Over Peril of Particulates*, L.A. TIMES, June 6, 1997, at A1.

[53.](#) See, e.g., Cone, *supra* note 52, at A1.

[54.](#) NAPA REPORT, *supra* note 4, at 72.

[55.](#) Esty & Chertow, *supra* note 20, at 237.

[56.](#) For a description of the CASAC process and findings, see *Browner House Testimony*, *supra* note 49.

[57.](#) See, e.g., STEPHEN BREYER, *BREAKING THE VICIOUS CIRCLE* 68 (1993); James K. Hammitt, *Data, Risk, and Science*, in *THINKING ECOLOGICALLY*, *supra* note 3, at 161-65.

[58.](#) For one of the best discussions of this important subject, see Wendy Wagner, *The Science Charade in Toxic Risk Regulation*, 95 COLUM. L. REV. 1613 (1995).

[59.](#) See, e.g., E4E REPORT, *supra* note 2, at 12-18.

[60.](#) See, e.g., *Ozone and Particulate Matter Air Pollution Health Effects: Hearings on S. 1084 Before the Subcomm. on Clean Air, Wetlands, Private Property, and Nuclear Safety of the Senate Comm. on Environment and Public Works*, 105th Cong. (1997) at 55-74, 118-45 (statement of Dr. George D. Thurston, Sc.D.).

[61.](#) See Al Kamen, *In the Loop; the Federal Page: Lost in the Ozone*, WASH. POST, Feb. 3, 1997, at A15.

[62.](#) See Joby Warrick, *Clean Air Standards Opponents Circle the Backyard Barbecue; Both Sides Escalate Debate as Hill Fight Looms*, WASH. POST, Jan. 24, 1997, at A1.

[63.](#) Wendy L. Gramm & Susan E. Dudley, *The Human Costs of EPA Standards*, WALL ST. J., June 9, 1997, at A18.

[64.](#) See, e.g., Warrick, *supra* note 62.

[65.](#) Henry A. Waxman, *False Alarms on Clean Air*, WASH. POST, Mar. 5, 1997, at A21.

[66.](#) John Tibbetts, *Farming and Fishing in the Wake of El Nino; Periodic Warming of the Waters of the Central Pacific*, 8 BioSCIENCE 566, 569 (1996).

[67.](#) A dinoflagellate is an animal-like plant, not bacteria.

[68.](#) See Deborah Franklin, *The Poisoning at Pamlico Sound; North Carolina, Toxic Algae*, 5 HEALTH 108, 111 (1995).

[69.](#) See *id.*

[70.](#) See, e.g., John D. Burns, *The Eight Million Little Pigs — A Cautionary Tale: Statutory and Regulatory Responses to Concentrated Hog Farming*, 31 WAKE FOREST L. REV. 851, 857-58 (1996); BLUE RIBBON CITIZENS *Pfiesteria* ACTION COMMISSION, FINAL REPORT 3 (1995) [hereinafter MD. BLUE RIBBON REPORT].

[71.](#) See Margaret Kriz, *Fish and Foul*, 30 NAT'L J. 450, 451 (1998).

[72.](#) See *id.*; see also MD. BLUE RIBBON REPORT, *supra* note 70, at app. 4 (*The Cambridge Consensus: Forum on Land-Based Pollution and Toxic Dinoflagellates in Chesapeake Bay*).

[73.](#) See MD. BLUE RIBBON REPORT, *supra* note 70, at app. 6 (*Sources of Nitrogen in the Bay — Testimony of Dr. Walter Boynton*), app. 7 (*Sources of Phosphorus in the Bay — Testimony of Dr. Walter Boynton*), and app. 9 (*Sources of Nitrogen and Phosphorus in Lower Eastern Shore and Pocomoke River*).

[74.](#) See Kriz, *supra* note 71, at 451.

[75.](#) See *id.*; see also ENVIRONMENTAL LAW INST., ENFORCEABLE STATE MECHANISMS FOR THE CONTROL OF NONPOINT SOURCE WATER POLLUTION (1997); James M. McElfish Jr., *State Enforcement Authorities for Polluted Runoff*, [28 ELR 10181](#) (Apr. 1998).

[76.](#) 33 U.S.C. §§ 1251-1387, ELR STAT. FWPCA §§ 101-607.

[77.](#) U.S. EPA, DRAFT STRATEGY FOR ADDRESSING ENVIRONMENTAL AND PUBLIC HEALTH IMPACTS FROM ANIMAL FEEDING OPERATIONS (Mar. 4, 1998).

[78.](#) E4E REPORT, *supra* note 2, at 62-63.

[79.](#) *Id.*

[80.](#) See *id.* at 63; 33 U.S.C. § 1313(d), ELR STAT. FWPCA § 303(d).

[81.](#) See E4E REPORT, *supra* note 2, at 64.

[82.](#) See *id.* at 65-67.

[83.](#) See *id.* at 67.

[84.](#) C. Ford Runge, *Environmental Protection From Farm to Market*, in THINKING ECOLOGICALLY, *supra* note 3, at 201.

[85.](#) *See id.* at 208-09.

[86.](#) *See id.* at 209.

[87.](#) *See id.*

[88.](#) *Id.* at 210.

[89.](#) Runge, *supra* note 84, at 210.

[90.](#) *See id.* at 213.

[91.](#) Oliver A. Houck, *TMDLs, Are We There Yet?: The Long Road Toward Water Quality-Based Regulation Under the Clean Water Act*, [27 ELR 10391](#) (Aug. 1997) [hereinafter Houck II]; Oliver A. Houck, *TMDLs: The Resurrection of Water Quality Standards-Based Regulation Under the Clean Water Act*, [27 ELR 10329](#) (July 1997) [hereinafter Houck I]. Both articles discuss this history, but the most extensive description appears in Houck I at 10330-38.

[92.](#) *See, e.g.*, Houck II, *supra* note 91, at 10397-10401.

[93.](#) *See id.* at 10399. The rationale for this position is that FWPCA § 303(d), 33 U.S.C. § 1313(d), requires TMDLs to be established after EPA and the states determine that technology-based emissions limits have not worked. Because nonpoint sources are not covered by such limits. TMDLs also do not apply.

[94.](#) The primary vehicle for these efforts is the National Environmental Performance Partnership System in which EPA negotiates agreements with states to develop performance-based standards in return for flexibility in implementing regulatory requirements. For a summary of such programs, see NAPA REPORT, *supra* note 4, at 46-52, 197-200. An analysis of the effectiveness of such programs and their impact on enforcement of traditional regulation when state budgets are limited is beyond the scope of this Dialogue, although the author hopes to tackle it within the next year.

[95.](#) Runge, *supra* note 84, at 212.

[96.](#) *See, e.g.*, E4E REPORT, *supra* note 2, at 67.

[97.](#) *See, e.g.*, Rena I. Steinzor, *Unfunded Environmental Mandates and the "New (New) Federalism": Devolution, Revolution, or Reform?*, 81 MINN. L. REV. 97, 166-79 (1996).

[98.](#) Joby Warrick & Todd Shields, *Md. Counties Awash in Pollution-Causing Nutrients*, WASH. POST, Oct. 3, 1997, at A1.

[99.](#) Michael Dresser, *Governor Omits Firms in Pfiesteria Measure, Environmentalists Say Cleanup Cost Shouldn't Fall on Chicken Farms*, BALT. SUN, Jan. 27, 1998, at B1.

[100.](#) *See id.*

[101.](#) *See, e.g.*, Ellen Nakashima & Peter S. Goodman, *The Pfiesteria Scare, Votes Tell a Tale of Two States*, WASH. POST, Mar. 3, 1997, at D7.

[102.](#) Robin Meadows, *Focus. The Livestock Legacy*, 12 ENVTL. HEALTH PERSP. 1096 (1995).

[103.](#) N.C. GEN. STAT. § 143-215.1 (1993); *see also* Burns, *supra* note 70, at 867-69.

[104.](#) Meadows, *supra* note 102, at 1096 (describing the farm and its regulatory status); Kriz, *supra* note 71, at 450.

[105.](#) Meadows, *supra* note 102, at 1096.

[106.](#) 1996 N.C. Sess. Laws ch. 626, codified at N.C. GEN. STAT. §§ 143-215.10A-215.10G (1996); 1997 N.C. Sess. Laws ch. 515, pt. 1, § 1.1(a).

[107.](#) When environmentalists proposed a tax on chickens in Maryland of one penny per pound, it died within one 24-hour news cycle. Michael Dresser, *Tax Proposed to Help Fight Bay Pollution; Environmental Groups Urge Governor to Back Levy on Chicken; "Manure Disposal Surcharge"; Idea Is "Disastrous," Says Lobbyist for Poultry Industry*, BALT. SUN., Dec. 18, 1997, at B1.

[108.](#) Kriz, *supra* note 71, at 452-53.

[109.](#) 42 U.S.C. §§ 9601-9675, ELR STAT. CERCLA §§ 101-405.

[110.](#) For a description of the deal, see Rena I. Steinzor, *The Reauthorization of Superfund: Can the Deal of the Century Be Saved?*, [25 ELR 10016](#) (Jan. 1995).

[111.](#) Jennifer Silverman, *Superfund: Inability to Produce Comprehensive Bill in 1998 May Trigger Narrower Legislation*, 28 Env't Rep. (BNA) 12 (Jan. 16, 1998).

[112.](#) See, e.g., Jennifer Silverman, *Superfund: List Outlining Fiscal 1998 Funding Needs More Detailed, Not Enough to Convince Panel*, Daily Env't Rep. (BNA), June 27, 1997, at A-6.

[113.](#) See, e.g., Thomas G. Kessler, *The Land Recycling and Environmental Remediation Standards Act: Pennsylvania Tells CERCLA Enough Is Enough*, 8 VILL. ENVTL. L.J. 161 (1997); Anne Slaughter Andrew, *Brownfield Redevelopment: A State-Led Reform of Superfund Liability*, 10 NAT. RESOURCES & ENV'T 27 (1996).

[114.](#) See, e.g., Esty & Chertow, *supra* note 20, at 238; NAPA REPORT, *supra* note 4, at 210.

[115.](#) E4E REPORT, *supra* note 2, at vii-viii; see also William D. Ruckelshaus, *Stepping Stones*, ENVTL. F., Mar./Apr. 1998, at 30.