Worst Things First: Risk, Information, and Regulatory Structure in Toxic Substances Control

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Scientific uncertainty is the characteristic problem of toxic substances control, and regulators lack the resources to resolve or significantly reduce uncertainty across all of the risks they must address. For this reason, the Environmental Protection Agency (EPA) has become intensely interested in setting priorities among its responsibilities. EPA lacks, however, a coherent framework within which to implement its findings. In this Article, Professor Applegate proposes that the current regulatory regime for toxic substances be restructured to emphasize thoughtful priority setting rather than unrealistic risk standards and deadlines. In his view, Congress should provide broad parameters for agency action in particular cases, but should give specific directions to the agency for setting priorities and goals. This recommendation necessarily implicates broader issues of congressional specificity in regulatory statutes, presidential control of administrative agencies, and judicial review in the early phases of the regulatory process. Professor Applegate explores these larger issues as they relate to his proposal and evaluates his proposal's feasibility by comparing it to legislatively mandated planning in forest management.

Introduction ........................................... 279

I. The Problem of Scarcity .................................. 282
   A. Sources of Scarcity .................................. 282
   B. Priority Setting ..................................... 287

II. Discretion and Direction in Priority Setting ............... 289
   A. Discretion and the Technocratic Tradition .......... 289
      1. The Managerial Agency ............................ 290
      2. Rationalist Methods and Criteria ................ 292
         a. Risk ......................................... 293
         b. Cost ....................................... 294
         c. Cost-Effectiveness ........................... 295
      3. Freedom from External Controls .................. 296

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B. *The Need for Direction: Post-New Deal Skepticism* ........... 298
   1. *The Informational Critique* .......................... 299
   2. *The Legitimacy Critique* ............................ 300
   3. *The Rationalist Critique* ............................ 302
   4. *The Historical Critique* ............................ 303

III. Restructuring Toxic Substances Control ........................... 304
   A. *Analytical Frameworks and Terminology* ............... 305
      1. *Predicates and Targets* .......................... 305
      2. *The Regulatory Process* .......................... 306
      3. *Risk Levels* ................................. 307
   B. *The Proposal* .................................... 309
   C. *Analysis* ........................................ 311
      2. *The Stringency of Control: Discernible Risk* ....... 313
         a. *The Dangers of an Inflexible Target* .......... 313
         b. *Discernible Risk as the Presumptive Target* .... 316
      3. *Directed Priority Setting* ........................ 318
         a. *Scarcity* .................................... 319
         b. *Legitimacy* .................................. 319
         c. *Efficiency* .................................. 323
         d. *Information* ................................. 324

IV. Implementation: Perspectives and Prospects ....................... 328
   A. *Planning* ........................................ 328
      1. *Executive Coordination and Direction: Executive*
         *Order No. 12,498* ................................ 328
      2. *Legislative Control: Statutory Deadlines* .......... 330
      3. *A Mixed Model: Regulatory Budgets and Calendars* 332
         *Forest Management* ............................... 334
   B. *Judicial Review* .................................... 336
      1. *The Traditional Administrative Law Approach* ....... 336
      2. *Overcoming Polycentricity* ........................ 339
         b. *Statutory Guidance* ........................... 342
   C. *Prospects* ........................................ 347

Conclusion .............................................. 352
Introduction

The duties of the Environmental Protection Agency have increased significantly in the past decade, but during that time the agency's budget has not grown in real terms. As a result, setting priorities has become something of a preoccupation with EPA's managers. Since 1987, EPA has undertaken a number of studies of the relative risks posed by the activities within its purview. It has discovered that existing congressional and agency priorities correlate much more strongly with perceived risk than with calculated risk. For example, the environmental and health risks posed by hazardous waste sites tend to be considerably smaller than, say, pesticide residues, despite far greater funding for the former. EPA hopes through these studies to determine which problems deserve the earliest attention and the greatest allocation of its limited resources, and, to the extent that statutes permit, to reorder its priorities accordingly. In the longer term, EPA hopes to link risk-based priority setting with integrated pollution control measures across environmental media.

EPA's intense interest in allocation and priority setting is echoed by several observers of environmental regulation. There are signs that Congress, too, has...
begun to address the issue. Responding to the lack of growth in EPA's budget, members of Congress have suggested the need for care in allocating EPA's resources. Moreover, many of Congress' most recent environmental initiatives have included requirements that EPA engage in explicit priority setting. The General Accounting Office, too, has endorsed EPA's priority-setting activities. These efforts to encourage more explicit priority setting would benefit from the creation of a Cabinet-level Department of the Environment and the adoption of a single environmental statute. A comprehensive environmental protection act would integrate decisionmaking across environmental protection programs. By integrating decisionmaking, a comprehensive act would create a legal structure within which Congress and EPA could improve their capacity for setting priorities among environmental risks.

This Article is about the role of priority setting in the control and management of toxic substances. It uses this important area of EPA's responsibility to explore how the current interest in priority setting might be incorporated into a workable regulatory architecture. The regulation of toxic substances poses a particularly acute problem of allocating limited resources because its outstanding characteristic is chronic and pervasive uncertainty concerning the nature, extent, and ability to control toxic risks. The law can address the scarcity of information in two ways: by improving the development of needed information, and by modifying regulatory strategies to use existing information more effectively. (It's a little like the old Peace Corps public service announcement:


7. See EPA's Operating Budget "Capped" for 10 Years; Reilly Defends Request Before Senate Committee, 21 ENV'T REP. (BNA) 2028 (Mar. 15, 1991); 1992 BUDGET HEARINGS, supra note 1, at 158, 170, 226, 303-04 (statements of Sen. Moynihan). Moreover, many of Congress' most recent environmental initiatives have included requirements that EPA engage in explicit priority setting.

8. Several examples, from drinking water to hazardous waste, are collected in Homstein, supra note 3, at 568-69 nn.20-25.


10. See GAO, LIMITED RESOURCES, supra note 1, at 24; see also Lakshman Guruswamy, Integrating Thoughtways: Re-Opening of the Environmental Mind?, 1989 WIS. L. REV. 463, 516-21 (discussing merits of unified statute but concluding that it is politically impractical).


you think the glass is half empty, then you need to fill it; if you think it is half full, then you need to make the best use of what you have.) The first path has an appealing directness to it, and in a previous article I suggested a number of ways in which the regulatory system might generate more information within the confines of current regulatory strategies and standards.  

The present Article follows the second path. Instead of taking the current regulatory scheme as given, it recommends restructuring the regulatory process to emphasize allocation and priority-setting decisions. The implications of this course of action are not limited to information policy. Once one begins to tinker with the underlying regulatory structure and standards, one cannot avoid consideration of the impact on substantive regulatory policy for toxic substances. Accordingly, restructuring is advocated not only because it would ease information demands, but also because it would permit implementation of the kind of comprehensive, risk-based approach to toxic substances control that EPA and Congress envision.

Part I of the Article casts uncertainty as a problem of scarcity of information, which is a subset of the more general scarcity of public resources relative to the number and complexity of the problems that government is expected to address. As such, the first task of the regulator is to allocate information and other regulatory resources in a rational and effective manner. EPA must be deeply and continually concerned with setting priorities among the many claims upon its attention.

Since the choices that limited resources force upon the agency involve fundamental policy decisions, Part II considers priority setting in the broader context of choosing between agency flexibility and congressional control. The technocratic tradition in regulation generally leaves allocation decisions to specialized agencies, trusting that they will use their discretion to make expert choices in areas of extreme complexity. Experience, however, has eroded confidence in unconstrained agency discretion: it is information-intensive, it leaves fundamental policy decisions to unelected officials, and it does not always produce effective and efficient regulation. Part II concludes that while administrative flexibility is important to sophisticated allocation and priority setting, Congress must give clear direction to the agency’s exercise of discretion.


14. The two approaches can be mutually compatible; their effects are cumulative.
In Part III, the Article proposes restructuring the regulatory process to encourage EPA to focus its attention on real risks, the most pressing problems, and to allow EPA to set priorities within a well-defined set of Congressional goals. This balance is achieved by moving the locus of legislative control of agency action from the standard-setting phase of the regulatory process to the earlier priority-setting phase. Specifically, EPA would have considerable discretion to target risks and to select levels of regulatory stringency, but its discretion would be constrained by a comprehensive plan for toxic risk reduction which the agency would adopt in accordance with congressional guidelines. EPA on its own initiative and pursuant to executive orders has undertaken detailed planning of the kind contemplated here. However, these efforts are largely internal to the executive branch, they are not guided by overall legislative direction, and they are highly constrained by piecemeal legislative priority setting in the underlying statutes.

Part IV discusses implementation of the proposal, bringing to bear perspectives from other areas of administrative and environmental law. First, the feasibility of controlling priority setting through mandatory planning is considered in light of Executive Order No. 12,498, statutory deadlines, “regulatory budgets,” and mandatory planning in natural resources management. While none of these is in itself a complete model for the priority-setting process suggested here, each suggests different strengths and potential pitfalls of the proposal. Second, recognizing that judicial review is often necessary to ensure compliance with congressional directions, Part IV reconsiders the courts’ traditional reluctance to become involved in agencies’ priority setting. Examination of the ripeness and finality doctrines reveals that judicial review is not infeasible, but requires adequate congressional guidance. Here again, the natural resources experience is instructive. Finally, Part IV turns to the prospects for restructuring. As yet, Congress has given EPA explicit priority-setting guidance only within programs (for instance, the National Priorities List of Superfund sites), but there is reason to expect that broader planning activities can be institutionalized within EPA or in a future Department of the Environment.

I. The Problem of Scarcity

A. Sources of Scarcity

It is universally acknowledged that the precise effects of toxic substances on human health and the environment cannot be stated with any certainty.\textsuperscript{15}
This uncertainty is rooted in the lack of a clear scientific understanding of the physiological mechanics of carcinogenesis, the induction of cancer by chemical agents. The science and policy of toxic carcinogenesis have been amply described elsewhere and need not be repeated in detail here. In the absence of alternative explanations, scientists cannot rule out the possibility that cancer is induced by the reaction of one molecule of the toxic substance with one cell of the target organ. If that is the case, there is no level of exposure to a carcinogen which can confidently be characterized as “safe” in the sense of posing a zero risk. The best that can be done to determine the carcinogenic potential of such substances is to describe their effects statistically, that is, to state quantitatively the level of risk they pose. Public officials, consequently, cannot base regulatory controls on individualized causation of actual harm. Instead, they must regulate risk per se.

Risk regulation acknowledges inability to predict who will be harmed and when, but even risk calculations are subject to uncertainty concerning the data upon which they are based. Obtaining a rough, qualitative sense of a chemical’s carcinogenic potential is a relatively manageable task. Defining the precise degree of risk, however, is an enormously difficult and perhaps impossible undertaking. Toxic health effects can be latent for a long period of time, they tend to be relatively rare within an exposed population, they are often not unique to the particular chemical agent, and they can result from chronic, low-dose exposure that is easily overlooked by the victim and investigators. Vast quantities of toxicologic, epidemiologic, and experimental evidence are needed to achieve even approximate risk levels.

These information demands are made no easier by the nonthreshold nature of toxic risks. Since no level of exposure can be regarded as safe, the only way to assure safety is to ban the chemical. Attractive and simple as a flat prohibition may seem, it is unrealistic in the short term in an industrial economy that

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17. The quantitative conclusion can be expressed as individual risk (e.g., 1 in 10,000 chance of getting cancer from this source), rate of excess deaths (e.g., 1 per 10,000), or absolute number of expected excess deaths in the exposed population. The differences between these terms are discussed in National Emission Standards for Hazardous Air Pollutants, 40 C.F.R. §61 (1989).
18. See Applegate, supra note 12, at 271-73; see also Reserve Mining Co. v. EPA, 514 F.2d 492, 506-07, 536 (8th Cir. 1975) (en banc), modified sub nom. Reserve Mining Co. v. Lord, 529 F.2d 181 (8th Cir. 1976); Ethyl Corp. v. EPA, 541 F.2d 1 (D.C. Cir.) (en banc), cert. denied, 426 U.S. 941 (1976).
19. For a discussion of the difference between risk and uncertainty, see Homstein, supra note 3, at 571-73.
20. The National Cancer Institute, for example, has been able to develop a list of definite, probable, and likely human carcinogens. As of 1985, the Institute had identified 119 substances that were “reasonably anticipated to be carcinogens.” Richard Merrill, FDA’s Implementation of the Delaney Clause: Repudiation of Congressional Choice or Reasoned Adaption to Scientific Progress, 5 YALE J. ON REG. 1, 17-18 (1988) [hereinafter Merrill, Delaney].
is built on carcinogens like benzene\textsuperscript{22} and vinyl chloride,\textsuperscript{23} to name two of the best known.\textsuperscript{24} In many contexts, courts have inferred acceptance of some minimal hazard level in otherwise unqualified congressional commands.\textsuperscript{25} In the principal toxics statutes,\textsuperscript{26} Congress has expressly recognized the problem, and these laws mandate achievement of an acceptable, not a complete, level of safety.

This standard, which I generically call "unreasonable risk," occupies a middle ground between complete safety (zero risk) and actual harm (100 per cent risk). It is not otherwise defined,\textsuperscript{27} but it permits EPA to consider—in

\textsuperscript{22} Benze is a widely used industrial solvent. See Industrial Union Dep’t, AFL-CIO v. American Petroleum Inst., 448 U.S. 607, 615-16 (1980) (Benzene).


\textsuperscript{24} Virtually all industrial activity depends on the use of one or more potential carcinogens. See Frank B. Cross, Beyond Benzene: Establishing Principles for a Significance Threshold on Regulatable Risks of Cancer, 35 EMORY L.J. 1, 3 n.10 (1986) [hereinafter Cross, Beyond Benzene]; CROSS, CANCER, supra note 6, at 70; Christopher Schroeder, The Evolution of Federal Regulation of Toxic Substances in Governance and Environmental Politics: Essays on Historical Developments since World War Two 263, 275-77 (Michael J. Lacey ed., 1989) [hereinafter Schroeder, Evolution].

The much-maligned Delaney Clause of the Federal Food, Drug, and Cosmetic Act, 21 U.S.C. § 348(c)(3)(A) (1988), exemplifies the problem. Read literally, it bans any food additive that poses any carcinogenic risk, no matter how small. See Public Citizen v. Young, 831 F.2d 1108, 1111-12 (D.C. Cir. 1987), cert. denied, 485 U.S. 1006 (1988) (rejecting attempt to apply de minimis standard to Delaney Clause because Congress wanted it to be "extraordinarily rigid"). Because carcinogens are now known to be ubiquitous in foods, FDA has been extraordinarily reluctant to invoke the clause. It has done so only four times (one of which, saccharine, was overturned by Congress), and otherwise made every effort to avoid invoking it in the first place. See Merrill, Delaney, supra note 6, at 9-41, 76.

\textsuperscript{25} Alabama Power Co. v. Costle, 636 F.2d 323, 360-61 (D.C. Cir. 1979) (inferring de minimis standard in Clean Air Act); \textit{see also} Benzene, supra note 22, at 614-15, 639-43 (suggesting that strict enforcement of significance threshold is necessary to avoid excessive delegation).


\textsuperscript{27} The only exception to this is a provision in the 1990 Clean Air Act Amendments, which defines "unreasonable risk" at a risk of 1/1,000,000. See Pub. L. No. 101-549, § 301, 104 Stat. 2531. Previously, Congress had specifically declined to establish a particular threshold.


each regulatory action—not only the degree of risk that a chemical poses, but also its benefits, the cost of regulation, and other factors such as currency, level, regulability, voluntariness, occupational, and comparison. The cost and benefit data, of course, add significantly to the already crushing demands for quantitative risk information.

The use of a largely undefined, nonzero standard in an ad hoc manner also invites extensive (and expensive) challenge by affected persons, which in turn requires the agency to attempt to base its actions on an extensive (and expensive) scientific record. To quantify risk so that it may be compared with costs and benefits, and to meet affected parties' and courts' demands for precision, EPA has sought a seemingly precise and certain basis for regulatory action. It and other agencies have turned to a methodology called quantitative risk assessment, a four-step process of hazard identification, exposure assessment, dose-response modeling, and risk characterization. The merits of quantitative risk assessment are hotly debated, but one thing is clear: given its aspirations to precise risk measurement, it makes enormous demands on agency information and analytical resources. Adoption of the unreasonable risk standard, in sum, has resulted in extraordinary demands for information concerning the regulation of toxic substances.

Remarkably, this information is almost entirely unavailable for the vast majority of toxic substances, and it is severely inadequate for nearly all of the


OSHA differs somewhat from the statutes previously mentioned in two ways. First, the statute itself does not use the term "significant" risk. Instead, the Benzene case imposed a judicial gloss on the statute, requiring an initial finding of the existence of a significant risk before the agency could impose controls. Since Benzene is the Supreme Court's only major venture into toxics regulation, this interpretation takes on particular importance. Moreover, the Benzene formulation was carried over into the pre-1990 toxics provision of the Clean Air Act. See Natural Resources Defense Council v. EPA (Vinyl Chloride), 824 F.2d 1146, 1164-65 (D.C. Cir. 1987). Second, the operative limitation in the statute is "feasible," a technology-based (as opposed to purely risk-based) standard.

28. The costs of regulation can include lost revenue, compliance costs, the costs of using more expensive substitutes for the regulated product, or the costs of foregoing the product and its derivatives altogether.

29. See Cross, Cancer, supra note 6, at 77-80. Technological risks, it has been argued, cannot rationally be rejected without considering the risks to which we all voluntarily expose ourselves on a daily basis. See, e.g., Bruce N. Ames et al., Ranking Possible Carcinogenic Hazards, 236 Science 271 (1987) [hereinafter Ames et al., Ranking] (arguing that naturally occurring carcinogens are vastly more numerous than artificial ones); Lave, Regulatory Priorities, supra note 4.

30. See Weinstein, supra note 13, at 361-63.


32. See Applegate, supra note 12, at 280-84.
rest. A recent National Academy of Sciences study concluded that "of tens of thousands of commercially important chemicals, only a few have been subjected to extensive toxicity testing and most have scarcely been tested at all." The present regulatory scheme for toxic substances, therefore, requires far more data than it possesses or can generate.

Information is not the only scarce commodity in toxic substances regulation. The government has finite resources with which to investigate problems, develop regulations, and enforce its decisions. A major regulatory initiative that will have a significant economic impact on the regulated industry is likely to be, for that reason alone, highly controversial. Controversy costs money: the information and analysis costs associated with developing a major regulation are high in any event but intensive industry involvement requires extensive analysis during the rulemaking process to respond to arguments and to prepare

33. See Applegate, supra note 12, at 285-89; Merrill, Delaney, supra note 20, at 16-17 (citing statistics).
34. See TOXICITY TESTING, supra note 13, at 92-99. Exposure assessment data and analytic methods are also needed to monitor releases and consumption. See TOXICITY TESTING, supra note 13, at 120-24; see also NRC, MANAGING THE PROCESS, supra note 31, at 150.
35. A number of commentators have emphasized the existence of irreducible or intractable uncertainty to emphasize the need to find ways to cope with uncertainty. See Howard A. Latin, The "Significance" of Toxic Health Risks: An Essay in Legal Decisionmaking under Uncertainty, 10 ECOLOGY L.Q. 339 356-57 (1982) (distinquishing "information uncertainty" and "knowledge uncertainty"); Thomas O. McGarity, Substantive and Procedural Discretion in Administrative Resolution of Science Policy Questions: Regulation of Carcinogens in EPA and OSHA, 67 GEO. L.J. 729 733-47 (1979) [hereinafter McGarity, Substantive and Procedural Discretion]; Marcia R. Gelpe & A. Dan Tarlock, The Uses of Scientific Information in Environmental Decisionmaking, 48 S. CAL. L. REV. 371, 392-96, 419-25 (1974); William H. Rodgers, Guerilla Decisionmaking: Judicial Review of Risk Assessments, 15 J. OF HAZARDOUS MATERIALS 205 (1987) [hereinafter Rodgers, Guerilla Decisionmaking]. In fact, however, while the mechanism of carcinogenesis may now be beyond the state of the art, there is no reason to believe that it will always be so, and certainly no reason to believe that measurement of the effects is unknowable, at least experimentally. The real problems are feasibility, expense, and timing.

We may quite sensibly decide that resolving uncertainty after a certain point is simply not worth the effort, but that is a very different thing from saying that the uncertainty cannot be resolved. See Howard Latin, Ideal Versus Real Regulatory Efficiency: Implementation of Uniform Standards and "Fine-Tuning" Regulatory Reforms, 37 STAN. L. REV. 1267, 1304 (1985) (contending that overemphasis on precision in regulation results in inadequate regulatory response); Bruce A. Ackerman & Richard B. Stewart, Reforming Environmental Law, 37 STAN. L. REV. 1333, 1357 (1985) [hereinafter Ackerman & Stewart, Reforming] (arguing that decisionmakers should confront uncertainty "openly and intelligently"); Weinstein, supra note 13, at 363-64, 380; Latin, Good Science, Bad Regulation, and Toxic Risk Assessment, 5 YALE J. ON REG. 89, 138-39 (1988) [hereinafter Latin, Good Science]; McGarity, Substantive and Procedural Discretion, supra, at 737-38. Thus, given a lack of understanding of carcinogenic mechanisms, there may be a degree of refinement of estimates of toxicity which may ultimately resist quantification, but that level of refinement is well beyond the lack of basic data that presently plagues toxic substances regulation. See TOXICITY TESTING, supra note 13, at 205. In any event, whatever uncertainty remains in quantitative analysis, additional data and analysis can improve the decisionmaking process. See GRAHAM ET AL., supra note 6, at 177-78 ("Little is gained from the sophisticated massaging of weak data. The key challenge is to improve the quality of the data used in risk assessment."); LESTER B. LAVE, THE STRATEGY OF SOCIAL REGULATION: DECISION FRAMEWORKS FOR POLICY 127-28 (1981) [hereinafter LAVE, STRATEGY].
36. See, e.g., Weinstein, supra note 13, at 337.
37. The large number of extremely complex issues involved in EPA's and OSHA's regulation of lead, whose properties are unusually thoroughly studied and understood, gives some indication of the difficulties involved in regulating more typical toxic substances. See National Primary and Secondary Air Quality Standards for Lead, 43 Fed. Reg. 46,246 (1978) (issued by EPA); Occupational Exposure to Lead, 40 Fed. Reg. 45934 (1975) (issued by OSHA).
Worst Things First

for the inevitable court challenge. As a result, agencies are unable to regulate "more than two or three controversial chemicals in any year." 38

Information aside, it is obvious that EPA cannot possibly regulate every risk that might be worth regulating, as the agency clearly recognizes. 39 Similarly, industry and society generally have a finite capacity to absorb regulatory costs. That capacity may be difficult to determine and subject to widely varying assessments; however, after some point no industry can afford environmental control without sacrificing economic viability. 40 One of the principal insights of the advocates of a "regulatory budget" is that there are important limits to the "mandated private expenditures" occasioned by regulation. 41 Likewise, society cannot pay for extensive controls or forgo certain products entirely without sacrificing some quality of life. 42 The scarcity of regulatory resources therefore mirrors the scarcity of information.

B. Priority Setting

The present regulatory scheme for toxic substances requires far greater informational and other regulatory resources than are available or can be obtained. Therefore, apart from developing better and cheaper ways to generate information, 43 accepting highly imprecise regulatory standards, 44 or adopting


39. See Reilly, The Turning Point, supra note 2, at 1389; see also Reilly, Aiming Before We Shoot, supra note 2, at 10-11 (comparing traditional environmental policy to "Space Invaders" game of blasting every blip with endless ammunition); NATIONAL ACADEMY OF SCIENCES, NATIONAL RESEARCH COUNCIL, REGULATING PESTICIDES 4 (1980) [hereinafter NRC, REGULATING PESTICIDES].

40. See Weinstein, supra note 13, at 361-63; GRAHAM ET AL., supra note 6, at 96-99; SAB, REDUCING RISK, supra note 2, app. C at 14 (estimating that $100 billion is spent yearly to administer and comply with environmental protection programs). Administrator Reilly has estimated that the nation can afford to spend about 3% of GNP on environmental protection. See Hornstein, supra note 3, at 569 n.26.

41. ROBERT E. LITAN & WILLIAM D. NORDHAUS, REFORMING FEDERAL REGULATION 134 (1983); Christopher DeMuth, Constraining Regulatory Costs, Part II: The Regulatory Budget, REGULATION, Mar./Apr. 1980, at 29. For more on regulatory budgets, see infra Part IV(A)(I).


43. See Applegate, supra note 12, at 318-32; Lyndon, supra note 13, at 1835-55.

44. The Delaney Clause requires relatively little information in theory, but it is too extreme. It is also possible to switch the burden of proof under an unreasonable-risk standard, but this approach imposes the same inefficiencies as the current unreasonable-risk standard, just in the opposite direction. See Floumoy, supra note 12 (citing Latin); Rodgers, Guerrilla Decisionmaking, supra note 35, at 220-22; see also GRAHAM ET AL., supra note 6, at 78-79, 210-11 (arguing against the use of generic standards and criteria); McGarity, Substantive and Procedural Discretion, supra note 35, at 757-58 (arguing the science policy questions based on insufficient information should not be resolved generically because additional information may become available to reduce uncertainty).

287
largely untried market-based controls, effective control of toxic substances requires that EPA use its scarce resources as efficiently as possible. The agency’s first task, upon which the overall efficacy and efficiency of the rest of the process depends, is the allocation of resources among potential regulatory efforts. Agencies must set priorities among the risks within their purview.

Institutions and individuals charged with risk management must routinely make decisions about which of the possibly many diverse risks within their purview should be addressed first, given the limited resources for risk reduction programs. A need to prioritize and rank risks quickly becomes clear.

It is important to emphasize that priority setting is not a statement of absolute value. Addressing asbestos first and groundwater contamination later does not mean that groundwater is unworthy of attention or that its current condition is

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45. A very different group of strategies includes market or economic incentive systems (e.g., marketable permits, effluent or emission charges) which would leave allocation to individual participants in the environmental market. Ackerman and Stewart, for example, argue that market-based systems can implement accurately calibrated regulatory controls at less cost to the agency because source-specific cost-benefit calculations are devolved to each source. Ackerman & Stewart, Reforming, supra note 35, at 1342-43. See also Latin, Regulatory Efficiency, supra note 18, at 1267-70 (citing other critics of command and control). Proponents are probably overly optimistic about the ease with which accurate charges can be set, property rights delimited, and market mechanisms established. See Guruswamy, supra note 10, at 501-07; Joel A. Mintz, Economic Reform of Environmental Protection: A Brief Comment on a Recent Debate, 15 HARV. ENVT'L. L. REV. 149, 158, 161 (1991). The incentive approach has little applicability beyond conventional air and water pollutants. While economic incentives could conceivably be applied to toxic substances—such as a surcharge on certain chemicals to reduce use—Congress has shown no interest in regulating toxic substances in this manner.

46. See Weinstein, supra note 13, at 335-43; Graham et al., supra note 6, at 105 (characterizing unreasonable risk as a Congressional scheme for setting priorities among limited resources); see also Byrd & Lave, Narrowing, supra note 6, at 93 (“In order not to squander limited resources . . . society should focus regulation on the worst risks and ignore trivial, or de minimis, ones.”)

Calabresi and Bobbitt divide these choices into two types. First-order determinations involve the total resources available. While these are often set by nature or largely unchangeable phenomena—e.g., the nature of toxic substances, the nature of cancer, the vitality of the economy—they may also be affected by broad policy choices. The available budget of EPA is a congressional determination that funds for fighting pollution will be enhanced or diminished relative to other needs. Second-order determinations are those made in allocating the given resources—who will be the winners and who the losers, so to speak. “[C]ommonly . . . scarcity is not the result of any absolute lack of a resource but rather of the decision by society that it is not prepared to forgo other goods and benefits in a number sufficient to remove the scarcity.” GUIDO CALABRESI & PHILIP BOBBITT, TRAGIC CHOICES 19 (1978). These categories are not air-tight: the state of the art in the understanding of carcinogenesis, for example, tends to be a given at any one point in time, but it can be pushed back (if unpredictably) by additional funding. This Article will focus on second-order determinations, because its main concerns are agencies and how their processes and structure can be improved.

47. See Ronald J. Mamiccio, Quantifying and Comparing the Benefits of Risk Reduction Programs to Prioritize Expenditures, in RISK ASSESSMENT IN SETTING NATIONAL PRIORITIES 97, 98 (James J. Bonin & Donald E. Stevenson eds., 1989); see also Milton Russell & Michael Gruber, Risk Assessment in Environmental Policy-Making, 236 SCIENCE 286, 286-87 (1987); LITAN & NORDHAUS, supra note 41, at 2-5 (recommending use of a “legislated regulatory calendar”—like a regulatory budget—to help Congress to recognize the scarcity of its resources and to allocate them appropriately).
acceptable.\textsuperscript{48} It is merely the recognition that the agency can only do so much. Money spent on one risk leaves others uncorrected. The central problem for toxic substances regulation, in this view, is the allocation of resources by setting priorities for the agency’s attention. If the regulation of toxic substances is to be effective and reasonably efficient, it is essential that the agency approach priority setting with care.

II. Discretion and Direction in Priority Setting

Since scarcity is the problem, our task is to structure a regulatory process to allocate agency resources wisely (or at least not wastefully) and in general conformity with the public will. Two general approaches are available within the context of traditional regulation.\textsuperscript{49} One is to give EPA broad discretion to apply its knowledge and experience. This approach seeks efficiency through the flexible application of technocratic or rationalist criteria. Agencies have special technical expertise which enables them to determine how best to approach a problem; therefore, they should enjoy a large measure of discretion within which to operate.

The other approach questions the political legitimacy of expertise and insists on tight control over agency discretion through clear congressional directives enforced by searching judicial review. A statute should clearly identify the circumstances under which the agency may act and precisely describe the actions it may take. Agency discretion, in the alternative view, has not in practice achieved some kind of neutral efficiency, and in any event neutral efficiency is neither determinate nor a goal in itself. Instead, agencies should apply definite, democratically established standards for the management of toxic substances.

A. Discretion and the Technocratic Tradition

The technocratic approach to regulation is often traced to the New Deal period, though it may be experiencing a resurgence.\textsuperscript{50} The New Deal Ideal described by Bruce Ackerman and William Hassler has at its core the affirma-

\footnotesize{\textsuperscript{48} See Hornstein, supra note 3, at 617-24 (pointing out that importance of problems depends in large part on where the baseline is set). It is also true that, since the agency may never get to the low-priority item, as a practical matter the groundwater contamination may be treated as if it is acceptable.}

\footnotesize{\textsuperscript{49} Traditional regulation is used here to refer to “command and control” regulation, including most incentive systems in which the government sets the parameters (price, quantity, entitlements) within which the market operates. Incentive systems are not incompatible with the approach suggested here. EPA could, for example, assign a certain priority to benzene emissions and choose to regulate them with an emissions tax.}

\footnotesize{\textsuperscript{50} See Sidney A. Shapiro & Robert L. Glicksman, Congress, the Supreme Court, and the Quiet Revolution in Administrative Law, 1988 DUKE L.J. 819, 845-77 (describing a new “executive implementation” model of administrative law).}
tion of expertise and its value in resolving regulatory problems. It follows that regulators should be relatively free from political control and judicial oversight. The technocratic approach to informational and resource scarcity means, in essence, taking the New Deal Ideal seriously. As a model for agency decisionmaking it has three components: the managerial agency, the use of rationalist criteria and methodologies for decisionmaking, and freedom from excessive judicial and executive control.

1. The Managerial Agency

The purpose of administrative agencies in the technocratic tradition is to exercise broad-ranging management and coordination functions. James Landis' classic statement of the New Deal philosophy emphasized the need for a managerial government that accomplishes its tasks in the way that non-governmental bureaucracies (great businesses) do.

The central New Deal mission is to create a decisionmaking structure capable of deploying the varieties of relevant expert knowledge. Without a sober understanding of the scientific and social facts, there can be no hope of defining an intelligent solution to the chronic problems of a complex and interdependent society.


Statements of the Ideal can be found in a number of important contemporary sources. See James M. Landis, The Administrative Process (1938); Felix Frankfurter, The Public and its Government (1930); William O. Douglas, Democracy and Finance (1940); Louis L. Jaffe, Invective and Investigation in Administrative Law, 52 Harv. L. Rev. 1201 (1939) (responding to Roscoe Pound's attack on "administrative absolutism" in Report of the Special Committee on Administrative Law, 63 A.B.A. Rep. 331 (1938)).

For the present, I assume that executive control of EPA (exercised primarily through the Office of Management and Budget) is subordinate to legislative control. This assumption is clearly not accurate, and I address OMB's role in Part IV(A)(2), infra.

52. Landis, supra note 51, at 10-13, 23-24; Ackerman & Hassler, supra note 51; see also Rabin, supra note 51, at 1253, 1261, 1267-68 (discussing the courts' acceptance of the managerial state and comprehensive governmental planning). Peter Huber is a current advocate of expert, businesslike administration of risk. See Peter Huber, Safety and the Second Best: The Hazards of Public Risk Management in the Courts, 85 Colum. L. Rev. 277, 320-32 (1985).

53. Ackerman & Hassler, supra note 51. See also Christopher F. Edley, Administrative Law: Rethinking Judicial Control of Bureaucracy 14 (describing a decisionmaking method paradigm of science or expertise).

For discussion of contemporary expressions of the importance of expertise, see Latin, Regulatory Efficiency, supra note 35, at 1275-1304 (citing and disagreeing with them). Latin points to Stewart, Ackerman, and Breyer, among others, as modern technocrats. The "risk portfolio" idea would seem to exemplify this faith in expert solutions. See Richard B. Stewart, The Role of Courts in Risk Management,
Worst Things First

Colin Diver describes this model of the managerial agency as the "comprehensive rationality" paradigm. Comprehensive rationality calls for the agency to go through a well-defined process of specifying goals, identifying alternatives and analyzing their consequences, and optimizing choices among the alternatives. Diver's paradigm partakes heavily of the managerial technique of decision analysis, a borrowing that is entirely in keeping with Landis' vision.

Applied to scarcity, the technocratic view is that the agency should be given the flexibility to apply its knowledge and expertise to pick and choose most wisely among the many alternative strategies that confront it. In particular, it would give the agency control over its own priority setting. Since priority setting is essentially a technical issue which ought to be resolved by scientific methods, it makes sense to give the expert agency the maximum leeway to reach and implement its own conclusions.

The expert agency must be able to identify and choose targets freely, and to decide what techniques to use against them and appropriate levels of stringency. "[S]ensible regulation, and indeed reasoned decisionmaking, requires choice among alternatives." Without a "diverse menu of risk-management options," experts cannot apply rationalist methodologies, exercise professional judgment, or use whatever information is available to set sensible priorities.

From the perspective of bureaucratic rationality, administrative justice is accurate decision-making carried on through processes appropriately rationalized to take account of costs. The legitimating force of this conception flows both from its claim to correct implementation of otherwise legitimate social decisions and from its attempt to realize society's preestablished goals in some particular substantive domain while conserving social resources for the pursuit of other valuable ends.


54. The opposing paradigm is incrementalism. See Colin Diver, Policymaking Paradigms in Administrative Law, 95 HARV. L. REV. 393, 396-401 (1981). Diver's main interest is administrative procedure, in particular, the choice between rulemaking and adjudication. He characterizes the New Deal as the "Golden Age of Incrementalism," id. at 401-09, and argues that the trend toward a comprehensive rationality paradigm arose from the 1960's movement to control agency action. Id. at 409-11.

55. See id. at 396-97 no. 12-16; see also HOWARD A. RAIFFA, DECISION ANALYSIS: INTRODUCTORY LECTURES ON CHOICES UNDER UNCERTAINTY (1968).

56. See id. at 396-97 no. 12-16; see also HOWARD A. RAIFFA, DECISION ANALYSIS: INTRODUCTORY LECTURES ON CHOICES UNDER UNCERTAINTY (1968).

57. See Shapiro & McGarity, Reorienting OSHA, supra note 6, at 18-24; CROSS, CANCER, supra note 6, at 140-41; Merrill, CPSC Regulation, supra note 6, at 1305-06, 1363-64; Ackerman & Stewart, Reforming, supra note 35, at 1320 (arguing for limited private initiation rights "[i]n light of competing claims on scarce agency resources and the necessity of flexibility in regulatory policy").

58. See Hornstein, supra note 3, at 569-84 (describing the "allure" of science, rationality, and integrated management).

59. LITAN & NORDHAUS, supra note 41, at 94; see also id. at 84, 90 (describing the regulatory process).

60. See GRAHAM ET AL., supra note 6, at 207-08 (albeit recommending more elaborate information); see also Richard B. Stewart, Regulation, Innovation, and Administrative Law: A Conceptual Framework, 69 CALIF. L. REV. 1256, 1316-20 (1981) [hereinafter Stewart, Regulation] (recommending that agencies have a choice among regulatory techniques which can be tailored to individual regulated entities); BARUCH
2. Rationalist Methods and Criteria

Expert agencies should apply rationalist methodologies and criteria. Thomas McGarity identifies two subdivisions of the technocratic approach. Traditional regulatory thinking, which he calls "techno-bureaucratic rationality," is characterized by pragmatic, technicians' solutions to regulatory problems. The alternative, the technocratic reformers' model, which McGarity calls "comprehensive analytical rationality," seeks to analyze a proposal (together with its various alternatives) in the broadest possible context, primarily making use of economic techniques. The latter is the more aggressively rationalist model and, predictably, it makes greater informational demands and aspires to precise results. The rationalist tools of analysis, planning, and optimizing require inputs that can be measured, manipulated, and compared. Thus, technocratic rationality in its ideal form is highly quantitative.

A quantitative approach to toxic substances control mainly focuses on risk and cost. The touchstone of the endeavor is cost-effectiveness, that is, the greatest risk reduction at the least cost. A quantitative approach to the regulation of toxic substances was given strong impetus by the Supreme Court in *Industrial Union Department, AFL-CIO v. American Petroleum Institute*, the *Benzene* case. The plurality opinion strongly implied that quantification of risk, benefits, and cost was the preferred basis for the imposition of regulatory controls. The balancing (at least roughly) of quantified risks, benefits, and costs is fundamental to the balancing ethic of the unreasonable risk regime.


61. See Thomas O. McGarity, Regulatory Analysis and Regulatory Reform, 65 TEX. L. REV. 1243, 1253-58 (1987) [hereinafter McGarity, Regulatory Analysis]. McGarity's implicit historical claim is that comprehensive analytical rationality is a departure from, in fact a reaction to, the techno-bureaucratic tradition that originated with the New Deal. Id. at 1270-71. While McGarity's purpose is to contrast the comprehensive and techno-bureaucratic models, both in fact are fundamentally rationalist approaches.


63. Although not explicitly required to do so by the *Benzene* decision, 448 U.S. 607, 652-53 (1980), OSHA inferred that the decision required the agency to quantify risks before determining their significance. See Occupational Exposure to Benzene, 52 Fed. Reg. 34,460, 34,461 (1987) (to be codified at 29 C.F.R. § 1910) (OSHA concludes that *Benzene* requires it to "attempt to quantify risk, if possible, and determine whether the risk is significant"); see generally Latin, Toxic Health Risks, *supra* note 35, at 383 (criticizing quantification requirement). OSHA's core evidentiary support for the subsequent cotton dust rule was quantitative, as the Supreme Court specifically noted on review. American Textile Mfrs. Inst. v. Donovan, 452 U.S. 490, 505 n.25 (1981) (upholding OSHA standard).

64. The rise of quantification is traced in Applegate, *supra* note 12, at 280-84. A zero-risk strategy, of course, requires only a qualitative judgment that some risk exists, while quantification is clearly necessary for risk-risk or cost-benefit determinations of appropriate non-zero levels of risk. See LAVE, STRATEGY, *supra* note 35, at 15-24; GRAHAM ET AL., *supra* note 6, at 109.
In deciding individual cases and in making programmatic choices, EPA has failed to achieve an efficient or effective allocation of its toxics-regulation resources. The technocratic solution is for the agency to apply rationalist criteria to improve the efficiency of priority setting.

a. Risk

Risks must be evaluated at the individual and comparative levels. The regulator must consider both how far to limit exposure to a potentially carcinogenic but highly useful industrial chemical given the cost of control ("how safe is safe enough"), and which risks to control, given limited resources (a "risk-risk" decision). The unreasonable risk standard responds well to the technocratic vision of regulatory analysis by trying to identify accurately which risks ought to be regulated and which should not, based on an evaluation of risk, cost, and benefit in each instance. As such it is also a tool for limited priority setting which separates the important from the unimportant. Unreasonable risk avoids the Scylla and Charybdis of zero risk and actual harm, and gives the agency a great deal of flexibility to exercise its judgment. Even if ideally applied, unreasonable risk addresses only one chemical at a time. It is at least as important for the regulator to compare toxic risks to be certain that less serious risks are not being treated while more serious ones go unchecked. Efficiency and efficacy therefore require that the agency make appropriate choices about which risks to attack and in what order.

65. See, e.g., Shapiro & McGarity, Reorienting OSHA, supra note 6, at 2; Merrill, CPSC Regulation, supra note 6; Merrill, Cancer-Causing Chemicals, supra note 38, at 111-14.


67. See Lester B. Lave, Health and Safety Risk Analyses: Information for Better Decisions, 236 SCIENCE 291, 294 (1987) [hereinafter Lave, Better Decisions] (arguing that "how safe is safe enough" questions require information similar to that required by more obviously comparative "risk-risk" decisions, because the former require a trade-off of other social goods for risk reduction).

68. See CROSS, CANCER, supra note 6, at 73-75; GRAHAM ET AL., supra note 6, at 101-05 (arguing that Benzene, 448 U.S. at 644 n.49 reflects a desire to use "significant risk" as a way of focusing limited administrative resources); CROSS ET AL., supra note 27, at 62-65; Cross, Beyond Benzene, supra note 34, at 8-11; Cass R. Sunstein, After the Rights Revolution: Reconceiving the Regulatory State 90-91 (1990) [hereinafter Sunstein, Rights Revolution].

69. See GRAHAM ET AL., supra note 6, at 101-05; CROSS, CANCER, supra note 6, at 74; LITAN & NORDHAUS, supra note 41, at 89-94. A common technocratic complaint is that agencies have failed to use their flexibility to rationalize their treatment of various risks. See generally CROSS ET AL., supra note 27; CROSS, CANCER, supra note 6.

and comparison are cornerstones of the technocratic approach to priority setting.\(^71\)

\[\text{b. Cost}\]

When resources are limited, consideration of cost is not only justified, it is inevitable.\(^72\) "No sensible regulatory program \ldots is indifferent to cost."\(^73\) Even in nominally cost-oblivious regulatory schemes, cost is at least a \textit{sub rosa} policy determinant because the alternative is impossible given limited regulatory and social resources.\(^74\) Moreover, where the statute imposes a nonzero level of risk, cost is the only plausible reason why \textit{any} added risk is acceptable.\(^75\) In the technocratic view, an agency ought to be able to take into account the relative worths of chemicals or activities in targeting them for action and in assessing the degree of stringency of control. It should be more reluctant to limit the use of a more valuable or irreplaceable chemical than a less valuable or easily replaceable one that poses an equivalent risk.\(^76\) Similarly, the degree of stringency should be subject to cost considerations. After a certain point the marginal reduction in risk becomes extremely expensive relative to previous reductions. "Simply regulating to the hilt whatever pollutants happen to get on the regulatory agenda may preclude an agency from dealing adequately with more serious problems that come to scientific attention later."\(^77\)

A key element of cost is the expense of information. It could well be sensible, in terms of cost, to attack first the chemicals whose risks, benefits, and characteristics are most familiar, even though the absolute risk they pose

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71. See SAB, REDUCING RISK, \textit{supra} note 2, at 19-20 (suggesting that EPA develop risk-based priorities); EPA, COMPARING RISKS, \textit{supra} note 3; UNFINISHED BUSINESS, \textit{supra} note 3.
72. The nature and measurability of costs and benefits are surveyed in Rodgers, Guerilla Decision-making, \textit{supra} note 35, at 193-201; McGarity, Regulatory Analysis, \textit{supra} note 61, at 1276-1308.
73. SUNSTEIN, RIGHTS REVOLUTION, \textit{supra} note 68, at 90.
75. See Applegate, \textit{supra} note 12, at 275-76; Dwyer, \textit{supra} note 74, at 273-74, 308-09; National Emission Standards for Hazardous Air Pollutants, 55 Fed. Reg. 28,496, 28,512 (1988) (issued by EPA); see also GRAHAM ET AL., \textit{supra} note 6, at 101 ("significant risk" is necessarily cost-based). Under the "significant risk" formulation of the Occupational Safety and Health Act, the Supreme Court emphasized that "significant" was intended to remove from the agency the power to impose enormous regulatory costs with little or no corresponding health benefit. See Benzene, 448 U.S. at 640-41, 664.
One of the most plausible ways of determining what risks are acceptable without considering cost is to compare other risks, but that requires the risk data described here to be available and comparable. See Dwyer, \textit{supra} note 74, at 272-73; NRC, \REGULATING PESTICIDES, \textit{supra} note 39, at 58-60; Benzene, 448 U.S. at 656-57 (significant risk approximates comparative risk); Wilson & Crouch, \textit{supra} note 70, at 269-70; Baram, \textit{supra} note 70, at 8-13 (describing and benefits and difficulties of comparative risk assessment in setting agency priorities).
76. See GRAHAM ET AL., \textit{supra} note 6, at 207.
77. See Ackerman & Stewart, \textit{Reforming}, \textit{supra} note 59, at 1337 (discussing BAT standard).
Worst Things First

is relatively small. Conversely, an uncertain risk might be a lower priority than a certain one, because the cost of obtaining sufficient information to impose legally sustainable and reasonably accurate controls would be lower. Howard Raiffa's work in decision analysis provides a methodology for identifying relevant factors, estimating the value of additional certainty (the cost of error), and placing a value on additional data. Where information resources are limited and the goal is to achieve the greatest risk reduction, the value of additional information ought to be carefully considered.

c. Cost-Effectiveness

As a general proposition, faced with limited resources and the need to make choices, we should accomplish our environmental goals (however defined) in a cost-effective way. That is,

[b]ased on the assumption that the objective is to achieve the greatest possible health benefits for the amount of resources expended, cost-effective resource allocation would give the highest priority to actions that achieve the greatest health benefit per dollar drawn from the resource pool.

Given a fixed resource pool, a cost-effective scheme sets priorities so as to achieve as much in total environmental protection as possible, usually but not necessarily in terms of reducing risk. It is also firmly in the technocratic tradition that these priorities must be based on "sound scientific data and analysis . . . to develop realistic, achievable, cost effective, environmentally sound goals."

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78. Fischhoff suggests that it might make sense for an agency to attend first to hazards which show the "greatest promise of quick, cheap fixes." FISCHHOFF, ET AL., supra note 60, at 155.
79. See NRC, REGULATING PESTICIDES, supra note 39, at 52-53 (classifying pesticides on basis of availability of relevant data); see also Wilson & Crouch, supra note 70, at 269 (certainty is relevant to evaluating risk levels). At OSHA, the availability of information is a (and was the) key determinant in going forward with candidates for regulation. Note, Deciding What to Regulate: Priority-Setting at OSHA, 2 VA. J. NAT. RESOURCES L. 87, 108-14 (1982).
80. See RAIFFA, supra note 56. Decision analysis is applied to toxic substances regulation in Weinstein, supra note 13, at 371-80; FISCHHOFF ET AL., supra note 60, at 105-07; TOXICITY TESTING, supra note 11, at 207-08.
81. See Weinstein, supra note 13, at 371-72.
82. Weinstein, supra note 13, at 337-38.
83. Cost-effectiveness can be a way of selecting among alternatives when costs are fixed ("How much risk reduction does each alternative achieve?"). When the goal is fixed ("What is the cheapest way to eliminate lead?") or when both are variable. See FISCHHOFF ET AL., supra note 60, at 104; ACKERMAN ET AL., UNCERTAIN SEARCH, supra note 62, at 137.
Getting the most "bang for the buck" is particularly important when comparing risks of potential concern. An agency ought to prefer to exercise control where it would be fairly easy to do so, because it could reduce risks with fewer resources from both agency and industry. Because the premise of cost-effectiveness is uncontroversial, and because cost-effectiveness does not require the wide-ranging inquiry contemplated by cost-benefit analysis, Congress and agencies have been more willing to adopt it. A more ambitious version of this idea is the so-called risk portfolio approach. The inverse of an investment portfolio, its overall goal is "the progressive reduction of the risk in the existing portfolio" of environmental hazards. The portfolio, like other comparisons, assumes an objective, tolerably reliable, and presumably quantitative risk assessment on which to base its technocratic analysis.

3. Freedom from External Controls

In order to make full use of its expertise, the agency requires the flexibility to choose responses to take into account changed circumstances and new or better information. Both of McGarity's technocratic models imply considerable agency freedom from executive and judicial control. Comprehensive analytical rationality emphasizes a broad view based on economic analysis, and the techno-bureaucratic model "rel[ies] heavily upon professional judgment, a kind of intuition informed by technical training and experience." Central to rationalist decisionmaking is that ex ante congressional control is limited to setting goals, and ex post judicial review is limited to narrow, adjudicable questions of procedure and arbitrariness. It is the duty of the agency in the first instance to perform the analysis and make choices. Congress should provide

85. See ACKERMAN ET AL., UNCERTAIN SEARCH, supra note 62, at 137-44.
86. For example, the agency might be well advised to look first at relatively cheap, quick fixes. See Cyril L. Comar, Introduction, in DE MINIMIS RISK xiii (Chris Whipple ed., 1987) (suggesting guidelines for setting priorities "to avoid squandering resources"); see also FISCHHOFF ET AL., supra note 60, at 155.
87. See, e.g., TSCA, 15 U.S.C. § 2605(a) ("protect adequately against such risk using the least burdensome requirements"); CERCLA, 42 U.S.C. § 9621(a) (requiring selection of "cost-effective response" at Superfund sites). OSHA, which steadfastly resisted cost-benefit analysis during the Carter Administration, was willing to use cost-effectiveness in making regulatory choices. See Identification, Classification, and Regulation of Potential Occupational Carcinogens, 45 Fed. Reg. 5002, 5240-41, 5256 (1980).
88. See Stewart, Role of the Courts, supra note 53, at 10208-09.
89. Id. Stewart's proposal in many ways embodies the paradigm of comprehensive rationality: it emphasizes process, rationalist criteria, and overall solutions. See Stewart, Role of Courts, supra note 53, at 10209.
90. See ACKERMAN & HASSLER, supra note 51, at 5; GRAHAM ET AL., supra note 6, at 207-08; Stewart, Regulation, supra note 60, at 1316-19.
91. McGarity, Regulatory Analysis, supra note 61, at 1317-30 (arguing that while regulatory analysis is not intended to expand judicial supervision, it can be used to improve the quality of review).
92. Id. at 1255.
93. See Richard J. Lazarus, The Tragedy of Distrust in the Implementation of Federal Environmental Law, 54 L. & CONTEMP. PROBS. 311, 355 (1991) (finding that "wasted resources and misdirected priorities" are the result of the "combination of impossible statutory mandates and increased judicial access"). See also Diver, supra note 54, at 425-28 (explaining Benzene), 433-34 (emphasizing role of agency); Guruswamy,
only the "most general kinds of policy guidance" to free the agency to engage in rationalist decisionmaking processes. Intensive congressional oversight and direct congressional commands regarding the regulation of particular substances are regarded as inefficient, ill-informed, or simply outdated "micro-management." EPA is more than usually subjected to both forms of detailed congressional control.

Likewise, the courts must severely limit their oversight of the administrative action to ensuring that it has been taken according to a thoughtful process. Aggressive judicial attention to the establishment of threshold levels of risk, to the certainty with which they are established, and to the reliability of the agency's scientific case, can impose a burden of proof on an agency that is extremely difficult—read extremely expensive—or impossible to meet. This may compel the agency to allocate significant resources to a risk that may not justify great attention (especially if a deadline or petition forces the agency to address the particular problem), and also involves the courts in areas outside the judges' expertise. The conclusion often expressed is that courts should not intrude into agency science and judgments, that they should not hold agencies to burdensome procedure and documentation. Agencies, not courts,

supra note 10, at 508, 533-34 (arguing that comprehensive rationality can force an agency to take integrative approach to media and problems).

94. ACKERMAN & HASSLER, supra note 51, at 5-6; LANDIS, supra note 53, at 70 ("Difficulties in administrative adjustment frequently flow from a too elaborate formulation of standards.").

95. See, e.g., CROSS, CANCER supra note 6, at 140. TSCA singles out PCBs for particular attention, 15 U.S.C. § 2605(e); RCRA focuses on dioxins, 42 U.S.C. § 6924(e). Congress has also taken to listing chemicals on a fairly regular basis. See, e.g., Emergency Planning and Community Right-to-Know Act (EPCRA), 42 U.S.C. § 11023(c); Clean Air Act, 42 U.S.C. § 7412(b)(1).


97. ACKERMAN & HASSLER, supra note 51, at 6; Diver, supra note 34, at 421-28 (analyzing Vermont Yankee and Cotton Dust).

98. This attitude reached its peak in a Fifth Circuit opinion in which the court rejected an OSHA standard because it was not based on what in the court's view constituted "good science." See Gulf South Insulation v. Consumer Prod. Safety Comm'n, 701 F.2d 1137, 1140, 1146 (5th Cir. 1984); see also Asbestos Information Ass'n v. OSHA, 727 F.2d 415, 425-26 (5th Cir. 1984) (rejecting evidence based on uncertain assessment analysis); Texas Indep. Ginners Ass'n v. Marshall, 630 F.2d 398, 406-07 (5th Cir. 1980) (agency bears burden of demonstrating existence of risk). This approach has been severely criticized. See Kenneth S. Abraham & Richard A. Merrill, Scientific Uncertainty in the Courts, ISSUES SCI. & TECH., Winter 1986, at 93, 97-99 (criticizing Gulf South); Latin, Toxic Health Risks, supra note 35, at 349-59 (criticizing Benzene).

Several commentators have noted that courts and agencies have very different thresholds of proof, and that courts (encouraged by opponents of the regulation) are often insensitive to the distinctions between different burdens of proof. See GRAHAM ET AL., supra note 6, at 186-87; Latin, Good Science, supra note 35, at 92-95; McGarity, Substantive and Procedural Discretion, supra note 35, at 100 (EPA & OSHA); GAO, TOXIC SUBSTANCES: EFFECTIVENESS OF UNREASONABLE RISK STANDARDS UNCLEAR 4-6 (1990) [hereinafter GAO, TOXIC SUBSTANCES].

are in the best position to consider technical data, to draw on expertise, and to allocate limited resources.\textsuperscript{100}

The risk portfolio, an exemplar of the technocratic approach, emphasizes administrative primacy in relation to both Congress and the courts:

The portfolio approach to risk management requires consistency and coordination in decisionmaking to achieve risk reduction in a rational and cost-effective manner and to ensure that similarly situated, competing generators of risk are treated equally. Administrative agencies (in contrast to both courts and legislatures) are centralized and specialized. Accordingly, they can achieve a greater degree of consistency and coordination and are better suited to serve as the front-line mechanism for regulating risk.\textsuperscript{101}

The Congressional role in assembling the portfolio is limited to setting the regulatory objectives, and the role of the courts is limited to enforcing them and ensuring procedural regularity.\textsuperscript{102}

\textbf{B. The Need for Direction: Post-New Deal Skepticism}

The New Deal Ideal was in many ways just that. In the decades following World War II, Congress and many students of regulation reached the conclusion that regulatory problems cannot be satisfactorily managed merely by the intervention of technocratic agencies.\textsuperscript{103} In this section, I identify four interwoven strands of post-New Deal skepticism: the informational critique, which questions the practical ability of an agency to apply its expertise; the legitimacy critique, which questions the neutrality of expertise and its consistency with democratic values; the rationalist critique, which doubts that flexibility, without more, can ensure technocratically sensible results; and the historical critique, which questions the success in fact of New Deal-type agencies in coping with


\textsuperscript{101} Stewart, \textit{Role of Courts}, supra note 53, at 10209; see also Ackerman & Stewart, \textit{Reforming}, supra note 35, at 1355-59 (recommending constrained cost-effectiveness analysis by agency, freed from requirements of uniform treatment and all-or-nothing stringency).

\textsuperscript{102} See Stewart, \textit{Role of Courts}, supra note 53, at 10209-10.

\textsuperscript{103} See Ackerman & Hassler, supra note 53, at 7; Stewart, \textit{Reformation}, supra note 66, at 1678-88. But see Glen O. Robinson, \textit{American Bureaucracy} 185-89 (1991) (concluding that Landis' vision is still accepted, if not acknowledged).

complex regulatory problems. Each points to the need to modify the pro-
discretion technocratic approach with the addition of clear congressional
guidance for agency action.

1. The Informational Critique

The administrative costs of the ideal rationalist, technocratic approach would
be exorbitant. In toxics regulation, a nonzero, cost-conscious risk standard is
far more demanding of information than a simple zero-risk standard because
it aspires to accurate calibration of risks and costs. Flexibility to set priori-
ties among risks adds to the expense. Comprehensive rationality, observes
Diver, "makes ravenous demands on agencies' limited investigative resources
and cognitive faculties." McGarity considers it "an abstract ideal that may
never be achieved." Loss of faith in comprehensive rationality can therefore
be traced to the vast universe of problems about which detailed data would
have to be generated to support expert analysis.

Howard Latin has been a persistent critic of the supposed virtues of cost-
effectiveness, technocratic expertise, and agency discretion. His most telling
criticism is empirical. Information of sufficient definiteness does not exist to
provide an adequate basis for the exercise of what could be called expertise in
any meaningful sense. Faced with huge data gaps and uncertainties, agency
choices are necessarily driven by policy and not by "fact." Citing the case-
by-case approach to toxic substances that has achieved abysmally few regula-
tions under the Clean Air Act and Clean Water Act (and TSCA), Latin charges
that attempts to "fine-tune" regulatory strictures have failed for lack of

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104. See LAVE, STRATEGY, supra note 35, at 26-27, 127-28; GRAHAM ET AL., supra note 6, at 108-10;
CROSS, CANCER, supra note 6, at 84-85.
105. Diver, supra note 54, at 428.
106. McGarity, Regulatory Analysis, supra note 61, at 1257-58 (contrasting ideal of comprehensive
rationality unfavorably with the "real world"); id. at 1276-84, 1287-92, 1303-08 (discussing lack of cost,
impact, and health information).
107. See Guruswamy, supra note 10, at 482-84; see also Diver, supra note 54, at 431 (concluding that
comprehensive rationality is inappropriate under conditions of uncertainty or under an immature regulatory
regime).
108. Latin, Good Science, supra note 35 at 105-07; Latin, Regulatory Efficiency, supra note 35, at
1273-84, 1297-99; see also Mintz, supra note 45, at 161-62 (agreeing with Latin); Gillette & Krier, supra
note 42, at 1088-90, 1103 (arguing that not enough data exists to justify claims to expertise).
109. Latin, Good Science, supra note 35 at 102-03, 123-26. Latin observes, "EPA's selection of a mid-
range position on this issue (i.e., site specificity in counting tumors) reflects an implicit social policy choice
that is not required by the norms of good science and that cannot be resolved solely on the basis of scientific
judgments." Id. at 103.
data. Moreover, the cost of obtaining the necessary information (if it is obtainable at all) is prohibitive.

The informational critique raises serious doubts about the practical ability of an agency to apply its expertise in the real world of scarcity of information and resources. In its place, these critics recommend techniques for regulating toxic substances that would reduce the information needed for taking action; these include, for instance, the use of generic standards or categories of risks. Even if they are scientifically imprecise, such approaches would more accurately reflect Congress’ goal of protecting health and the environment.

2. The Legitimacy Critique

Reliance on expertise and its data demands necessarily entails delay and expense while information is developed and thoroughly analyzed. To critics such as Latin, there is no a priori reason why protective action ought to be subordinated to rationalist analysis and “good science.” Especially under conditions of scarcity, it is clearly a policy choice to sacrifice safety to certainty and comprehensiveness. Expertise, in other words, is not necessarily benign.

Quantification, in this view, is not only impossible (the informational critique), but undesirable. Basic trade-offs between health and cost, between safety and development, are not resolvable as technocratic exercises. Since no neutral equation or analytical tool can determine whether a risk is “reasonable” or “unreasonable,” the delegation of its resolution to an expert agency both avoids and obscures the real policy decision being made. These decisions are fundamentally political and must be based on broader sets of values, many of which are not quantifiable. Quantification is meaningful only to

110. Latin, Regulatory Efficiency, supra note 35, at 1304-31. Technocrats, on the other hand, explain this effect as the paradox of overregulation (requiring too much stringency) resulting in underregulation because regulators are unwilling to impose irrationally tight controls. See Sunstein, Rights Revolution, supra note 68, at 91-92, 106-07; John Mendeloff, Regulating Safety: An Economic and Political Analysis of Occupational Safety and Health Policy (1979).

111. Latin, Regulatory Efficiency, supra note 35, at 1279-81; see also supra note 35 (discussing the existence of irreducible uncertainties).

112. See Latin, Regulatory Efficiency, supra note 35, at 1324-31; see also Ackerman & Hassler, supra note 51 at 10-11 (identifying uniform controls as significant departure from New Deal ideal).

113. Latin, Good Science, supra note 35, at 100.

114. See Freedman, supra note 51, at 44-57; Latin, Good Science, supra note 35, at 93-95; Sunstein, Rights Revolution, supra note 68, at 96-97.

115. See Hornstein, supra note 3, at 587-616 (criticizing expected-utility theory and comparative risk for failing to account for equity in and public judgments about risk exposure); Lee Clarke, Acceptable Risk? 81-82, 178-82 (1989); see also David Schoenbrod, Goals Statutes or Rules Statutes: The Case of the Clean Air Act, 30 UCLA L. Rev. 740, 789, 819-20 (1983) (asserting that Congress used general statements of goals for EPA to avoid hard choices); Latin, Good Science, supra note 35, at 145-46 (relying on science and expertise hides policy choices); Industrial Union Dep’t, AFL-CIO v. American Petroleum Inst., 448 U.S. 607, 685-88 (1979) (Rehnquist, J., concurring) (leaving to OSHA the trade-off of lives and cost contained in the idea of “significant” risk was an unconstitutional delegation of legislative power).

a limited extent where lives and deaths are involved, and intensity of risk is only one of a number of concerns that ought to be considered: voluntariness of encountering risk, equity of risk distribution, certainty of assessment, familiarity, "dread," and others. Without quantification, most technocratic tools have limited utility, even theoretically, and the democratic critics are willing to forgo them.

It follows that these choices should not be made by expert elites but through publicly responsive systems. Ackerman and Hassler observe that post-New Deal statutes prefer accountable individual agency heads to commissions, and they impose apparently specific, tight deadlines. Adherence to a strong version of the nondelegation doctrine would assure direct and narrowing authority from citizenry to Congress to agency. While the difficulty of applying a clear standard has left this avenue largely unexplored as a means of judicial control, it provides a continuing mandate that Congress guide agency expertise. Responsiveness to congressional demands, in other words, provides legitimacy.

Accountability also implies broad public participation and accountability of representatives, as reflected in Richard Stewart's interest representation model of administrative law. Lacking conviction that neutral expertise provides meaningful limits on agency discretion, this model guarantees broad citizen access to the regulatory process to ensure that various public interests are


118. See Lowrance, supra note 117, at 86-94 (array of considerations); National Emission Standards for Hazardous Air Pollutants, 53 Fed. Reg. 28,496 (1988) (variety of considerations); English, supra note 119, at 498-99 (equity); Wilson & Crouch, supra note 70, at 269 (certainty); Gillette & Krier, supra note 42, at 1071-85 (elements of public perception of risk).

119. See Lowrance, supra note 117, at 9-10, 86-94, 109-14; Fischhoff et al., supra note 60, at 101-05; see also Howard Kunreuther & Ruth Patrick, Managing the Risks of Hazardous Waste, 33 Envt’t 13 (1991) (discussing difference between public and technical perception of risk); GAO, Limited Resources, supra note 1, at 19-20, 23-24 (these choices reflect important values among which Congress must choose).

Some have suggested that the analytical methods of the technical approach may make it risk-prefering, in contrast to the public's risk-aversion. See Gillette & Krier, supra note 42, at 1060-61. Decision analysis seeks to avoid this problem by focusing on perceived rather than statistical risks. See Fischhoff et al., supra note 60, at 106.

120. Ackerman & Hassler, supra note 51, at 8-9.

121. Then-Justice Rehnquist and Chief Justice Burger vigorously argued for the application of the nondelegation doctrine to Congress' vague (if not nonexistent) guidance to OSHA for the health-cost trade-off implicit in the "significant risk" standard in the benzene and cotton dust cases. See Industrial Union Dep’t, 448 U.S. 607, 685-88 (1979) (Rehnquist, J., concurring); American Textile Mfrs. Inst. v. Donovan, 452 U.S. 490, 543-48 (Rehnquist, J. & Burger, C.J., dissenting). But apart from a rather tentative nod by the Benzene plurality, 448 U.S. at 642-52 (Stevens, J.), the Rehnquist-Burger approach garnered no following. The nondelegation doctrine has fared no better in recent separation-of-powers cases. See, e.g., Mistretta v. United States, 488 U.S. 361, 371-74 (1989); id. at 413, 416 (Scalia, J., dissenting) (conceding unmanageability of standards for impermissible delegation).

represented through broadened standing and expanded participation in the
decisional process, as well as more potent procedures like citizen suits and
petitions. Given the complexity of risk issues, it also requires better public
education about risks and the science of risk. The democratic objection to
flexibility is therefore more fundamental than the informational critique. The
democratic objection suggests that neutral expertise is chimerical at best; at
worst it is mystification that masks critical policy choices.

3. The Rationalist Critique

Precision, in the sense of expert judgments based on many factors and broad
comparisons, is a technocratic goal that requires discretion. EPA has clearly
indicated its preference for case-by-case determination of the reasonableness
of toxic health risks because it gives the agency the flexibility to balance a wide
variety of relevant factors in each unique context. Even from a rationalist
point of view, however, lack of direction often leaves agencies at sea, not
knowing which policies to pursue or how to accommodate conflicting poli-
cies. Critics of this ad hoc decisionmaking have pointed out that while
"there is some merit in allowing EPA flexibility to adjust future regulations for
special circumstances. . . this flexibility must be bounded by some overarching
conceptual framework that guides agency discretion."
Schoenbrod criticizes
the Clean Air Act for being a "goals," and not a "rules," statute. It not only
permits the agency to "deflate" the statute through its wide discretion, but also
makes it difficult for the agency to do otherwise. By ordering "safety,"
Congress made it impossible for EPA to confront (at least openly) the cost

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123. Stewart, Reformation, supra note 66, at 1676-81, 1711-13; Gillette & Krier, supra note 42, at
1104-05; FREEDMAN, supra note 51, at 44-57; ACKERMAN & HASSLER, supra note 51, at 72.
125. See National Emission Standards for Hazardous Air Pollutants, 54 Fed. Reg. 38,044, 38,045,
38,049 (1989) (responding to Vinyl Chloride decision).
126. See Richard C. Fortuna, Preventing Hazardous Waste Management Liability: The Lessons of
Recent Legislation, 25 HOUS. L. REV. 877, 880 (1988); MENDELOFF, supra note 110, at 69; Floumoy, supra
note 12, at 386-89 (avoiding action by determining that reasonableness threshold not crossed).
127. See Cross et al., supra note 27, at 77.
128. Schoenbrod, supra note 115, at 753, 766-77. A rules statute sets out relatively specific standards
of conduct for the regulated industry; a goals statute gives a general mandate to an agency, which the agency
must translate into rules of conduct. Id. at 751-55, 783-89.

The reader may have noticed some dissonance here: Ackerman and Hassler hold up the Clean Air Act
as an exemplar of overly specific post-New Deal legislation, while Schoenbrod criticizes its generality. Both
are right. The Act was intended to respond to criticisms of the New Deal Ideal, but in fact Congress also
wanted to avoid tough choices. Schoenbrod spends much time explaining (convincingly) that what appears
clear and specific in the Act is not. Id. at 756-77.
Worst Things First
	rade-off that it cannot avoid. EPA as technician is unwilling or unable to make
these policy choices that Congress ought to have made.\footnote{129}{Id. at 789-98. Schoenbrod goes on to point out that a goals statute is not easily fixed by the agency so long as Congress itself fails to confront—or wholly delegates the resolution of—the basic trade-offs and controversies involved in air pollution control. Id. at 798-803.}

Lack of policy control and broad reliance on agency expertise can also result in the squandering of scarce resources on costly, low-impact projects. Technocratic expertise is narrowing; it tends to leave everything outside of its particular focus blurry. A central theme of Ackerman’s studies of the implementation of the Clean Air Act and of the cleanup of the Delaware River in an earlier study was experts’ failure to see the forest for the trees. “Unfortunately, the EPA did not respond to the inept statute with creative use of its expertise, but treated NSPS as if it were merely a problem in applied sanitary engineering.”\footnote{130}{Id. at 798-803.} Good-but-vague statutory intentions led to a progression of bad, even perverse, policies from the perspective of broader environmental and economic concerns.\footnote{131}{Id. at 789-98. Schoenbrod goes on to point out that a goals statute is not easily fixed by the agency so long as Congress itself fails to confront—or wholly delegates the resolution of—the basic trade-offs and controversies involved in air pollution control. Id. at 798-803.}

Others have suggested that the problem is deeper and that expertise is highly contingent.\footnote{132}{Id. at 789-98. Schoenbrod goes on to point out that a goals statute is not easily fixed by the agency so long as Congress itself fails to confront—or wholly delegates the resolution of—the basic trade-offs and controversies involved in air pollution control. Id. at 798-803.} Not only do experts lack the data upon which truly expert decisions would have to be based, but they are subject to many of the same weaknesses in judgment that other mortals are. Given inadequate information, they must guess, and their guesses are subject to bias.\footnote{133}{Id. at 789-98. Schoenbrod goes on to point out that a goals statute is not easily fixed by the agency so long as Congress itself fails to confront—or wholly delegates the resolution of—the basic trade-offs and controversies involved in air pollution control. Id. at 798-803.} Technocratic expertise, especially without an adequate informational foundation, is not itself an answer; therefore, it provides a poor justification for rejecting democratic policy control. Broad discretion merely amplifies the limitations in coping with complex regulatory problems.

4. \textit{The Historical Critique}

Finally, the skepticism is pragmatic: the technocratic model has, at least on significant occasions, led to regulatory failure. The post-New Deal period demonstrated that one problem with regulatory flexibility is that the agency may do nothing or very little.\footnote{134}{Id. at 789-98. Schoenbrod goes on to point out that a goals statute is not easily fixed by the agency so long as Congress itself fails to confront—or wholly delegates the resolution of—the basic trade-offs and controversies involved in air pollution control. Id. at 798-803.} Natural inertia aside, flexibility contributes to inaction in a number of ways. First, in an environment of scarce information,
the expert agency can always use uncertainty as an excuse to do nothing or to engage in endless introspective analysis. Second, flexibility can result in the "capture" of an agency by the very entities which the agency is supposed to regulate. Capture occurs primarily as a result of the agency's limited information and regulatory resources: the agency must rely on the industry for most of the information it receives, and the industry can field greater resources per target. Therefore, it is argued, the agency has a continuing incentive to "get along" with industry and to avoid confrontation, and this relationship develops into a close, symbiotic one over time. Captured agencies, as a result, no longer actively control their industries, but rather take little action or act to protect them. The present regulatory structure of Congress setting broad and often unworkable goals for EPA permits both Congress and the agencies to avoid real accountability for the lack of progress. The post-New Deal solution to stagnation caused by uncertainty, lack of direction, and capture is to establish specific goals and to mandate implementation. Congress must take control once again.

It is not a mere platitude to conclude that both the technocratic approach and its critiques have considerable merit. If, therefore, Part I demonstrated the importance of thoughtful priority setting, then Part II demonstrates that priorities must be set in the context of a regulatory structure that provides sufficient flexibility for the agency to exercise its specialized knowledge and experience, yet demands clear congressional guidance on policy and productivity.

III. Restructuring Toxic Substances Control

In this Part, I suggest a new structure for toxic substances regulation, founded on the two basic propositions so far advanced: that the fundamental problem in regulating toxic substances is scarcity of information and other resources, which demands careful priority setting (Part I); and that the appropriate allocation of control over toxics policy must recognize EPA's managerial capacity and expertise, but also demand clear congressional guidance in establishing principles for priority setting (Part II). Policy control of EPA should not come from aggressive judicial review of opaque congressional standards, based on marginally relevant criteria such as burden of proof and substantiality of

135. See Flournoy, supra note 12; Latin, Good Science, supra note 35, at 126-34; Guruswamy, supra note 10, at 482.
136. See Stewart, Reformation, supra note 66, at 1682-83, 1684-87; SUNSTEIN, RIGHTS REVOLUTION, supra note 68, at 98-100. Post-New Deal criticism of this phenomenon included BERNSTEIN, supra note 103, at 74-95.
Worst Things First

inevitably uncertain evidence. The essence of my proposal is that EPA should be granted considerably greater flexibility in managing individual toxic hazards that present a real risk, but that Congress should guide its overall toxics program by requiring EPA to prepare and follow a plan that describes the regulatory actions it plans to take in the next few years, the order in which it plans to take them, and the reasons for its planned course of action. Under this approach, Congress would mandate that the plans have certain characteristics and priorities (for example, greatest short-term risk reduction for least cost, carcinogens first, or occupational exposure last). This Part begins with explanations of three analytical frameworks that underlie the proposal. The proposal is then described. Finally, each part of the proposal is analyzed separately.

A. Analytical Frameworks and Terminology

1. Predicates and Targets

In instructing an agency to take substantive action, Congress must describe the set of circumstances under which the agency is authorized to exert regulatory control. For toxic substances these are the existence or potential existence of a risk to human health presented by a chemical or activity. These circumstances can be thought of as the trigger or threshold; I will use the term “predicate.” The predicate can be more or less stringent and more or less specific. The Federal Trade Commission Act, for example, is an open-ended authorization for the FTC to correct “unfair trade practices.” The Toxic Substances Control Act (TSCA), in contrast, requires EPA to make three very specific findings—a potential risk, a data gap, and the utility of testing to fill the gap—before it can impose the relatively limited requirement of chemical testing.

The predicate is the set of circumstances that must exist before the agency takes action. Congress then must define the state of affairs that it wishes to exist after the agency has taken action. The latter is the goal of the statute;

138. For a detailed discussion of the negative effects of a substantial evidence standard in toxics regulation, see Applegate, supra note 12, at 325-30; see also Dorfman, supra note 99, at 26-27 (arguing that EPA should be able to “arrive at decisions with less documentation and review than is now required of it”).
139. See text accompanying notes 378-83 (suggesting possible ranking criteria).
142. In the Benzene decision, the plurality opinion reached to the definition of “health and safety standard” in the Occupational Safety and Health Act to demand that the agency make a threshold determination that a risk exists in the unregulated workplace and that it is “significant.” See Benzene, 448 U.S. 607, 639-46, 662 (1980) (plurality opinion); see also Natural Resources Defense Council v. EPA, 842 F.2d 1146 (D.C. Cir. 1987) (Vinyl Chloride) (following the Benzene analysis).
I call it the "target." The target defines the extent to which a particular risk is to be reduced. The predicate helps the agency to identify the appropriate subjects of its attention and also protects regulated entities by ensuring that the agency does not impose large costs without justification. The target, likewise, protects public health by ensuring that when the agency acts it does so with sufficient vigor. The target also provides the terms, however vague, of the ultimate trade-off between risk and cost.\footnote{Wilson and Crouch advocate the use of risk assessment "to select targets for regulation and to decide how stringently to control the various sources that contribute to a particular problem." Wilson & Crouch, supra note 70.}

Congress often uses the same level of risk for both predicate and target. In TSCA, unreasonable risk is a threshold for action and the level below which the risk must be reduced:

If the Administrator finds that there is a reasonable basis to conclude that the manufacture . . . , use, or disposal of a chemical substance . . . presents or will present an unreasonable risk of injury to health or the environment, the Administrator shall by rule apply one or more of the following requirements to such substance . . . to the extent necessary to protect adequately against such risk using the least burdensome requirements: . . . \footnote{The dichotomy between predicate and target is illustrated in the Benzene case, the leading Supreme Court case on toxic substances regulation. The plurality’s finding that the target risk level of the Occupational Safety and Health Act was greater than zero risk was well supported, but its conclusion that the Act required a predicate finding of a "significant risk" was far more tenuous. The plurality forthrightly conceded that its motivation was to limit OSHA’s power to impose huge control costs. See Benzene, 448 U.S. at 607.}

This provision clearly separates the predicate finding of "unreasonable risk" in the first clause from the requirement of sufficient stringency "to protect adequately against such risk" (in other words, making the risk "reasonable") in the second clause. By conflating the two under the idea of reasonableness, Congress hoped to "finesse a [target]-setting problem by getting agreement on what was thought to be an easier notion."\footnote{Daniel Byrd & Lester B. Lave, Significant Risk is Not the Antonym of De Minimis Risk, in DE MINIMIS RISK 54 (Chris Whipple ed. 1987) [hereinafter Byrd & Lave, Significant Risk].} As a result, TSCA fails to recognize the different goals of identifying hazards and regulating them.

2. \textit{The Regulatory Process}

Broadly speaking, regulatory action occurs in four phases.\footnote{See Applegate, supra note 12, at 267, 285-94 (discussing information needs of each phase). This description is based most closely on rulemaking, the dominant procedural mode of the toxics statutes.} First, hazard identification establishes the universe within which the remainder of the process operates. The agency must initially identify and define the hazards which
potentially require a regulatory response under the terms of the underlying statute. For toxic substances, this includes the identification of chemicals that are likely to be carcinogens, regardless of toxic potency.\textsuperscript{147} Second, an agency must allocate its resources by setting priorities for regulatory action among the hazards it has identified as within the congressional mandate. Ideally, of course, this phase would involve an exhaustive assessment of risks and other factors.\textsuperscript{148} However, the resources that this would require are so extravagant that agencies set priorities with incomplete information. Third, the agency must choose the appropriate regulatory response. It must determine the level of risk reduction (stringency of control measures) that it wishes to achieve. Unlike priority setting, this cannot be accomplished without a fairly detailed assessment of health effects, technology, and cost. Fourth, the agency must enforce the standards it sets.\textsuperscript{149}

Hazard identification corresponds to the predicate determination, and regulatory response corresponds to the target level of risk. From this perspective, the reason that hazard identification and regulatory response are the traditional locations for exercising congressional control is quite apparent. The predicate and target are the two elements that Congress must specify if the agency is to have any idea of what it is expected to do, but it can leave priority setting and enforcement to agency discretion. Acknowledging this, the courts treat priority setting as a type of enforcement (prosecutorial) discretion, and they accord agencies great deference in both.\textsuperscript{150}

3. Risk Levels

For the purposes of either a predicate or a target, the possible regulatory risk levels form a spectrum from zero to 100 per cent risk, that is, from absolute safety to actual harm. In view of the impracticality of either extreme, the task is to find an appropriate middle level of risk.\textsuperscript{151} The essential goal is to

\textsuperscript{147} See Graham, supra note 60, at 142-44 (listing under Clean Air Act).
\textsuperscript{148} See Russell & Gruber, supra note 47, at 287-88 (recognizing this sequence and advocating early use of quantitative risk assessment). Early use of quantitative risk assessment also causes delays in reaching the standard-setting phase, for which EPA has been criticized. See GAO, DELAYS IN EPA'S REGULATION OF HAZARDOUS AIR POLLUTANTS 3-4, 17-18 (1983) [hereinafter GAO, DELAYS].
\textsuperscript{149} These phases are not, of course, neatly compartmentalized. Setting a low priority on a chemical may mean that the agency will not address it in the foreseeable future, and that is the equivalent (for the time being) of setting an extremely loose standard. Likewise, placing a high priority on a chemical may encourage the agency to set a highly stringent standard for it. However, for analytical purposes it is helpful to distinguish the various purposes for which an agency collects information and for which legal mandates are imposed.
\textsuperscript{150} See, e.g., Heckler v. Chaney, 470 U.S. 821, 831-32 (1985). This is discussed further in Part IV(B) infra.
\textsuperscript{151} See supra text accompanying notes 15-42.
encourage EPA to concentrate on real risks, those of sufficient seriousness to justify the expenditure of significant social resources.\textsuperscript{152}

The nonzero levels range as follows, very roughly from most to least protective of human health:\textsuperscript{153}

- A \textit{de minimis risk} standard excludes from regulatory action only trivial risks;

- An \textit{unreasonable risk} standard is higher than a de minimis standard and recognizes a compromise between safety and cost;\textsuperscript{154}

- A \textit{near-unreasonable risk} standard is described by its authors, Cross, Lave, and Byrd, as "discernible risk." It denotes a risk large enough that actual harm could in theory be detected in a population of the size actually exposed to the chemical;\textsuperscript{155}

- A \textit{lowest-feasible risk} standard sets the permissible level of risk based on the technological capacity of the relevant industry to reduce exposure. It is usually but not necessarily less stringent than the above risk-based standards;

- A \textit{cost-effectiveness risk} standard considers cost to the extent of choice among alternative methods for achieving a fixed level of safety;

\textsuperscript{152} The courts, too, emphasize "real risks." "[T]he only question is whether a reasonable man having the knowledge and experience to be expected of the chief engineer of the Wagon Mound would have known that there was a real risk of the oil on the water catching fire in some way ...." Overseas Tankship (U.K.) Ltd. v. Miller Steamship Co. (1967) 1 A.C. 617 (Wagon Mound (No. 2)) (opinion of Lord Reid for the Privy Council) (discussing proximate cause). The D.C. Circuit recently urged EPA not to require expensive cleanup of a Superfund site where it was unclear whether the site "pose[d] any real risk to the public." B & B TriTech, Inc. v. EPA, 957 F.2d 882 (D.C. Cir. 1992).

\textsuperscript{153} See Cross, Cancer, supra note 6, at §4 (spectrum of zero risk, significant risk, cost-benefit balancing, feasibility); Lowrance, supra note 117, at 78-84; Graham et al., supra note 6, at 96-108 (describing a spectrum of absolute safety, lowest feasible risk, elimination of significant risk, balancing costs and health benefits, and free market); Lave, Strategy, supra note 35, at 19-25 (identifying eight "frameworks"—market regulation, no-risk, feasibility based, risk-risk (i.e., comparative risk), risk-benefit, cost-effectiveness, regulatory budget, and benefit-cost); Rodgers, Guerilla Decisionmaking, supra note 35, at 201-14 (cost oblivious, cost sensitive, cost effective, cost-benefit); Thomas O. McGarity, Media-Quality, Technology, and Cost-Benefit Balancing Strategies for Health and Environmental Regulation, 46 L. & CONTEMP. PROBS. 159 (1983) [hereinafter McGarity, Balancing Strategies] (describing a spectrum of zero-risk, unreasonable or significant risk, cost-benefit, and feasibility statutes). Market-based risk levels are not discussed here, as they are an alternative to traditional regulation and beyond the scope of this Article.

\textsuperscript{154} See Byrd & Lave, Narrowing, supra note 6, at 96-98; Byrd & Lave, Significant Risk, supra note 145, at 42-44. Byrd and Lave take issue with those who suggest that unreasonable and de minimis risk are antonyms—that is, that the terms simply describe being above or below a particular level of risk. For examples of the terms being used in this way, see U.S. v. General Motors Corp., 518 F.2d 420, 438 n.84 (D.C. Cir. 1975); Monsanto Co. v. Kennedy, 613 F.2d 947, 954-55 (D.C. Cir. 1979); Proposed Ban on the Use of Methylene Chloride as an Ingredient of Aerosol Cosmetic Products, 50 Fed. Reg. 51,551, 51,557 (1985) (issued by FDA).

\textsuperscript{155} See Cross et al., supra note 27, at 81-87 (advocating this risk level).
A cost-benefit justification standard requires that the benefits of the controls outweigh their costs. Followed literally, it would tolerate very risky levels of a very useful chemical.

These levels vary in stringency, precision, and information demands. The consideration of many factors makes for flexibility and more precise action, but also requires greater regulatory resources.

B. The Proposal

My proposal emphasizes broad priority setting and seeks to balance agency discretion and Congressional control. It has three parts. First, the unreasonable risk standard, which currently dominates toxic substances control, is relaxed as a predicate to regulatory action. It is replaced by the de minimis standard, which gives EPA greater flexibility and eases its informational burden. Second, reasonable (i.e., not-unreasonable) risk as the target of regulatory action is loosened to give the agency the ability to choose to regulate more or less stringently on the basis of relative cost-effectiveness or other considerations. A statutory design that accomplishes this separation of predicate and target can be found in the hazardous air pollutant control process of the pre-1990 Clean Air Act. That process required EPA first to list chemicals under a low threshold of risk (the predicate), and then required the automatic imposition of very stringent controls (the target). Separating predicate and target allows the agency the greatest flexibility to identify problems, and then to deal with them appropriately. The pre-1990 Clean Air Act failed, however, because it nullified the distinction between predicate and target by requiring that extremely rigorous controls follow automatically from listing. Since EPA could avoid unduly burdensome targets only by exercising discretion not to list in the first place, in most cases it took no action at all. The present proposal would maintain the separation of target and predicate by relaxing both.

156. EPA must list a chemical which "may reasonably be anticipated to result in an increase in mortality or an increase in serious... illness." 42 U.S.C. § 7412(a)(1) (1988).
157. Emission limitations must be set "at the level which... provides an ample margin of safety to protect the public health..." 42 U.S.C. § 7412(b)(1)(B) (1988).
158. See Graham, supra note 60, at 143-46 (distinguishing listing, requiring some action, and choosing stringency of emission control); see also Byrd & Lave, Narrowing, supra note 6 (distinguishing standards for deciding to regulate from "how far to go").

Shapiro and Glicksman studied these elements as constraints on agency action, which they characterize as limiting "regulatory discretion"—whether to regulate—and "legislative discretion"—if so, how to regulate. See Shapiro & Glicksman, supra note 50, at 822-23. They note that Congress has in many cases abandoned its traditional "discretionary" model of maximum regulatory and legislative discretion, in favor of models that control one or the other, or both. Deadlines, for example, control regulatory discretion (when to regulate) but preserve legislative discretion (how to regulate). Listing provisions like the Clean Air Act grant discretion in when to act but leave little discretion in stringency. Congress regularly attempts to control both. Id., at 824-40. Shapiro and Glicksman are critical of rigid constraints and recommend that the courts take a more active role in policing residual agency discretion.
To offset the greater flexibility given EPA for individual risks, and to ensure that EPA uses its flexibility wisely and aggressively, the proposal imposes controls on the agency's discretion in the otherwise unregulated priority-setting phase of the regulatory process. Setting priorities requires an agency to take a longer view than it does in applying a legal standard to a particular activity on a case-by-case basis. It encourages the agency to articulate a comprehensive ordering of its responsibilities and requires the agency to justify its actions in terms of that ordering. Setting priorities, in a word, requires planning, and requiring agencies to set priorities means requiring them to develop plans which form the basis for regulatory action.

The requirement to plan, however, is inadequate in itself. EPA already does plan on its own, but its planning lacks congressional direction. Therefore, Congress should require EPA to develop, in advance of regulating, a multi-year plan of action based on criteria established by statute. It must be more than a regularly updated list of existing priorities. The plan would instead describe the risk reduction activities that EPA proposes, identifying both the subjects of regulatory action and the order in which it plans to act. It would explain its choices in terms of the criteria Congress directed. For example, if the principal criteria were risk, cost, and cost-effectiveness, EPA might explain that it plans to order modest but inexpensive controls on chemical A to permit it to use other resources to pursue chemical B. Or it might choose to defer for the present action on chemical C—whose risks are fairly modest due to low, generally avoidable exposure—in favor of chemical D—whose risk is better understood and will consume far fewer information resources. Other factors may well be thought equally or more important, and Congress would have to specify the precise factors it deems relevant and their relative weight in setting priorities.

In terms of procedure, the plan would be subject to public comment before being finalized. In addition, it would be subject to judicial review (probably on an expedited basis) to ensure compliance with congressional guidance and minimum rationality. (It would also, obviously, be subject to Congressional revision by legislation.) Finally, the plan would be binding during the period of its operation. All regulatory actions would have to conform to the plan, except for emergencies or significant new information.

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159. See Fiorino, supra note 96, at 86, 88.
161. These exceptions are clearly manageable by the courts. Courts have routinely determined whether or not a workplace hazard is an emergency or not. See infra note 378 and accompanying text.
C. Analysis

1. The Regulatory Predicate: De Minimis Risk

The function of the predicate in any regulatory structure is to identify the hazards of concern to Congress. To ensure that important risks are not overlooked or summarily passed over because of uncertainty, the predicate risk level should be low and easily demonstrated. As a predicate or threshold for regulatory controls, the unreasonable risk standard has been a failure. It has imposed huge information demands, invited contention and judicial intervention, and thwarted regulatory action. A risk standard that tries to measure a complex and incompletely understood human health effect like cancer, that considers cost and several other factors, that must do all of this for each chemical that it wishes to control—and must do so with relative precision—makes enormous information and resource demands on the regulator. Where the agency has the burden of proof, the uncertainty of all of these elements leads to regulatory paralysis, especially in the face of a well-financed opposition and critical courts. The ineffectiveness of OSHA is legendary.  

In fifteen years TSCA has produced only a handful of rules and test rules, which the GAO attributes in part to the unreasonable risk standard. Deadlines for toxic water pollutants are still being litigated. The Superfund program is subjected to constant criticism for being big on cost and small on cleanup. The 1984 amendments to RCRA were a welter of deadlines designed to get the stalled program on its feet. Congress, exasperated by the almost complete lack of progress on air toxics in two decades, abandoned risk for technology-based standards in the 1990 amendments to the Act. The basic problem of toxic substances is an information problem. Information demands will always be high for toxic substances, but the unreasonable risk standard aggravates the problem by making the threshold almost unreachable.

The nonzero standard giving EPA the greatest predicate flexibility is de minimis risk. “[E]ssentially a threshold concept” in any event, de minimis risk makes any real risk fair game for some level of agency action without

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163. GAO, TOXIC SUBSTANCES, supra note 98; David Roe, Barking up the Right Tree: Recent Progress in Focusing the Toxics Issue, 13 COLUM. J. ENVTL. L. 275, 279 (1988).
166. See 42 U.S.C. § 7412 (1991); see also Cross, Beyond Benzene, supra note 24, at 11, n.49; GAO, DELAYS, supra note 148.
further proof of the seriousness of the problem. The place for balancing is in calibrating response, not in identifying the hazard at the beginning of the process. A good internal priority setting scheme would obviate the need to invoke de minimis risk, but if it fails, de minimis risk provides some assurance of minimally rational agency priorities by cutting off further consideration of a chemical that poses no real concern. Even if it were so inclined, the agency should not be permitted to spend scarce informational, agency, or social resources to remedy trivial risks. EPA has consistently found the need to use de minimis thresholds, and the courts have readily inferred the agency's power to ignore de minimis risk for just this reason. Thus, de minimis risk does not tie the agency to a particular value judgment and elaborate quantification, but it also does not allow the agency to act improvidently.

An authoritative numerical definition of de minimis risk does not exist, and achieving one is probably undesirable. Quantification of de minimis risk (say, at 1/1,000,000) would imply a degree of precision that is unrealistic and extremely expensive. Unquantified, however, de minimis is a widely accepted idea. It derives from a maxim that courts have applied in many contexts. It has been variously described as "trivial," "negligible," or "below regulatory concern." It is an absolute concept—very small risks, like being hit by a meteor—and also a comparative one—a small increase...
above background risk, for example, may be trivial.\textsuperscript{177} Agencies support de minimis exceptions as a way to avoid expending resources on the trivial,\textsuperscript{178} and courts are willing to infer from seemingly absolute environmental statutory requirements an unquantified de minimis threshold.\textsuperscript{179} Accordingly, a de minimis risk standard should provide flexibility at the predicate, assure at least minimal rationality in the selection of regulatory actions, and reduce the administrative costs of initially proceeding.

2. The Stringency of Control: Discernible Risk

a. The Dangers of an Inflexible Target

A rationalist axiom holds that a decisionmaker should have before it a sufficiently broad array of considerations, techniques, and risk levels to enable it to make efficient, sensible decisions.\textsuperscript{180} EPA therefore needs the flexibility to impose stringent controls on toxic substances, or not, as its overall plan dictates. (The Delaney Clause, which entirely bans any substance that is found to cause cancer in animals or humans, figures prominently in the technocratic demonology.\textsuperscript{181}) As previously described, the pre-1990 Clean Air Act failed to distinguish the separate functions of the target and predicate by making the stringent target level of regulation automatically follow the very low threshold for listing. As a result, it overregulated, especially in terms of absolute cost and of the opportunity cost of other regulatory activities.\textsuperscript{182} In many cases, it does

\textsuperscript{177} See Byrd & Lave, Narrowing, supra note 6, at 96.
\textsuperscript{178} See, e.g., Merrill, Delaney, supra note 20, at 9-41 (describing FDA’s efforts to apply a de minimis exception to the Delaney Clause); EPA Asks for Rehearing, Clarification on Mixture, Derived-From Rules, 22 Envr’t Rep. (BNA) 2175 (Jan. 24, 1992) (reporting that EPA is in the process of drafting a de minimis rule for certain RCRA provisions); FDA’s efforts under the Delaney Clause were rebuffed by the D.C. Circuit. The court recognized the sense and precedent for a de minimis rule, but it found that Congress intended the law to be “extraordinarily rigid.” Public Citizen v. Young, 831 F.2d 1108, 1111-12 (D.C. Cir. 1987), cert. denied, 485 U.S. 1006 (1988).
\textsuperscript{179} See, e.g., Alabama Power Co. v. Costle, 636 F.2d 323, 360-61 (D.C. Cir. 1979) (interpreting the Clean Air Act ambient air quality standards).
\textsuperscript{180} It is very important to be able to select from a variety of regulatory techniques—e.g., emission limits, required control technology, warnings, penalties, or marketable permits—but that is another subject. This Article considers only risk levels and the considerations that should go into their establishment.
\textsuperscript{181} See, e.g., Sunstein, Rights Revolution, supra note 68, at 88-89.
\textsuperscript{182} See Graham, supra note 60, at 145-46. Dwyer discusses in detail the reasons that the agency should be empowered to reinterpret the statute, despite its apparently clear cost-oblivious language. See Dwyer, supra note 74, at 282-315.

In the Vinyl Chloride case, supra note 142, the D.C. Circuit rejected EPA’s attempt to use feasibility (ultimately, a cost issue) to limit § 112 of the pre-1990 Clean Air Act. In response, EPA testily asserted that it was nearly impossible “to consider whether a risk is acceptable without at the same time considering benefits of the activity causing the risk, feasibility of control, or other factors that EPA (or anyone) would normally consider in deciding whether a risk was ‘acceptable.’” See National Emission Standards for Hazardous Air Pollutants, 40 C.F.R. §61 (1988); see also id. at 28,512 (emphasizing the broad spectrum of considerations appropriate, including cost and feasibility). Clearly, then, EPA wanted to have more discretion to consider cost than the D.C. Circuit was willing to provide. See Dwyer, supra, at 274.

313
not make sense to demand that the agency, having embarked on regulation of a particular substance, go all the way to making it "safe," regardless of the marginal cost. As a general rule, the marginal cost of control increases with the degree of control. Increasing incremental cost of control means that at some point increasing stringency becomes more expensive than it is worth in terms of lives saved—it is no longer cost-effective. The agency also loses the opportunity to concentrate its resources on other problems.

Overregulation, paradoxically, can also result in inefficient underregulation, which is in fact what happened under the Clean Air Act. EPA attempted (in sequence) to insert economic factors, to adopt a best available technology (BAT) standard, to rewrite the statute to accept feasibility, and finally to delay and review—all to avoid listing. One delaying tactic was to insist on excessive amounts of information before acting and to analyze the data endlessly, a grotesquely wasteful use of limited resources. In essence, EPA simply refused to list anything that it was not prepared in effect to ban. Not only did this shift attention away from the standard-setting process where the necessary risk-cost-benefit trade-offs could publicly be debated, it also meant that most hazardous air pollutants were not regulated at all (only seven standards were promulgated two decades after the original Clean Air Act was enacted). This result is perverse: aggregate pollution increased because the stringency required for each pollutant was too great. Finally, overregulation distorts the allocation of resources toward depth over breadth in coverage. There is always a trade-off between depth and breadth in tackling an area of regulation, but overly stringent standards ignore the very real possibility that breadth

183. See ACKERMAN ET AL., UNCERTAIN SEARCH, supra note 62, at 91 (giving data for water pollution control); Joyce P. Davis, The Feasibility of Establishing a De Minimis Level of Radiation Dose and a Regulatory Cut-off Policy for Nuclear Regulation, in DE MINIMIS RISK 145, 194 (Chris Whipple ed., 1987); Lave, Better Decisions, supra note 67, at 291 n.3.

184. See Lave, STRATEGY, supra note 35, at 19-20, 30, 86; GRAHAM ET AL., supra note 6, at 105; see also ACKERMAN ET AL., UNCERTAIN SEARCH, supra note 62, at 91-93 (discussing pollution-control cost curve).

185. See Dwyer, supra note 74, at 250-81; Graham, supra note 60, at 116-39; GAO, DELAYS, supra note 148, at 43-44. EPA itself has said as much. See EPA Hazardous Air Pollutant Strategy (Fourth Draft), reprinted in 13 ENV'T REP. (BNA) 1633 (Jan. 21, 1983).

186. See GAO, HAZARDOUS AIR POLLUTANTS, supra note 185, at 11, 17-18; Graham, supra note 60, at 116-23, 130-32; Dwyer, supra note 74, at 277-82. Merrill has noted the same tendency to overstudy a problem when faced with the stringency of the Delaney Clause. See Merrill, Delaney, supra note 20, at 76.

187. See CROSS, CANCER, supra note 6, at 104-07; Dwyer, supra note 74. Par another way, stringency at the target stage can overcome stringency at the priority-setting stage. GRAHAM ET AL., supra note 6, at 111-12.

188. See SUNSTEIN, RIGHTS REVOLUTION, supra note 68, at 91 (pointing out that even the most cost-oblivious statute can have cost injected through prosecutorial discretion).

189. John Mendeloff first documented this phenomenon at OSHA. See MENDELOFF, supra note 110; see also SUNSTEIN, RIGHTS REVOLUTION, supra note 68, at 106-07; GRAHAM ET AL., supra note 6, at 111-12; Cross et al., supra note 27, at 64-65.
might generate greater overall risk reduction.\textsuperscript{190} At the very least, EPA ought to consider this option.

Similarly, a mandatory best available control technology (BAT) target\textsuperscript{191} would be flawed. Its critics assert that while feasibility is a cost consideration, it is cost at the outer limits: any cost may be imposed as long as it is not prohibitive.\textsuperscript{192} Therefore, "[g]iven the immense task of protecting the environment on a limited public and social budget and given the large number of important problems that receive little attention, the waste of resources inherent in any strict BAT approach would seem unwise."\textsuperscript{193} In relative terms, too, BAT standards focus on the financial soundness of the industry (to a struggling industry, a relatively low control cost is prohibitive), creating irrational disparities in safety levels.\textsuperscript{194} This reveals a deeper flaw in the BAT approach: it is merely a surrogate, and not necessarily an accurate one,\textsuperscript{195} for the underly-

\textsuperscript{190} Mendeloff and Sunstein are most persuasive in cases of gross overregulation leading to gross underregulation, i.e., extremely stringent targets leading to no regulatory action. That outcome occurred under the pre-1990 Clean Air Act. Shapiro and McGarity strongly dispute the existence of the overregulation-underregulation paradox in the context of OSHA. See Sidney A. Shapiro & Thomas O. McGarity, Not So Paradoxical: The Rationale for Technology-Based Regulation, 1991 DUKE L.J. 729, 730-39 [hereinafter Shapiro & McGarity, Technology-Based Regulation].


\textsuperscript{192} See Ackerman & Stewart, Reforming, supra note 35, at 1335-40, 1359-62; Graham, supra note 60, at 138-39; see also LAVE, STRATEGY, supra note 35, at 131 (criticizing 90% across-the-board reduction in emissions by cars for failing to recognize differences in abatement costs among pollutants).

In 1984, OMB undertook a lengthy critique of the use of BAT in EPA's standards for air emissions of inorganic arsenic and radionuclides. It argued that BAT is too inflexible, principally because it fails to consider wide variations in the risk reduction effects of its application. See OFFICE OF MANAGEMENT AND BUDGET, EPA'S STANDARD-SETTING FOR TOXIC POLLUTANTS (1983), reprinted in 14 ENV'T REP. (BNA) 1594 (1984). OMB's alternative strategy was to set a mandatory marginal cost for control and apply it across the board. DeMuth Favors Sending Air Act Proposals to Congress, Working on New Cancer Policy, 13 ENV'T REP. (BNA) 1574, 1575 (Jan. 14, 1985). This idea has superficial appeal, since it addresses the marginal cost curve, but it suffers from the same rigidity as feasibility analysis. The only difference is that it sets the cut-off at a lower cost.

\textsuperscript{193} See Russel & Gruber, supra note 47, at 287. Other observers comment:

"A BAT strategy is inconsistent with intelligent priority setting. Simply regulating to the hilt whatever pollutants happen to get on the regulatory agenda may preclude an agency from dealing adequately with more serious problems that come to scientific attention later.

Ackerman & Stewart, Reforming, supra note 35, at 1337; see also Graham, supra note 60, at 138-40. But see Latin, Good Science, supra note 35, at 106-07.


\textsuperscript{195} See Ackerman & Stewart, Reforming, supra note 35, at 1353 (criticizing BAT standard for focussing on "arcane" questions of technology); ACKERMAN & HASSLER, supra note 51, at 103 (criticizing EPA's overly technical approach); Christopher H. Schroeder, In the Regulation of Manmade Carcinogens, If Feasibility Analysis is the Answer, What is the Question, 88 MICH. L. REV. 1483, 1488-1504 (1990) (reviewing CROSS, CANCER, supra note 6) [hereinafter Schroeder, Manmade Carcinogens].
ing trade-off of health versus cost. BAT standards can be justified only by lesser demands for information and other resources, without which there seems little reason to depart from health concerns. Technology-based regulation may well be a realistic and effective second-best solution, and EPA would be free to adopt it in a particular case under the proposal’s flexible target, but it should not be the target for all toxic risks.

b. Discernible Risk as the Presumptive Target

As with the predicate, placing some limit on agency target-setting discretion seems desirable. Instead of being the extent to which a risk must be reduced, the target should be “the maximum extent to which a selected risk should be reduced.” The target, then, would be presumptive in the sense that it is aspirational. First, a fixed target is prey to the very demands for precision that have plagued unreasonable risk. Under unreasonable risk, the agency must prove that it has met and not exceeded the target. Even a presumptive target, of course, leaves open the possibility of challenge based on excessive stringency. This seems unlikely to occur, but to the extent that it does, the risk of such litigation is outweighed by a second benefit of a presumptive target: a presumptive target gives the agency direction and a mandate to take vigorous protective action. At the target stage, total flexibility raises the possibility of underregulation which endangers public health. A presumptive target indicates the level of risk that in Congress’ judgment appropriately balances risk and cost, all other things being equal. It is not utopian to suggest a long-term goal of largely eliminating involuntary toxic risks, and that goal should not be lost. In the meantime, however, scarce resources require a thoughtful, incremental approach.

The presumptive target should be “discernible risk,” the level of risk that scientific evaluation concludes would result in actual injury to the group

196. Shapiro and McGarity argue that there is a normative, moral imperative “that workers do have a right to insist that employers ‘do the best they can’ to protect human health.” Shapiro & McGarity, Technology-Based Regulation, supra note 190, at 743-44.


199. Baram, supra note 70, at 3 (emphasis added) (using the term “risk limit”).

200. “Presumptive” ought not be construed to impose upon EPA a strict burden of proving that the target should not be met. See Environmental Defense Fund v. EPA, 465 F.2d 528, 539 (D.C. Cir. 1972) (holding that EPA has the burden of showing that a pesticide registration proposed for cancellation after a lengthy hearing should not also be immediately suspended).
Discernible risk denotes the risk level at which the lifetime individual risk of death as a function of the potential number of deaths (basically, the size of the exposed population) is sufficiently high that a statistically significant elevation in risk above background could be observed. It is a real risk: “a risk that is large enough to be observed is nontrivial and deserves attention.” To require actual observation of an injury—to say nothing of being able to trace it back to the chemical in a particular case—is highly unrealistic given the present state of the science of epidemiology and the lack of adequate data; consequently, the effect must be observable in principle only. Discernible risk is not particularly forgiving in terms of information demands, though it does a far better job of coping with the uncertain nature of the relevant data than does unreasonable risk. Nevertheless, its data demands are ameliorated by its use in the context of a target—EPA need not prove that it has achieved this specific level of risk reduction.

Discernible risk is particularly appropriate in the context of allocation of scarce resources. It accentuates the number of persons actually exposed to a substance, rejecting the dominance of theoretical individual risk as the basis for regulation. “Identifying any risk, especially significant risk, has its basis in the physical concept of a manifest, observable, or detectable event.” When control resources are limited, risks that pose a real likelihood of actual harm (though not to an identifiable individual) have a much stronger claim on society's resources than inchoate personal risks. The D.C. Circuit recently urged EPA to remove from the National Priorities List a Superfund site because, although it met the legal requirements for placement on the National Priorities List, there remained doubt that the site “poses any real risk to the public.” In addition, discernible risk is essentially a comparative tool: statistical significance is necessarily an operation that tries to sort excess from background.

201. See Cross et al., supra note 27, at 83-85; see also Byrd & Lave, Significant Risk, supra note 46, at 48.

202. The greater the exposed population, the greater the ability to discern small, statistically significant increases in risk. Similarly, the more that the disease is a signature for a particular chemical, the easier it will be to find causality, regardless of population. See Cross et al., supra note 27, at 83-84.

203. See Byrd & Lave, Narrowing, supra note 6, at 96-97; see also Cross et al., supra note 27, at 83-85.

204. An effect is observable in principle if it is large enough that it could be observed if the necessary data were available. See Byrd & Lave, Significant Risk, supra note 46, at 48; Byrd & Lave, Narrowing, supra note 6, at 96.

205. See Cross et al., supra note 27, at 81.

risks, and a discernible risk is large enough to be realistically measurable against other risks.

3. Directed Priority Setting

It only remains to supply some way to structure the choice among real risks and the decision to deviate from the presumptive target. Clearly, the tension between discretion and direction cannot be resolved through the simple choice of the "right" predicate or target level of risk. No simple set of words—like "unreasonable risk"—can accomplish this balance. As long as we focus on the predicate and the target, we are faced with the discretion-direction dilemma discussed above. We must therefore look elsewhere in the regulatory process. The present proposal already decrees discretion for predicate (hazard identification) and target (regulatory response), so priority setting and enforcement are left as possible locations for exercising congressional control. Enforcement is clearly inappropriate: it comes at the end of the whole process, so control at that point would be inefficient at best and probably wholly ineffective. Priority setting, on the other hand, is ideally located to provide direction for the rest of the process. Even more importantly, priority setting directly

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207. Byrd and Lave rightly point out that, at the individual level, no excess death can be considered "trivial," but that perspective would require regulation (without more) of one excess death in a population of a million which is already exposed to many, many other causes of death. See Byrd & Lave, Narrowing, supra note 6, at 96.

208. See Byrd & Lave, Significant Risk, supra note 46, at 48. Byrd, Lave, and Cross emphasize the priority-setting aspect of discernible risk. See Cross et al., supra note 27, at 85 ("On the other hand, a maximum of one case per year in a population of 260 million is negligible and regulation of such risks would waste important resources in controlling substances that present little or no risk." (emphasis added)); see also Byrd & Lave, Significant Risk, supra note 46, at 54-57 (making observable risk part of a priority-setting process based on cost-effectiveness); Byrd & Lave, Narrowing, supra note 6, at 93, 99 ("We propose that priorities be set by first giving attention to the situations estimated to cause the greatest number of deaths.").

This account does not reflect all of the dimensions of the discernible risk concept. Its authors emphasize the importance of considering other "currencies" of risk such as average lifetime risk and maximum lifetime risk, as well as degree of scientific certainty, presumed accuracy of exposure estimates, context, and type of restriction contemplated. See Cross et al., supra note 27, at 73-75, 86-87. Its application, in consequence, depends on the availability of adequate quantification of risk and of data concerning the various currencies of risk and other relevant factors. See Byrd & Lave, Narrowing at 100. Since the authors of discernible risk intend it to be a minimum level for post-regulation risk and not a presumptive target, this complexity may be justified. For our purposes, however, a simplified version must suffice.

209. The target-setting aspect tends to overwhelm priority-setting. See GRAHAM ET AL., supra note 6, at 111-14 ("Only the significant risk doctrine addresses priority setting and standard setting simultaneously, and it does so . . . in a highly elusive way." Id. at 114).

210. Shapiro and Glicksman present four models of delegated power, but they are variations on flexibility and control in these two phases only. See Shapiro & Glicksman, supra note 158, at 821-45. Likewise, Stewart's four alternative responses to inactive agencies focus on the standard-setting stage: deregulation, a revived nondelegation doctrine, structuring agency discretion, and providing substantive rules for exercising agency discretion. See Stewart, Reformation, supra note 53, at 1688-711. His third alternative, structuring administrative discretion by requiring "that it be exercised in accordance with consistently applied general rules," could be applied outside of the identification and response phases. While Stewart dismisses this approach as impractical in the context of standard setting, id. at 1698-1702, it is worth another look.
Worst Things First

addresses allocation of scarce resources, the fundamental problem that regulators face. Control of priority setting can force public debate on critical allocation decisions, it can improve the efficiency and effectiveness of the regulatory regime, and it can reduce informational demands.

a. Scarcity

Confronted with more regulatory demands than they can possibly manage, regulators must choose which risks to address first, which later, and which not at all. Regardless of differences in the actual criteria they advocate, virtually all observers of actual regulatory programs agree that a consistent, systematic approach to priorities is essential to good regulation. At a minimum, regulators must avoid paralysis in the face of competing demands for attention. Without clear priorities, they are likely to shift focus constantly, disperse their forces, and fail to accomplish much. They may ignore long-term problems in favor of passing concerns, or approach serious health risks incrementally, narrowly, or haphazardly. The important hazard ignored at the outset may never be revisited. From this perspective, simply being systematic about priorities is as important as anything else in managing very limited resources.

Several commentators, in fact, advocate early review of agency plans for various considerations. Lack of authoritative guidance when faced with scarcity and conflicting goals leaves the agency with nothing but its expertise, which by itself is an uncertain guide.

b. Legitimacy

The current approach to priority setting is justly criticized as unaccountable. Congress imposes tasks, goals, standards, and deadlines that it knows EPA and industry cannot meet, so the inevitable choices among risks are conducted outside of the formally established regulatory process and without meaningful

211. For studies of specific programs, see Merrill, Cancer-Causing Chemicals, supra note 38, at 111-14; Shapiro & McGarity, supra note 6, at 15-20 (OSHA); Dorfman, supra note 99, at 16-17 (FIFRA); Merrill, CPSC Regulation, supra note 6, at 1304-09, 1360-65; GRAHAM ET AL., supra note 6, at 34-37, 200-01 (studies of regulation of benzene and formaldehyde); see also CROSS, CANCER, supra note 6, at 138-42; Byrd & Lave, Significant Risk, supra note 46, at 54-57; Lave, Strategy, supra note 35, at 6, 129.

212. See Shapiro & McGarity, Reorienting OSHA, supra note 6, at 18-20.

213. “Muddling through,” or trial and error, is not an appropriate response to toxic substances. See Gillette & Krier, supra note 42, at 1107-08; Guruswamy, supra note 10, at 507-08; Diver, supra note 54; see also Lave, Strategy, supra note 35, at 86 (global view); Fischhoff et al., supra note 60, at 54, 154-55 (importance of comprehensiveness).

214. See Floumoy, supra note 12, at 49 (pre-regulation look at plans); id. at 52 (principles or values); see also Ralph A. Luken & Lyman H. Clarke, How Efficient Are EPA’s Regulations?, 20 Envtl. L. REP. (Envtl. L. Inst.) 10419, 10423 (1990) (strategic planning).

215. See Fortuna, supra note 126, at 884-89 (congressionally established presumptions intended to cure problem of too much discretion under pre-1984 RCRA).
Exercising control over priority setting would force Congress and administrative agencies to face up to the real problem of scarcity and to make the hard choices among risks to regulate. Instrumentally, explicit consideration reveals conflicts among goals and exposes the allocational issues and value choices to public debate, both of which improve analysis.

Beyond improved decisionmaking, explicit consideration of priorities is essential to the legitimacy of agency choices in a democratic society. Allocational choices are ultimately Congress' to make. They involve fundamental trade-offs, as Justice Rehnquist's Benzene concurrence pointed out. They are in the broadest sense political choices about winners and losers. If Congress does not make these choices itself, it is incumbent upon it to provide standards and to mandate a process that will permit oversight. Judge Wald has remarked:

Most reformers . . . assume that Congress is incapable of addressing these issues when crafting new statutes. The fact remains, however, that Congress is the primary lawmaker and the most logical source of general principles . . . .

Planning can serve this function very well because it combines "elements both of rational-comprehensive and of incremental decision making" by permitting analysis of options on the basis of technocratic principles within a framework of congressional commands. Under post-New Deal statutes "the agency had to define its goals in a highly visible way and recognize that Congress would call it to account by a specific date if it found the agency's performance unsatisfactory." This builds public understanding and confidence in the decisions which affect lives and health. Moreover, a systemat-

216. See Dwyer, supra note 74, at 284; Schoenbrod, supra note 115, at 789; Tomlinson, supra note 38, at 201-04.
217. Several commentators have emphasized this virtue of an explicit priority-setting regime. See ACKERMAN & HASSLER, supra note 51, 1569-70; CROSS, CANCER, supra note 6; Lave, Environmental Regulations, supra note 123, at 161-62; see also Dwyer, supra note 74 (symbolic legislation fails to face up to hard issues); Schoenbrod, supra note 115 (goals statutes likewise fail).
218. See Fiorino, supra note 96, at 86-87. McGarity catalogs this and other virtues of regulatory analysis in Regulatory Analysis, supra note 61, at 1258-71.
219. See Benzene, 448 U.S. 607, 671 (1980).
220. See Ackerman & Stewart, Reforming, supra note 35, at 1355, 1362; Guruswamy, supra note 10, at 533; Thomas O. McGarity, Risk and Trust, 16 ENVTL. L. REP. (Env'l L. Inst.) 10201-04 (1986) (discussing role of quantitative risk assessment); see also LITAN & NORDHAUS, supra note 41, at 147, 174-77 (expertise does not answer fundamental political trade-offs).
222. See Fiorino, supra note 96, at 83, 88 (discussing risk-based planning).
223. See ACKERMAN & HASSLER, supra note 51, at 9 (but expressing doubts that this occurs in practice).
would call it to account by a specific date if it found the agency’s performance unsatisfactory.”

This builds public understanding and confidence in the decisions which affect lives and health. Moreover, a systematic, coherent approach provides an important indication that the laws are being applied fairly and evenhandedly.

The National Environmental Policy Act of 1969 (NEPA) illustrates the point. Concededly, NEPA only indirectly requires planning among projects by forcing an agency to pick and choose among the more destructive projects likely to attract opposition. Nor does it require reordering of agencies’ substantive priorities to favor environmental protection. Nevertheless, it is a model of open decisionmaking in the technocratic tradition. Public disclosure of information sufficient to permit a reasoned choice and the iden-

223. See ACKERMAN & HASSLER, supra note 51, at 9 (but expressing doubts that this occurs in practice).
225. See Stewart, Reformulation, supra note 53, at 1698-1701 (concluding that formal justice in the sense of specific rules is not obtainable).

For analyses of the effect of NEPA litigation on projects, see COUNCIL ON ENVIRONMENTAL QUALITY, ENVIRONMENTAL QUALITY: TWENTIETH ANNUAL REPORT 391-99 (1990) (collecting data on NEPA litigation through 1989); TAYLOR, supra, at 351-61 (analyzing earlier CEQ data for delay).
229. See Methow Valley, 490 U.S. at 349-50; Stryker’s Bay Neighborhood Council, Inc. v. NRDC, 435 U.S. 519, 558 (1978) (per curiam). At most, the substantive policies themselves require a balancing process that includes consideration of environmental factors. See Baltimore Gas & Electric Co. v. NRDC, 462 U.S. 87, 97 (1983); Calvert Cliffs, 449 F.2d at 1109.
230. See McClary, Regulatory Analysis, supra note 61, at 1260-62; Diver, supra note 54, at 414-17; see generally TAYLOR, supra note 227 (advocating the adoption of “science-like” procedures to improve environmental decisionmaking). But see Paul J. Culhane, NEPA’s Impacts on Federal Agencies, Anticipated and Unanticipated, 20 ENVTL. L. 681, 684-702 (1990) (contending that the NEPA process undermines technocratic, rationalistic decisionmaking by overemphasizing planning at the expense of operations and by inviting appropriate public intervention); Stewart, Observations on the Transformation of the Forest Service: The Effects of National Environmental Policy Act on U.S. Forest Service Decision Making, 20 ENVTL. L. 703, 710-11 (1990) (taking same position as Culhane, and arguing that public intervention is undesirable).

Rabin suggests that NEPA departed from the New Deal tradition of agency discretion by demanding consideration of specific items. Rabin, supra note 51, at 1287. He is right about discretion, but the cure offered is simply more analysis in the technocratic tradition—NEPA does not specify results. Several commentators are skeptical of NEPA’s effectiveness for precisely this reason: technocratic process is fine, but it does not in itself assure environmentally sound decisions. See Joseph L. Sax, The (Unhappy) Truth About NEPA, 26 OKLA. L. REV. 239, 239, 245-48 (1973) (focusing on NEPA and its application to airport development); Culhane, supra, at 682-84 (noting the inconsistencies between rationalist decisionmaking and public participation).
231. See 30 C.F.R. § 1502.1 (purpose of EIS); see also California v. Block, 690 F.2d 753, 767 (9th Cir. 1982).
and (2) give legitimacy to the decisionmaking process. First, NEPA's Environmental Impact Statement (EIS) requirement is a "springboard for public comment," both to correct and supply information. Therefore, participatory planning and priority setting are means of "conveying practical information instrumental to a technocratic choice." Second, planning that is accessible to and solicits the contributions of the public and its representatives provides political legitimacy for the regulatory process. It enhances "democratic" legitimacy by encouraging participation by any interested individual, group, or business. It also enhances "republican" legitimacy by creating an open process that is subject to review by the constitutional branches of government: executive control by the Council on Environmental Quality and EPA, congressional oversight to ensure that Congress' policies are actually being implemented or to alter policies that Congress decides are unwise, and judicial review to ensure minimal rationality and consistency with legislative command.

Congress contemplated that the Impact Statement would constitute the environmental source material for the information of the Congress as well as the Executive, in connection with the making of relevant decisions, and would be available to enhance the enlightenment of—and by—the public.

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234. See Methow Valley, 490 U.S. at 349.

235. See California v. Block, 690 F.2d 753, 770-72 (9th Cir. 1981); ROBINSON, supra note 103, at 130; see also William F. Pedersen, Jr., Formal Records and Informal Rulemaking, 85 YALE L.J. 38, 59 n.82 (1975) (pointing out that different groups often have better knowledge of different aspects of a regulation).

236. See ROBINSON, supra note 103, at 130-21; see also McGarity, Regulatory Analysis, supra note 61, at 1261-62 (discussing importance of information gathering to analytical rationality); PETER L. STRAUSS, AN INTRODUCTION TO ADMINISTRATIVE JUSTICE IN THE UNITED STATES 168 (1989) ("Most thoughtful observers would concede that the problems of fact-finding in these portentous matters, typically complicated by issues of modelling, scientific judgment, and projection, require a public procedure of some fullness and visibility.").


237. See ROBINSON, supra note 103, at 131-36; Magat & Schroeder, supra note 227, at 323-24; Culhane, supra note 229, at 701-02 (praising informational contributions of NEPA).


239. NRDC v. Morton, 458 F.2d 829, 833 (D.C. Cir. 1972) (footnote omitted). NRDC v. Morton held that the Department of the Interior was not limited to alternatives within its power without further legislation or the action of other agencies, because such alternatives are "within the purview of both Congress and the..."
The Supreme Court has recognized that "the broad dissemination of information mandated by NEPA permits [both] the public and other governmental agencies to react to the effects of a proposed action at a meaningful time."\(^{240}\) Ultimately, where congressional control over the agency is clear, an electorate that feels strongly that its values are not reflected in administrative action can make its views known at the polls.

c. Efficiency

To the extent that inefficiency results from failure to allocate scarce resources wisely, priority setting is the logical place to encourage efficiency. At the most basic level, appropriate allocation requires a kind of regulatory triage distinguishing emergencies from the routine, and the routine from the marginal. At the higher end of the risk spectrum, all of the toxics statutes expressly require the agency to take special action where imminent threats are posed.\(^{241}\) Not everything is or should be treated as a crisis. At the lower end, de minimis (as opposed to zero) risk sets priorities between risks of regulatory concern and those that are not.

A more sensitive priority-setting system allows EPA to consider additional factors and degrees of risk, and to compare risks with one another. The meaning of "worst" could be refined by emphasizing the likely number of actual injuries\(^{242}\) or the type of toxicity.\(^{243}\) EPA must decide where its efforts will have the most effect to avoid squandering limited funds on relatively minor or intractable problems. Put another way, EPA should first address the "most

\(^{240}\) See Marsh, supra, at 371; see also Methow Valley, 490 U.S. at 349 (1989).


\(^{242}\) OSHA's 1980 Cancer Policy rejected quantitative risk assessment as a basis for regulation of non-threshold toxics but accepted it for setting priorities. Even so, it placed the number of persons exposed and levels of exposure at the head of its list of priority factors. See 29 C.F.R. § 1990.32 (1991). Only where adequate risk data existed was it factored in. See Position on Use of Risk Assessment, Cost Effectiveness Analysis, Benefit-Cost Review in Setting Standards for Toxic Air Pollutants, 14 Env't Rep. (BNA) 1594-95, 1605-07 (Jan. 13, 1984); Identification, Classification and Regulation of Potential Occupational Carcinogens, 45 Fed. Reg. 5002, 5256 (1980) (issued by OSHA); see also Cross et al., supra note 27, at 81-83 (emphasizing importance of predicted actual injury).

\(^{243}\) TSCA gives testing priority to chemicals "known to cause . . . or which are suspected of causing . . . cancer, gene mutations, or birth defects." 15 U.S.C. § 2603(e)(1)(A)). Likewise, EPA sets reportable quantities for carcinogens under CERCLA §§ 9602(a) and 9603 based solely on toxicity. See Reportable Quantity Adjustments, 40 C.F.R. § 117 (1991) (issued by EPA); see also Bruce N. Ames et al., Ranking, supra note 29, at 271 (using animal cancer tests to develop a numerical index as a guide to priority setting).
serious solvable" problems.244 Even without perfect information, a comparative process permits EPA to choose the most appropriate targets from a wide selection.

d. Information

Efficiency has its own risks, one of which is the demand for excessive amounts of information. Priority setting has implications for information requirements in two ways: the resource demands of the regulatory program as a whole, and the needs of the priority-setting process itself. A cornerstone of the efficiency argument is the belief that priority setting can reduce information demands by taking into account the availability and cost of information in choosing whether, when, and to what level to regulate a particular chemical.245 For example, an agency might confine its regulatory activities to the chemicals about which it either possesses or can readily obtain the most information.246 Where resources are scarce, costly reduction of risks is to be avoided, regardless of whether the source of the cost is information or control measures. On the basis of information alone, a regulatory process that emphasizes priority-setting will tend to focus on stronger effects which are easier to discover, assess, and set levels for. Under a cost-effectiveness priority scheme,

244. See Cross, Cancer, supra note 6, at 139; see also EPA, Framework, supra note 31, at 7, 27, 33-34; SAB, Reducing Risk, supra note 2, at 16, 19-20; GAO, Limited Resources, supra note 1, at 24-28; 1992 Budget Hearings, supra note 1, at 321-22 (testimony of Richard L. Hembra).

One scientist recommended these rules of thumb, which focus regulatory activity on both high risks and low costs:

1) Eliminate any risk that carries no benefit or is easily avoided.
2) Eliminate any large risk (about 1 in 10,000 per year or greater) that does not carry clearly overriding benefits.
3) Ignore for the time being any small risk (about 1 in 100,000 per year or less) that does not fall into category 1.
4) Actively study risks falling between these limits . . .

Cyril L. Comar, Risk: A Pragmatic De Minimis Approach, 203 Science 319 (1979). See also Sheldon Meyers, Applications of De Minimis, in De Minimis Risk 101 (Chris Whipple ed., 1987) (arguing that a de minimis standard can exclude both low risks to an exposed population and expensive incremental further reductions in risk).

245. See Ilia L. Cote et al., The Hazardous Air Pollutant Prioritization System, in Risk Assessment in Setting National Priorities 159, 160 (James J. Bonin & Donald E. Stevenson eds., 1989); Chris Whipple, Application of the De Minimis Concept in Risk Management, in De Minimis Risk at 17-18 (Chris Whipple ed., 1987) (failure to meet a de minimis standard can be a valid reason not to undertake a great deal of research on a low-risk chemical).

246. Faced with the congressional deadlines imposed in the 1972 amendments to the Clean Water Act, EPA first regulated the point sources about which it had most information. See Tomlison, Statutory Time Limits, supra note 38, at 223, 230; Merrill, Cancer-Causing Chemicals, supra note 38, at 121 (discussing CPSC). Merrill expresses concern that this "me-too" approach would be demoralizing to the agency staff. Id. See also Regulating Pesticides, supra note 175, at 49 (giving high review priority to chemicals similar to ones already studied under FIFRA because the analysis can be done more cheaply).
it is unlikely that EPA would get beyond first-order priorities, at least in the foreseeable future.  

The process of setting priorities need not be extraordinarily information-intensive. There is always a temptation to attempt to fine-tune priorities, and it is true that setting priorities to maximize the agency’s impact on risk requires evaluation of exposure, toxicity, cost, and feasibility.  

The National Academy of Sciences (NAS) study of regulatory information needs concluded that “the knowledge needed for unerring selection of the most important chemicals and tests is the same as the knowledge resulting from a complete and accurate testing program for all chemicals.”  

The point, however, is that “unerring selection” is unnecessary, as NAS recognized. The NAS priority-setting calculus is carefully designed to operate on limited information for precisely this reason. Such “risk indexing systems” are simplified versions of risk assessment, to be used where precision is impractical or not cost-effective. Houck has suggested that Congress abandon its attempt to “fine tune” water toxics control and simply set deadlines for total elimination of the pollutants “based on relative risk. Science may not be able to set absolute risk numbers, but it can identify categories of greater and lesser risk.” Even advocates of quantitative risk assessment in priority setting are careful to warn that establishing priorities should not be as elaborate as a full-blown quantitative risk assessment.

If an agency had to complete a cost-effectiveness analysis for every possible proposal, it might never finish and never be able to take action. . . . [The cure is the idea] of “agency best effort.” An agency should begin with a general consideration of which situations are likely to rank near the top of the cost-effectiveness list. . . . Other situations would be ignored, at least initially. Inevitably, there would be disagree-

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248. In short, the priority-setting process creates its own data gap. Applegate, supra note 12, at 291-94. EPA has called for the generation of more toxicity and exposure information and additional study of quantitative methods to aid priority-setting. See EPA, UNFINISHED BUSINESS, supra note 3, at 2-3, 98-99; see also EPA, REDUCING RISK, supra note 2, at 8, 18.

249. TOXICITY TESTING, supra note 13, at 205, 211, 215-22.

250. TOXICITY TESTING, supra note 13, at 215-16, 223, 296; see also MENDELOFF, supra note 110, at 152-54 (discussing NIOSH).

251. TOXICITY TESTING, supra note 113, at 207. The same is true of EPA’s Hazardous Air Pollutant Prioritization System. See Cote et al., supra note 245, at 159.

252. Gary R. Rosenblum & Steven A. Lapp, The Use of Risk Index Systems to Evaluate Risk, in RISK ASSESSMENT IN SETTING NATIONAL PRIORITIES 190-93 (James J. Bonin and Donald E. Stevenson eds., 1989). At the lowest levels of risk, no method of risk quantification is accurate, so overindulgence in depth of analysis and precision of quantification are pointless. Id.

253. See Houck, supra note 164, at 10560.
ments as to which items should be on the list. The notion would be that outside groups could attempt to persuade an agency by their own data-gathering or analysis effort. This process would tend to help an agency by supplementing its resources, rather than divert it by stopping actions until proposals had been analyzed.254

In fact, because of the difficulties of quantitative risk assessment, priority setting is the most appropriate use of the technique. OSHA’s 1980 Cancer Policy rejected quantitative risk assessment as a basis for regulation of non-threshold toxics, but accepted it for setting priorities, in part because the technique was insufficiently precise to determine what nonzero level of risk was below regulatory concern.255

Estimates are entirely appropriate.256 If they are systematic, thoughtful, and consistent, best-guesses would be a major improvement over present practices.257 Some observers of OSHA, for example, have recommended a “committee” system for setting priorities, which incorporates available quantitative data but relies principally on the experience and judgment of its members.258 EPA’s Unfinished Business study declared itself “not analytically pure but . . . judgmentally correct and unlikely to be far wrong.”259 This seems an appropriate standard for priority setting. It recognizes that the agency’s knowledge and experience in the field is manifested not only in its ability to


Similarly, McGarity concludes that, in view of informational and methodological limitations, regulatory analysis (informed by comprehensive analytical rationality) is more appropriate for developing options and setting priorities than for choosing the level of stringency. See McGarity, Regulatory Analysis, supra note 61, at 1298-99, 1331-32; see also Latin, Good Science, supra note 35, at 95-98 (tracing quantitative risk assessment at EPA); Leape, supra note 37, at 108-13 (recommending use of quantitative risk assessment for rough priority classifications but not for setting standards).

256. See Lave, Better Decisions, supra note 6, at 292-95; see also Lave, Strategy, supra note 35, at 28 (partial quantification preferable to none).

257. See GRAHAM ET AL., supra note 6, at 200-01; CROSS, CANCER, supra note 6, at 80, 132-42; Rosenblum & Lapp, supra note 252, at 183; Baram, Comparative Risk, supra note 70, at 8; Shapiro & McGarity, Reorienting OSHA, supra note 6, at 22. One commentator points out that the inconsistent application of risk assessment across programs distorts priorities. Richard B. Belzer, The Peril and Promise of Risk Assessment, 14 REGULATION 40, 47-48 (1991). One advantage of the interprogram priority setting that I recommend is encouragement of consistent risk assessment.

258. See Shapiro & McGarity, Reorienting OSHA, supra note 6, at 22-24.

259. EPA, UNFINISHED BUSINESS, supra note 3, at 2.
develop and perform an analytical calculus for ranking concerns, but also in
its intuitive judgments about importance and significance. Otherwise, priority
setting differs little from standard setting. Since priority setting occurs early
in the regulatory process, the agency’s decision does not in itself affect busi-
nesses and society, so that imprecision is less wasteful. If further review at the
standard-setting stage indicates a greater or lesser cause for concern, the risk
limit can be adjusted accordingly.

The foregoing arguments for using priority setting to direct agency action
parallel the four critiques of the technocratic approach in Part II. This is no
coincidence: the Article suggests that directed priority setting would improve
technocratic decisionmaking. The historical and rationalist critiques are met
because setting priorities combats agency inaction by confronting the central
problem of scarcity. Since setting priorities is an inevitable agency activity, the
democratic critique demands that the process be open and subject to majori-
tarian influence. The rationalist critique demands efficiency, and it is clear that
failure to address priorities in a systematic way has inefficient consequences.
Finally, priority setting, while susceptible to overanalysis, could meet the
informational critique by operating on the basis of less information than current
structures.

Congress has in fact adopted a plan, not unlike that advocated here, in the
1990 Clean Air Act Amendments. For hazardous air pollutants, the agency
has a relatively long lead time within which to impose regulations, thus steering
away from unrealistic deadlines. Within that framework, the agency must
establish priorities—and a schedule for action—for listed chemicals based on
stated criteria: known or anticipated effects, quantity and location of emissions,
and efficiency of grouping categories by pollutants or technologies. In addition,
while this structure does not grant flexibility in standard setting in the way
suggested here, Congress clearly recognized the value of trading stringency for
speed and scope. The Amendments defer regulation of the health-based level
of “residual risk” in favor of quick risk reduction based on the more easily
determinable best available technology. Unfortunately, the plan expressly
exempts the priority-setting process from judicial review (except for failure to
set a schedule at all). Despite several practical difficulties in implementa-

260. See Industrial Union Dep’t, AFL-CIO v. Hodgson, 499 F.2d 467, 474-75 (D.C. Cir. 1974); Ethyl
Corp. v. EPA, 541 F.2d 1, 23 (D.C. Cir. 1976) (en banc) (analogizing toxics decisions to agency predictions,
to which courts have traditionally deferred).
261. For example, the information required to justify placement on the National Priorities List under
EPA’s Hazard Ranking System is less than that required for establishing the required cleanup measures and
degree of cleanup. See Eagle-Picher Indus. v. EPA, 759 F.2d 905, 922 (D.C. Cir. 1985); City of Stoughton
v. EPA, 858 F.2d 747 (D.C. Cir. 1988).
264. 42 U.S.C. § 7412(e)(4) (Supp. 1991) (“no action . . . shall be final agency action subject to judicial
review.”)

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tion—not the least of which is commensurability of toxic risks—the 1990 Clean Air Act Amendments confirm that such an approach is feasible.

IV. Implementation: Perspectives and Prospects

This Article cannot hope to explore all of the arrangements that putting a new regulatory structure into practice would entail, but one cannot entirely abdicate responsibility for addressing the practical aspects of restructuring. This Part will first survey models for implementation of a regulatory regime based on priority setting. The general models typically favor either executive or legislative control; I will suggest their drawbacks and examine two mixed alternatives. This Part then considers the problem of judicial review of priority setting. Finally, we look at congressionally mandated priority setting under the National Priorities List and other programs, and at the prospects for a unified environmental protection statute that would provide an umbrella for EPA planning.

A. Planning

1. Executive Coordination and Direction: Executive Order No. 12,498

The White House is an important locus of planning. The President possesses general supervisory responsibilities over the executive branch and recent incumbents have exercised it aggressively. The “Regulatory Planning Process” established by President Reagan’s Executive Order No. 12,498 is intended to provide government-wide coordination of policy to avoid inconsistency and duplication, as well as to set priorities for regulatory expenditures. It requires each executive branch agency annually to submit a “Draft Regulatory Program” to the Office of Management and Budget (OMB) for review. The approved programs are published together as “The Regulatory Program of the United States.” This provides each agency with an excellent opportunity to take a broad view of its own responsibilities and to undertake internal planning and priority setting, which are necessary for effective management. The annual agendas, therefore, can be the vehicle for comprehensively analyzing agency

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action in terms of rationalist criteria like the relative effectiveness and cost of regulatory programs. Thus, Executive Order 12,498 finds much support among observers who suggest an analytical approach to regulation. At EPA, a Strategic Planning and Management System (SPMS) supplements the Executive Order 12,498 process by annually setting priorities and establishes operational programs for carrying priorities into effect.

Unfortunately, the Executive Order 12,498 process is purely executive, intensely partisan, and subject to nonpublic influence. Control is given to OMB, which (until the Competitiveness Council assumed the responsibility) provided the shock troops of the White House deregulation team. OMB has, for example, taken the position that EPA overstates risks, and consequently suggested less stringent regulations. On its own terms, Executive Order 12,498 seems to require consideration of substantive criteria by agencies which are absent from or inimical to the underlying statute.

Congress does have an important role to play in setting the tone of regulatory activities by taking a comprehensive look at regulatory priorities. Unless such broad scale reviews are conducted, the Congress will surrender to the executive the power to set regulatory priorities.

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268. See Diver, supra note 54, at 413-21 (describing elements of the analytical, rationalist approach); McGarity, Regulatory Analysis, supra note 61, at 1258-69 (describing analysis to improve decisions and policy management); DeMuth & Ginsburg, supra note 267, at 1080-82 (noting relationship of Exec. Order 12,291 in this respect).


270. See Fiorino, supra note 96, at 86.

271. See Percival, supra note 265, at 168-72, 178-204.

272. See Magat & Schroeder, supra note 227, at 330 (Exec. Order 12,291 process tends to reduce stringency of regulations).


The review process uses highly suspect methodologies such as cost-benefit analysis, which are susceptible to bias and co-option because of the difficulty or impossibility of measuring soft variables like social cost and benefit. See generally McGarity, Regulatory Analysis, supra note 61, at 1271-1308 (cataloging difficulties with quantitative analyses, especially lack of information); Jeffrey H. Howard & Linda E. Benfield, Rulemaking in the Shadows: The Rise of OMB and Cost-Benefit Analysis in Environmental Decisionmaking, 16 COLUM. J. ENVTL. L. 143, 169-75 (1991); Alan B. Morrison, OMB Interference with Agency Rulemaking: The Wrong Way to Write a Regulation, 99 HARV. L. REV. 1059, 1065-66 (1986). Even DeMuth, who later headed the OMB office implementing Exec. Order 12,498, concedes that supporters of cost-benefit analysis recognize that where an agency or government has many, often conflicting, purposes (i.e., that by which benefits are measured), strict cost-benefit discipline cannot be imposed; at best, it could demand a "reasonable relationship" between the two. DeMuth, supra note 41, at 36.

Indeed, the express goal of the planning process is to “ensure that all regulatory actions are consistent with the goals of the agency and of the Administration.” 275 Whatever policy-neutral justifications it may have, Executive Order 12,498 was promulgated as part of a partisan deregulation agenda. 276 Finally, Executive Order 12,498 is a largely private exercise in which relatively unknown OMB officials review and often alter the proposals of responsible agency officials acting under statutes. 277 Similarly, the Strategic Planning and Management System (SPMS) program is an internal, bureaucratic mechanism with no direct congressional involvement. 278

In contrast to the existing planning structures, the present proposal would involve Congress in setting the overall direction of the agency, rather than leaving it to the executive branch. Openly managed, the regulatory agenda could be the occasion for a thorough airing of the agency’s direction and priorities, both internal and external, before the public or its authoritative representatives. 279 This would both ensure adherence to existing statutory factors and allow Congress to recast its commands to alter a decision permitted under current standards. 280

2. Legislative Control: Statutory Deadlines

Congress has attempted to influence EPA’s agenda by imposing statutory deadlines for taking particular actions. In many cases, Congress was simply expressing frustration with what it perceived as inaction by the agency. In
Worst Things First

others, Congress was consciously attempting to set agency priorities.\textsuperscript{281} Internally, deadlines are clearly a good management tool;\textsuperscript{282} externally imposed, they provide important guidance on priorities in terms of time and importance. The actual practice, however, has paradoxically provided too much as well as too little direction. As to the former, deadlines are blunt. They are by their nature designed to remove an agency’s discretion over its priorities.\textsuperscript{283} As a result, deadlines reduce EPA’s ability to balance options, within and among programs, in terms of cost, effectiveness, and other criteria.\textsuperscript{284} Deadlines force an agency to commit resources to projects that may be ill-timed, not thoroughly considered, or disruptive of other programs.\textsuperscript{285}

As to the latter, Congress has often squandered its opportunity to exercise centralized planning control by imposing deadlines indiscriminately and unrealistically. In addition to being too short, they are too numerous. When an agency’s resources are too limited to meet all of the deadlines imposed, the agency has no choice but to violate some of them. As a result, agencies are placed in the position of themselves setting priorities among the deadlines.\textsuperscript{286} Alternatively, agencies sometimes respond to deadlines by shifting discretion to different, untimed, and unobserved parts of the process.\textsuperscript{287}


The principal concern in this Article is with deadlines for rulemakings. Deadlines for adjudication and licensing take a more individualized form. See Tomlinson, supra, at 128-39. As a result, deadlines for adjudication and licensing do not have the direct planning and priority-setting function that rulemaking priorities do. To the extent that adjudicatory deadlines demand that agency resources be committed to a prompt response, they communicate a congressional determination of relative importance.

\textsuperscript{282} See Tomlinson, supra note 281, at 120-23.

\textsuperscript{283} See Abbott II, supra note 281, at 469; Tomlinson, supra note 281, at 182. See also NRDC v. EPA, 32 Env’t Rep. at 1972-73 (rejecting EPA claim that Clean Water Act § 304(m) is merely a target as to which EPA may exercise discretion).

\textsuperscript{284} See Fix & Eads, supra note 274, at 315-16 (“Congress should . . . focus on promoting the responsible use of discretion and not second-guess day-to-day decisions of regulators who seek to fashion coherent regulatory programs.”). The courts recognize this problem and much prefer to enforce deadlines of the agency’s own creation or acquiescence. See Shapiro & Glicksman, supra note 158, at 834-36.

\textsuperscript{285} See Graham, supra note 60, at 124; Tomlinson, supra note 281, at 143; Abbott I, supra note 281, at 186-200 (documenting “wasted resource” and “misallocation” costs); Abbott II, supra note 281, at 468-69, 472-76, 480-85 (case studies). For example, ATSDR has been unusually prompt in publishing Superfund health assessments in accordance with deadlines in CERCLA, 42 U.S.C. § 9604(i), but only at the cost, according to GAO, of reports that were too narrow in scope and of poor quality. See Statutory Deadline Blamed for Inadequacy of Superfund Health Assessments by ATSDR, 22 Env’t Rep. (BNA) 1272-73 (Sept. 6, 1991).

\textsuperscript{286} See Abbott I, supra note 281, at 181-84; Dwyer, supra note 74 (criticizing “symbolic” legislation).

\textsuperscript{287} See Tomlinson, supra note 281, at 201-04, 209.
Current legislative priority-setting techniques, therefore, tighten deadlines without loosening substantive commands. The present proposal recognizes the need for some agency flexibility in exercising judgment, and it differs from current legislative efforts by compensating for tightened priorities with loosened predicates and targets. This approach is consistent with the suggestion that Congress itself, or the agencies at Congress' behest, set nonbinding deadlines. This would, in effect, require the agencies to plan while taking advantage of the need for expertise and discretion in making the trade-offs necessary to reasoned priority setting. This compromise has the additional benefit of retaining original direction and overall supervision in Congress.

3. A Mixed Model: Regulatory Budgets and Calendars

Commentators have advanced two models that combine legislative control with executive management. Both bear instructive similarities to the proposal in this Article. One, the "regulatory budget," requires Congress to establish cost parameters within which the agencies must operate. A competing theory, legislated regulatory calendars, would have the agency propose an allocation of resources (in terms of time) subject to congressional approval. The regulatory budget is like E.O. 12,498, but with numbers attached. Congress (and the President, since it is legislated) would set an upper limit on the costs which regulation could impose on the economy. "The policies of individual regulatory statutes would have to be implemented within this budget constraint, just as they now must be implemented within the constraint of the expenditure budget." The idea of a budgetary process has the important virtue of recognizing the central problem of scarcity (the capacity of the economy to absorb control costs) and of the central necessity of allocating resources and setting priorities. It thus forces Congress to come to grips, openly and explicitly, with the policy issues implicit in priority setting, and to give answers. Within the agency, a budgeting process forces it to sort out its goals and priorities, and encourages consideration of whether resources invested in one task would

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288. See Tomlinson, supra note 281, at 122-23; see also Abbott I, supra note 281, at 200-03; Abbott II, supra note 281, at 487.

289. See Fix & Eads, supra note 276, at 312 (making this point in similar terms).

290. See DeMuth, supra note 41, at 30-31; see also Litman & Nordhaus, supra note 41, at 133-58 (extensively discussing regulatory budget proposal).

291. See Lave, Strategy, supra note 35, at 23; Litman & Nordhaus, supra note 41, at 147, 173-81; Dwyer, supra note 74; see also DeMuth, supra note 41, at 37 (emphasizing political accountability); Fix & Eads, supra note 274, at 313 ("Budgets are political statements which are manifestations of a government's priorities.").

Worst Things First

yield greater benefits elsewhere\(^2\) and whether it has chosen the most cost-effective actions possible.\(^2\)

The principal problem of regulatory budgets is measurement of regulatory costs across the economy as a whole. Not only would the amount of data needed by enormous, but the information gathered would itself be highly uncertain, indeed speculative.\(^2\) Measurement aside, the capacity of the economy to absorb regulatory costs is not really meaningful at the macro level: some industries are marginal and face heavy competition; some products are practically unavoidable (the demand being inelastic), so increases in cost can be passed along.\(^2\) Litan and Nordhaus have recommended "legislated regulatory calendars" as a more practical alternative. Rather than focus on numbers, the calendars would force Congress to make fundamental policy decisions.\(^2\)

The agencies, through OMB, would submit to Congress a list of Notices of Proposed Rulemakings. Before further action could be taken, Congress would have to approve each major regulation by enacting a regulatory calendar that includes it.\(^2\) On the other hand, post hoc legislative enactment of specific agency actions seems rigid and time-consuming.\(^2\) Congressional handling of such complex items is notorious for inviting the inclusion or deletion of parochial interests.\(^2\)

The annual Congressional budget process, for instance, does not inspire confidence. Litan and Nordhaus suggest that a more realistic alternative would require agencies to submit their priorities and agendas to Congress for approval.\(^2\) This structure, like the deadlines compromise, plays better to the strengths of each institution. It still requires detailed Congressional involvement.

\(^2\) See LITAN & NORDHAUS, supra note 41, at 81-83.
\(^2\) See DeMuth, supra note 41, at 36. Indeed, DeMuth expressed hope that the antithetical pressures of budgetary limits and political expectations would create a synthesis of agencies incorporating cost-benefit analysis into their decisionmaking, and central authorities like OMB would simply wither away. Id. at 36-37. This has not yet happened. See also LAVE, STRATEGY, supra note 35, at 79 ("The essence of both cost-effectiveness and regulatory budget frameworks is the comparison among alternative actions an agency might take that would enhance health.") (emphasis added); LITAN & NORDHAUS, supra note 41, at 83-89 (criticizing the constraints of agencies' ability to balance costs and benefits to come up with the most efficient priorities).

\(^2\) Secondary effects, joint causation, and capital expenditures further complicate the calculations. See LAVE, STRATEGY, supra note 35, at 22-23, 29-45, 86-87; DeMuth, supra note 290, at 38-42; LITAN & NORDHAUS, supra note 41, at 150-54.

\(^2\) For a review of the practical problems of the proposal, see LITAN & NORDHAUS, supra note 41, at 140-60.

\(^2\) LITAN & NORDHAUS, supra note 41, at 167 (political accountability is the "primary objective" of the calendar proposal).

\(^2\) LITAN & NORDHAUS, supra note 41, at 159-82. Diver severely criticizes both regulatory budgets and legislated regulatory calendars in his review of Litan and Nordhaus' book. His fundamental critique is that these simply add a higher level of command-and-control regulation to cure the problems that the authors deem inherent in the lower level. See Diver, Book Review, Regulating the Regulators, 132 U. PA. L. REV. 1243, at 1248-49 (1984).

\(^2\) See Fix & Eads, supra note 274, at 315-16 (Congress is ill-equipped to establish or approve specific budgets or to draft regulations). "If anything, regulators need more, not less, discretion." Id.

\(^2\) Litan & Nordhaus concede that annually fixing priorities may be politically impossible. See LITAN & NORDHAUS, supra note 41, at 162-67.

\(^2\) LITAN & NORDHAUS, supra note 41, at 171-73.
but does not provide for ex ante Congressional guidance. "With a clearer articulation of priorities, fewer occasions would arise when Congress would feel the necessity of instructing an agency about details."  


The conservation area of environmental law, in particular the management of federal lands and natural resources, provides actual experience in the use of planning as a technique for exercising congressional direction. The federal government owns millions of acres of valuable timber land, mainly in the western United States. Areas that have been designated national forests are managed by the U.S. Forest Service. These lands are also suitable for recreational use as wilderness areas or ski resorts in their more or less natural states. The commercial and recreational uses can be fundamentally incompatible with each other. Wilderness by definition cannot accommodate any commodity uses or intensive recreation. Other statutorily recognized uses—outdoor recreation, range, watershed, and wildlife and fish—can be incompatible with wilderness, with timber, and with each other. Indeed, it is hard to imagine a tract of land that could accommodate more than two or three of these uses simultaneously. Because some uses, notably recreation and timber, are in high demand, the major task of land managers is the distribution of land among

302. LAVE, STRATEGY, supra note 35, at 87.
303. For discussion of the distinction between the conservation and pollution control/toxics areas of environmental law, see Samuel P. Hays, Three Decades of Environmental Politics: The Historical Context, in GOVERNMENT AND ENVIRONMENTAL POLITICS 21-28 (Michael J. Lacey ed., 1989); see also Rabin, supra note 51, at 1280-81 (distinguishing the wilderness and pollution strands of the environmental movement); see generally Mitchell, From Conservation to Environmental Movement: The Development of the Modern Environmental Lobbies, in GOVERNMENT AND ENVIRONMENTAL POLITICS 81-113 (Michael J. Lacey ed., 1989) (distinguishing first- and second-generation environmental issues). The conservation and toxics areas of environmental regulation are also managed by different agencies: the Department of Agriculture and the Department of the Interior manage conservation programs; EPA, OSHA, and FDA manage toxics regulation.
304. The Forest Service is part of the Department of Agriculture. National parks are administered by the Fish and Wildlife Service, both in the Department of the Interior, but they represent a relatively tiny proportion of the Western public lands. The remainder, much of it rangeland, is administered by the Bureau of Land Management in the Interior Department. Rangelands are managed under a statutory regime very similar to that for national forests, but it is more open-ended and more disorganized. Therefore, I will concentrate on the forests.

305. See 16 U.S.C. § 1131(c) (1988) ("an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain").
Worst Things First

these competing uses. Because high-quality lands are scarce, managers are confronted with an allocation problem that parallels the problem with toxic substances control. To allocate national forest land, Congress turned to the highly detailed planning structures that now dominate forest management.

Congress arrived at the planning solution through much the same tension between expert discretion and the need for policy guidance that was discussed previously. There is a long technocratic tradition in federal natural resources management. The then-new science of forestry was the driving force in the original movement to manage federal timber resources for sustainability and profit under Gifford Pinchot and President Theodore Roosevelt. Pinchot’s goal, acceded to by Congress, was to free land managers to make the best scientific decisions to achieve a high yet sustainable yield of renewable resources. The Forest Service regarded allocation decisions as fundamentally technical-scientific matters. Congressional micromanagement, and the judicial intervention that followed, was antithetical to “everything in which the Forest Service believed and on which it had been founded: expertise, scientific forestry, discretion, and professional independence.” By the 1970s, however, Congress became increasingly concerned that the Forest Service was not managing these lands as Congress wished. In particular, Congress thought the managers had become too tied to commodity uses at the expense of the environment, and consequently sought to reduce discretion and to give the agencies clearer guidance. Recognizing the impossibility of setting specific standards for each forest and range, Congress sought a compromise and found land-use planning. In doing so, it followed the 1970 recommendation of the Public Land Law Review Commission, which had seen in planning the opportunity to provide much-needed guidance to land managers.

The Forest Service manages the national forests under the National Forest Management Act of 1976 (NFMA). Based on statutory guidelines, principally the “multiple use” mandate discussed below, the Forest Service must


309. “Federal land use planning is becoming the most critical stage in the overall process for allocating public natural resources.” COGGIN, supra note 304, at 13-2.

310. Gifford Pinchot, the guiding force for the establishment of the national forests, was trained in Europe in the late nineteenth century when formal training in forestry did not exist in this country. He sought to bring scientific principles to American forest management and to develop a highly professional Forest Service to carry them out. See SAMUEL P. HAYS, CONSERVATION AND GOSPEL OF EFFICIENCY (1958).


312. See WILKINSON & ANDERSON, supra note 304, at 13, 69-71, 159-70, 371; COGGIN, supra note 304, at 13-3, 13-28; Sax, supra note 311, at 122-25 (less discretion and “more environmentally focussed”).


develop a hierarchy of plans, beginning with a national policy and descending to management of individual tracts. Consistency from top to bottom—from statute to program to plan to individual permits and contracts—is statutorily required and judicially enforceable. The structure of the process is highly technocratic. Before reaching a final decision, the agency must (1) gather data and inventory assets; (2) develop comprehensive, integrated management strategies in the context of other disciplines and concerns; (3) consider alternatives (NEPA is expressly incorporated); and (4) obtain public comment. Although forest planning may fall short of the ideal in practice—it is often criticized as expensive, time-consuming, and poorly executed—its structure does provide a workable model for setting priorities among toxic risks.

B. Judicial Review

1. The Traditional Administrative Law Approach

A plan that is to be the basis for regulatory action based on congressional directives must be subject to judicial review and enforcement if it is to be mandatory in any meaningful sense. Typically, judicial review of agency
Worst Things First

action has been limited to the last two stages of the regulatory process: the choice of response (promulgation of a rule) and enforcement. Review of a prior stage, including priority setting, has been precluded by the doctrines of finality and ripeness. Unless otherwise provided by statute, the Administrative Procedure Act provides no right of review to an agency action that is not “final,” and even technically final actions can escape immediate judicial review if they are not “ripe” for review. While conceptually distinct, finality and ripeness apply to similar situations and are motivated by a common set of judicial concerns. Indeed, ripeness is in many respects a nonjurisdictional replay of the finality analysis.

The leading cases in the area, Abbott Laboratories v. Gardner and its two companion cases, concentrate on two issues: the immediacy of the complainant’s need for judicial resolution of the challenge to the agency action, and the fitness of the issues for judicial determination. On the need question, the two cases that granted review focused on the “immediate and substantial impact” upon the complainant. The other, which denied review, emphasized the numerous contingencies that intervened between FDA’s unquestionably final regulations and the actual enforcement pressure that would compel the complainant to take costly action to comply or to resist. The fitness issues are more complex. The first is the familiar one of agency discretion and judicial control. As a general rule, agencies should be permitted to go about their business with a minimum of judicial interference, especially at the early stages of review, interpreted in Union Electric Co. v. EPA, 515 F.2d 206, 216-20 (8th Cir. 1975), affirmed, 427 U.S. 246, 255-56 (1976)).

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Abbott Laboratories, 387 U.S. at 149.


There are exceptional cases, of course. The D.C. Circuit held that an agency's decision to begin proceedings to cancel a pesticide registration, but not to suspend the registration in the interim, was reviewable due to the potentially severe health effects of use of the pesticide in the interim. See EDF v. Hardin, 428 F.2d 1093 (D.C. Cir. 1970); EDF v. Ruckelshaus, 439 F.2d 584 (D.C. Cir. 1971). This decision had much to do with the court's perception that an imminent health hazard existed (the pesticides involved included the notorious DDT) and the unique structure of FIFRA. Other courts came to the opposite conclusion. See, e.g., Nor-Am Agricultural Products v. Hardin, 435 F.2d 1151 (7th Cir. 1970) (en banc), cert. denied, 402 U.S. 935 (1971).

Toilet Goods, 387 U.S. at 162-64.

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of the regulatory process. Second, the courts want to avoid involvement with abstract and potentially unrealistic disputes. This concern motivated the Supreme Court’s recent, very restrictive finality analysis in *National Wildlife Federation v. Lujan*, which refused to accord finality to a course of conduct which the agency had not formalized into a “program.”

The third fitness concern, only hinted at in the *Abbott Laboratories* cases and *Lujan*, is that administrative decisions at the early stages of the regulatory process are by their nature ill-suited to judicial resolution. In Lon Fuller’s phrase, such decisions are “polycentric.” They involve choices among many competing subjects of concern, and a decision as to each affects all of the others. Reasoned adjudication, on the other hand, requires that the decision-maker’s choices be narrowed to a bipolar standard or established succession of bipolar standards to which the tribunal can apply the facts it finds. Polycentric problems, therefore, must be handled by managerial decisionmaking, that is, an authoritative individual handing down a decision after consideration of the many interdependent variables. Priority setting fits this description. James Henderson has observed that planning and resource allocation decisions

328. *Abbott Laboratories*, 387 U.S. at 148; see also *Toilet Goods*, 387 U.S. at 175-76 ("the courts should not intervene in the administrative process at this stage, under these facts and in this gross, shotgun fashion"); see also Heckler v. Chaney, 470 U.S. 821, 842 (1985) (Marshall, J., concurring in judgment) (in priority setting, where "an agency is choosing how to allocate finite enforcement resources, the agency’s choice will be entitled to substantial deference").


330. 110 S. Ct. 3177, 3190-91, and a post-*Lujan* case has suggested some concern about ripeness. *Sierra Club v. Yeutter*, 911 F.2d 1405 (10th Cir. 1990). These developments are discussed in *Coggins*, supra note 304, at 6-39—6-44.

331. See *Gardner*, 387 U.S. at 193 (Fortas, J., dissenting) (distinguishing prior cases permitting review because they were “two-dimensional” and not “part of the warp and woof of an elaborate administrative pattern, intimately woven into the congressional design”).

332. Lon L. Fuller, *The Forms and Limits of Adjudication*, 92 HARV. L. REV. 353, 394-404 (1978) (posthumous publication of materials substantially completed by 1957). Fuller’s ideas were further explicated in an important article on tort law, *See James A. Henderson, Jr., Expanding the Negligence Concept*, 51 IND. L.J. 467, 469-77 (1976); *see also id.* at 476, 497-98 (planning problems generally, and environmental planning in particular, are polycentric).

333. See Fuller, supra note 332, at 398-403; Henderson, supra note 332, at 469-77; *see, e.g., Washington Crab Producers v. Mosbacher*, 924 F.2d 1438, 1446-48 (9th Cir. 1991) (deferring to agency management plan for complicated resource). It may be coincidental, but it is not insignificant, that Landis viewed agencies as “managerial” in very much this sense. See supra Part II(A)(1).
are "one of the most unadjudicable problems imaginable," and courts have tended to agree. Thus, in *Heckler v. Chaney*, the Supreme Court considered prosecutorial discretion, which is a form of priority setting used when resources are inadequate to enforce all of the laws all of the time. The Court stated that an agency decision not to enforce often involves a complicated balancing of a number of factors which are peculiarly within its expertise. Thus, the agency must not only assess whether a violation has occurred, but whether agency resources are best spent on this violation or another, whether the agency is likely to succeed if it acts, whether the particular enforcement action requested best fits the agency's overall policies, and, indeed, whether the agency has enough resources to undertake the action at all... The agency is far better equipped than the courts to deal with the many variables involved in the proper ordering of its priorities.

In priority setting, the Supreme Court has reversed the traditional presumption in favor of judicial review under *Abbott Laboratories* with a strong policy that review of decisions not to proceed is inappropriate.

2. *Overcoming Polycentricity*

The problem of polycentricity for adjudication is not unavoidable. It may be overcome in two ways: by requiring an explanation of the agency action that is reviewable for basic rationality, or by providing sufficient statutory or administrative guidelines for courts to apply. My proposal incorporates both features to ensure its reviewability and hence enforceability.

a. *Reasoned Explanation*

The strong position taken by the *Chaney* majority against review was strikingly unnecessary to that case because the administrator's decision was bipolar and was exceptionally well defined (FDA had published a detailed explanation). The issue was highly unusual, since the choice whether to enforce the Federal Food, Drug, and Cosmetics Act was clearly not made in the same

334. *See* Henderson, *supra* note 332, at 470 ("Potentially, at least, a contracts case involves the resolution of one of the most unadjudicable problems imaginable—the allocation of scarce resources in society.").


way that choices about routine enforcement are. FDA provided a thorough, well reasoned justification for its decision. As the concurring justices pointed out, deferential review of FDA’s statement was entirely appropriate, but it ought not to be unreviewable per se.

The concurring justices’ approach was in effect adopted in an earlier series of cases dealing with priority setting by OSHA. Section 6(g) of the Occupational Safety and Health Act is unusual in its explicit recognition of the agency’s need to set priorities, although it provides no substantive standards for doing so. In the El Congreso cases, migrant farmworkers asked the courts to mandate the development of regulations governing field sanitation. The district court had originally rejected resource allocation as a reason for noncompliance with statutory deadlines, but the court of appeals allowed OSHA to use section 6(g) as a defense to claims that agency action was unreasonably delayed. Section 6(g) represented “implicit acknowledgement [of] traditional agency discretion to alter priorities and defer action due to legitimate statutory considerations,” and it was entirely appropriate to proceed “on a ‘worst-first’ basis,” as long as the agency exercised its discretion “honestly and fairly.” Yet, on remand, OSHA felt obliged to come up with an elaborate statement of its reasons (as FDA did in Chaney) for assigning the field standard a low priority. It pointed to risk, available resources, existing enforce-

338. See Public Citizen Health Research Group v. FDA, 740 F.2d 21 (D.C. Cir. 1984) (refusing to require FDA to promulgate a regulation requiring aspirin warning for Reye’s Syndrome, also a relatively bipolar decision). For criticisms of the Chaney approach, see Shapiro & Glicksman, supra note 50, at 874-75.

339. See Heckler v. Chaney, 470 U.S. 821, 842, 854 (1985) (Marshall, J., concurring in judgment) (“the basis on which the agency chose to exercise this discretion—that other problems were viewed as more pressing—generally will be enough to pass muster”).

340. The Occupational Safety and Health Act reads:

In determining the priority for establishing standards under this section, the Secretary shall give due regard to the urgency of the need for mandatory safety and health standards for particular industries . . . . The Secretary shall give due regard to the recommendations of the Secretary of Health and Human Services regarding the need for mandatory standards in determining the priority for establishing such standards.

29 U.S.C. § 655(g).

341. The Occupational Safety and Health Act requires OSHA to take regulatory action within specified time limits. OSHA had missed these deadlines. The courts excused the delay on the ground that § 655(g) gives OSHA considerable latitude in setting its priorities. National Congress of Hispanic American Citizens v. Dunlop, 554 F.2d 1196, 1198-200 (D.C. Cir. 1977) (El Congreso II, reversing 425 F. Supp. 900, 902 (D.D.C. 1975) (El Congreso I); 626 F.2d 882, 888-90 (D.C. Cir. 1979) (El Congreso III).


343. El Congreso II, 554 F.2d at 1200. The legislative history of subsection (g) provides little illumination. Congress evidently sought to ensure that the Secretary would have sufficient flexibility to target urgent demands for regulations in particular industries without waiting to develop broader standards. See 116 Cong. Rec. 37,623 (Nov. 17, 1970) (amendment offered by Sen. Javits).

344. See also El Congreso II, 554 F.2d at 1199-1200; El Congreso III, 626 F.2d at 889-90 (reversing district court ruling on remand from El Congreso II that OSHA had set priorities irrationally); Benzene, 448 U.S. at 644 n. 49 (under § 655(g), "a court cannot tell the Secretary which of two admittedly significant risks he should act to regulate first").
Worst Things First

ment commitments, number of employees, severity of the health or safety hazard, and availability of information, which the court accepted. A subsequent ruling, Public Citizen Health Research Group v. Auchter, went a step further. The court acknowledged, "[w]e would hesitate to require the Assistant Secretary to expedite the EtO [ethylene oxide] rulemaking if such a command would seriously disrupt other rulemakings of higher or competing priority," but it ordered action because, from its own review of OSHA's docket, the court concluded that the agency could not point to any more pressing needs. The agency had not given "due regard to the urgency of the need," as required by section 6(g). A subsequent Third Circuit case expressly found that this language provides "a statutory standard by which to measure the exercise of the Secretary's priority-setting discretion."

Under the NFMA, Congress mandates such explanations. Every five years the Forest Service must develop a Statement of Policy for budget requests, and the pre-Chadha statute provides for a one-house veto of the Policy. If the Forest Service submits an annual budget request for less than the Policy indicates, it must supply an explanation:

[The report] shall express in qualitative and quantitative terms the extent to which the programs and policies projected under the budget meet the policies approved by Congress . . . . In any case in which such budget so presented recommends a course which fails to meet the policies so established, the President shall specifically set forth the reason or reasons for requesting the Congress to approve the lesser programs or policies presented.


346. Public Citizen Health Research Group v. Auchter, 702 F.2d 1150, 1158 (D.C. Cir. 1983); see also NRDC v. EPA, 595 F. Supp. 1255 (S.D.N.Y. 1984) (holding that even good faith reliance on limited resources and higher priorities could not excuse delay amounting to failure to carry out statutory program); see also In re Barr Laboratories, Inc., 930 F.2d 72, 76 (D.C. Cir. 1991) (declining to order FDA to approve a new drug applications because, despite conceded lateness under the FFDCA, promptness with Barr's applications would merely result in lateness elsewhere).

347. Health Research Group, 702 F.2d at 1158.


While the explanation provides no strong basis for judicial review, this process provides a model similar to the process envisioned here. Taken as a whole, the process represents a structure in which (1) Congress sets parameters, (2) the agency takes the lead in fleshing them out, and (3) the courts maintain supervision for consistency with congressional policy.

b. Statutory Guidance

If one wants congressional direction of agency action, judicial review could be more directly obtained by statutory guidance of priority setting. Chaney expressly recognized that adequate guidelines could render even prosecutorial discretion reviewable. Applied to planning, it is clear, first, that Congress can create finality if it so desires. For example, agency plans that create no legal rights under OSHA or Executive Order 12,498 do create a right of review under the Outer Continental Shelf Lands Act (OCSLA) because Congress has specifically so provided. The real problem is the one addressed in Overton Park: the court needs some "law to apply." Just as a specific deadline gives content to the otherwise amorphous "unreasonably delayed" standard of the Administrative Procedure Act, there is nothing inherent in priority setting that precludes judicial review. Establishing clear standards addresses Chaney's main concern. At the vague end of the spectrum

350. See National Wildlife Federation, 626 F.2d at 924-28 (denying mandamus relief based on inadequacy of explanation).
351. See Chaney, 470 U.S. at 827, 832-34. The Court distinguished an earlier case, Dunlop v. Bachowksi, 421 U.S. 560 (1975), on the ground, among others, that the statute there "provided guidelines for the exercise of its enforcement power." 470 U.S. at 834.
352. See Switchmen's Union v. NLRB, 320 U.S. 297, 301 (1947). Even the cramped formulation of finality in Lujan makes it clear that (within very broad limits) Congress can create final agency action. See 110 S. Ct. at 3190 ("Some statutes permit broad regulations to serve as the 'agency action,' and thus to be the object of judicial review directly, even before the concrete effects normally required for APA review are felt.")
353. Compare Merrill, Cancer-Causing Chemicals, supra note 38, at 121-23 (discussing OSHA Priority Lists); Exec. Order 12,498 § 5 (regulatory agendas are purely internal and create no judicially enforceable rights), with 43 U.S.C. § 1349(c) (authorizing judicial review of leasing program).
354. See 43 U.S.C. §§ 1344, 1349(c)(1). Under OCSLA, the first stage of activity is establishment of five-year plans for outer continental shelf exploration and development. Challenges, however, have not been notably successful due to the vagueness of the applicable statutory standards. See NRDC v. Hodel, 865 F.2d 288 (D.C. Cir. 1988) (remanding the 1987-92 plan); California v. Watt, 712 F.2d 584 (D.C. Cir. 1983) (Watt II) (upholding the 1982-87 plan on remand from Watt I); California v. Watt, 668 F.2d 1290 (D.C. Cir. 1981) (Watt I) (upholding the 1980-85 plan).
356. See 5 U.S.C. § 706(1) (1988). Failure to meet a specific deadline would bring the agency within the scope of the mandatory "unlawfully withheld" language. Id.
of statutory criteria is the multiple use principle\textsuperscript{357} that forms the core substantive criterion for planning in national forests.\textsuperscript{358} Multiple use requires the balancing of renewable resources, nonrenewable resources, recreation, wilderness, watershed, and fishing.\textsuperscript{359} Despite the diversity and obvious incompatibility of these goals, the clear intention of the statute is to accommodate simultaneously as many uses as possible on the same tract of land.\textsuperscript{360} And it leaves the relative importance of each use to be measured by the astonishingly vague standards of what will “best meet the needs of the American people,” and what represents the “most judicious use of the land.”\textsuperscript{361} This state of affairs not only fails to give any real direction to the agency, but also makes judicial review nearly impossible.\textsuperscript{362} The imposition of conflicting demands on an agency gives it nearly unlimited discretion, since virtually any decision it makes can be justified by reference to at least one of the statutory criteria.\textsuperscript{363} Courts have thus felt themselves unequipped to take a hard look at forest planning.\textsuperscript{364}

\textsuperscript{357} Congress first enacted the multiple use principle in the Multiple Use—Sustained Yield Act of 1960 (MUSYA), 16 U.S.C. §§ 528-531 (1988).

\textsuperscript{358} See 16 U.S.C. §§ 1602, 1604(e), 1604(g) (1988); see also 43 U.S.C. §§ 1701(a)(7), 1702(c), 1702(h), 1712(c)(1) (1988) (rangeland).

\textsuperscript{359} See 16 U.S.C. § 528 (identifying “outdoor recreation, range, timber, watershed, and wildlife and fish purposes” as the uses to be balanced).

The specialized literature should be consulted for a more complete understanding of these issues. See, e.g., 2 \textsc{Coggins}, supra note 304, ch. 16-20; Constance E. Brooks, \textit{Multiple Use Versus Dominant Use: Can Federal Land Planning Fulfill the Principles of Multiple Use for Mineral Development?}, 33 \textsc{Rocky Mt. Min. Inst.} 1 (1988); \textsc{Bowes & Krutilla}, supra note 307.

\textsuperscript{360} See 16 U.S.C. § 531(a) (defining “multiple use”); 2 \textsc{Coggins}, supra note 304, at 16-7—16-9, 16-12; see also Brooks, supra note 359, at 12-15, 28-29 (objecting that Forest Service improperly fails to provide for all uses, specifically mineral uses).

The Federal Land Policy and Management Act (FLPMA) for rangeland goes out of its way to emphasize simultaneous use by requiring BLM to report to Congress “[a]ny management decision or action . . . that excludes (that is, totally eliminates) one or more of the principal or major uses for two or more years with respect to a tract of land of one hundred thousand acres or more.” 43 U.S.C. § 1712(e)(2).

\textsuperscript{361} See 16 U.S.C. § 531(a).

\textsuperscript{362} See \textsc{One Third of the Nation’s Land}, supra note 313, at 44-45; 2 \textsc{Coggins}, supra note 304, at 16-10—16-20.

\textsuperscript{363} See Panama Refining Co. v. Ryan, 293 U.S. 388, 418, 432 (1935). The holding that contradictory provisions of the National Industrial Recovery Act rendered it an unconstitutional delegation of legislative power may have little continued validity, but Chief Justice Hughes’ observation remains apt.

\textsuperscript{364} The tendency is to require “consideration” of other uses, but not to interfere with the agency’s actual allocation of uses. See, e.g., National Wildlife Federation v. U.S. Forest Service, 592 F. Supp. 931, 937-38 (D. Ore. 1984) (“The standards in MUSY are broad, but they do exist. MUSY is not entirely discretionary.”); Sierra Club v. Hardin, 325 F. Supp. 99, 113 (D. Alaska 1971) (Forest Service must “consider certain factors”), rev’d on other grounds, 3 E.L.R. 20292 (9th Cir. 1973); Dorothy Thomas Foundation v. Hardin, 317 F. Supp. 1072, 1075-76 (W.D.N.C. 1970). Each court suggested that MUSY reached the outer limits of reviewability, and, perhaps, of the nondelegation doctrine. \textit{Id.} (Judicial review of BLM decisions, under statutes described as “breath[ing] discretion at every pore,” has been similarly deferential to the point of abdication. See \textsc{Perkins v. Bergland}, 608 F.2d 803, 804-07 (9th Cir. 1979) (FLPMA); \textsc{Strickland v. Morton}, 519 F.2d 467, 469-70 (9th Cir. 1975) (Classification and Multiple Use Act of 1964)).

There is an important exception, a pre-NFMA ban on clearcutting, but it relied on the Organic Act of 1897 and eschewed reliance MUSY, calling it “broad and ambiguous.” \textsc{Izaak Walton League v. Butz}, 522 F.2d 945, 948-52, 954 (4th Cir. 1975). The Organic Act may be found at 16 U.S.C. § 476. All in all,
This vagueness can be remedied. The Wilderness Act permits hard-look
judicial scrutiny because it strictly defines wilderness and provides specific uses
for such areas.\textsuperscript{365} Even within the general multiple use mandate, Congress
stepped in to control clearcutting with the Church Guidelines,\textsuperscript{366} which were
followed in the NFMA's very specific harvesting criteria.\textsuperscript{367} Even though
NFMA plans have not yet been subjected to much litigation, the few cases that
have considered them recognize the new teeth in planning. In the \textit{Rio Grande Forest}\textsuperscript{368} and \textit{Bighorn Forest}\textsuperscript{369} cases, the courts were willing to look
closely at the compliance of Forest Service plans with substantive statutory
guidance, to require explanations, and to examine the basic rationality of the
Forest Service's reasoning. They did not, however, attempt to reorder priorities
that Congress had left to the discretion of the agency.\textsuperscript{370}

There remains, of course, doubt whether Congress has the ability to provide
truly detailed guidance on the allocation of national forest resources.\textsuperscript{371} The
allocation among uses presents as polycentric a problem as one could ask for:
Congress has provided for five very different uses in the Multiple Use-Sus-
tained Yield Act (MUSY), plus wilderness and mineral uses under separate
statutes.\textsuperscript{372} Under MUSY and NFMA, the agency must consider economic and noneconomic factors; it must serve the needs of industry and the American
people generally; it must consider productivity in the short and long terms, at
the unit and system levels; and it must assess the "relative values" of these
incommensurables.\textsuperscript{373} The agency's \textit{own} planning can give the detail and

however, judicial review of forest and rangeland planning has been haphazard. See \textit{1 COGGINS, supra} note
304, at 13-23 - 13-28 (rangeland), 13-43--13-54 (forests); \textit{WILKINSON & ANDERSON, supra} note 304, at
69-75 (pre-NFMA judicial review).

\textsuperscript{365} See \textit{Sax, supra} note 229, at 121-22.


\textsuperscript{367} See 16 U.S.C. \textsection 1604(g)(3)(D)-(F) (timber harvest and clearcutting). The relationship between the Church Guidelines and the NFMA is described in \textit{WILKINSON & ANDERSON, supra} note 304, at 138-59. Wilkinson and Anderson analyze the NFMA criteria in depth. See \textit{id.} at 159-88.

\textsuperscript{368} \textit{Citizens for Environmental Quality v. United States, 731 F. Supp. 970, 983-94 (D. Colo. 1989).}

\textsuperscript{369} \textit{Sierra Club v. Cargill, 732 F. Supp. 1095, 1099-1101 (D. Colo. 1990).}


\textsuperscript{371} See, e.g., \textit{Stark Ackerman, Observations on the Transformation of the Forest Service: The Effects of NEPA on Forest Service Decision Making, 20 ENVTL. L. 703, 731-34 (1990).}

\textsuperscript{372} The Wilderness Act clearly trumps the MUSY uses. Constance Brooks has argued that the Forest Service has failed to recognize that hard-rock mining trumps MUSY uses. \textit{See Brooks, supra note} 359, at 15-19.

\textsuperscript{373} \textit{See \textit{1 COGGINS, supra} note 304, at 13-39--13-41; \textit{BOWES & KRUTILLA, supra} note 307, at 87-88 (interrelated resources).}

\textsuperscript{374} \textit{See \textit{ONE THIRD OF THE NATION'S LAND, supra} note 313, at 45-52 (planning and dominant use); Brooks, supra note 359, at 16; \textit{2 COGGINS, supra} note 304, at 16-18--16-19.}

344
Worst Things First

they become the agency’s own “law to apply.” The response of the Forest Service to the practical impossibility of simultaneous multiple use—de facto “dominant use” planning for particular areas—could facilitate judicial review, as well. Even though the agency, and not Congress, has established what the dominant use is to be, that decision is at least available for congressional review (post hoc guidance, so to speak) and subject to judicial review for rationality.

Turning to priority setting for toxic substances, existing provisions for responding to emergencies constitute a crude form of priority setting among the problems calling for an agency’s attention. In challenges to the invocation of emergency procedures where the only criterion is imminence of hazard, the courts of appeals (the Fifth Circuit most vociferously) have enforced a strict distinction between OSHA’s emergency temporary standard power and its ordinary cases. If a more complex set of criteria is needed, the multiple use experience suggests that the best way to establish judicially manageable

375. See Heckler v. Chaney, 470 U.S. 821, 839 (Brennan, J., concurring) (“statutes or regulations . . . may well provide ‘law to apply’”) (emphasis added); see also Morton v. Ruiz, 415 U.S. 199, 230-36 (1974) (holding that while agency may make extra-statutory rules to allocate limited funds, it was required to promulgate formal, public rules to do so); Curry v. Block, 738 F.2d 1556, 1562-63 (11th Cir. 1984) (requiring agency to promulgate regulations to administer program); Amalgamated Meat Cutters v. Connally, 337 F. Supp. 737, 758-59 (D.D.C. 1971) (three-judge court, per Leventhal, J.) (rejecting nondelegation doctrine challenge to price control standards because price control authority provided specificity through its regulations).

376. See 2 COGINS, supra note 304, at 16-10; BOWES & KRUTILLA, supra note 307, at 32-34.


Despite the similarity in language, courts have interpreted emergency provisions in other statutes more loosely. The imminence criterion in CERCLA has been virtually read out of the statute through expansive interpretation of what constitutes a threat. See B.F. Goodrich Co. v. Murtha, 697 F. Supp. 89, 95-97 (D. Conn. 1988); United States v. Conservation Chemical Co., 619 F. Supp. 162, 191-97 (W.D. Mo. 1985). This approach is consistent with judicial interpretation of CERCLA generally. Under the D.C. Circuit's treatment of suspensions under FIFRA, once a notice of intent to cancel is issued, the burden is on the agency registrant to explain why it is not suspending the registration. See Environmental Defense Fund v. EPA, 465 F.2d 528, 532-33, 539-40 (D.C. Cir. 1972) (aldrin and dieldrin); EDF v. EPA, 510 F.2d 1292, 1297-98 (D.C. Cir. 1975) (aldrin and dieldrin); EDF v. EPA, 548 F.2d 998, 1002-05 (D.C. Cir. 1976), cert. denied 431 U.S. 925 (heptachlor and chlordane). This similarly conflates routine activity with emergencies. TSCA’s emergency provision, 15 U.S.C. § 2606 (imminent hazards), has been virtually unused. The sole case interpreting it suggested in dicta that the difference between routine and emergency cases is imminence of harm, rather than degree of risk. See United States v. Commonwealth Edison Co., 620 F. Supp. 1404, 1410-11 (N.D. Ill. 1985); see also Dow Chemical Co. v. Blum, 469 F. Supp. 892 (E.D. Mich. 1979) (imminence under FIFRA requires a substantial likelihood of harm within the next 3-4 months). While the weakening of the threshold for emergency action increases agency freedom to take emergency action, it renders these provisions of little use in controlling agency priorities. While the Fifth Circuit decisions betray some general hostility to OSHA, and they make use of emergency temporary standards nearly impossible, they do vindicate the Congressional priorities.
The Yale Journal on Regulation Vol. 9: 277, 1992

"law to apply" is to establish a firm hierarchy of the relevant criteria for setting priorities. Congress has in fact done this in a few, limited cases. A simplified model which divides the relevant factors into two categories, of primary and secondary importance, has been used in the Clean Water Act and in Superfund cleanup priorities. EPA has used such a system for its National Priorities List/Hazard Ranking System. More recently, Congress developed a priority list of desired actions under the Pollution Prevention Act.

For toxic substances, the primary directive could be the greatest overall risk reduction possible within the budget allocated by Congress. Relative risk and cost-effectiveness are also obvious candidates for priority-setting criteria, but each has significant drawbacks. Alternatively, attacking situations which present the maximum risk or the lowest marginal cost of reduction might be emphasized. Congress could also indicate general preferences, such as breadth versus depth: remedy many problems less fully, or a few completely. I do not propose in this Article to advocate particular criteria that Congress ought to instruct EPA to use in setting priorities. The fact is that "worst" can mean a number of things, including but not limited to the degree of risk and avoidability. It is up to Congress to decide, at least initially, what it does mean.

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379. This is essentially what GAO recommends that EPA do internally for the ITC, in the absence of such direction from Congress. See GAO, TOXIC SUBSTANCES: EPA'S CHEMICAL TESTING PROGRAM HAS MADE LITTLE PROGRESS 23-25 (1990).
380. See 33 U.S.C. § 1314(b)(1)(B), which was explained and applied in Weyerhause Co. v. Costle, 590 F.2d 1011, 1044-47 (D.C. Cir. 1978) (distinguishing between "comparison factors," to which the agency is to give primary weight, and "consideration factors," a list of several factors in no particular order of importance).
381. See 42 U.S.C. § 9605(a)(8)(A) (requiring the National Hazardous Substance Response Plan to include criteria for determining priorities among releases and threatened releases of hazardous substances).
382. See National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. § 300.430(f) (1991) (distinguishing between threshold, balancing, and modifying factors).
384. Ackerman and Hassler make the similar suggestion that Congress should give EPA an overall risk target (like 25,000 lives saved per year) within which EPA is free to allocate its resources as it sees fit. See ACKERMAN & HASSLER, supra note 51, at 124-28. Schoenbrod criticizes plans such as Ackerman and Hassler's as vague goals which overstate the ability of law to compel sensible planning. Schoenbrod, supra note 115, at 801-02.
385. Valuable analyses of the advantages and disadvantages of risk-based priority setting can be found in the sources cited supra note 3 and in Fiorino, supra note 96; see also Robert F. Blomquist, The EPA Science Advisory Board's Report on "Reducing Risk": Some Overarching Observations Regarding the Public Interest, 22 ENV'T L. 149 (1992).
387. See GAO, CHEMICAL TESTING PROGRAM, supra note 379, at 24 ("Officials are uncertain about whether the testing program's goal is to gather a little information on as many chemicals as possible or to require extensive testing for a few chemicals more highly suspected of posing an unreasonable risk.")
388. See Merrill, Cancer-Causing Chemicals, supra note 38, at 114-17.

346
Worst Things First

C. Prospects

The most common congressional approach to agency priority setting is to ignore it. The major environmental statutes typically instruct EPA to take action "if it finds" that a certain predicate exists. Since the predicate often covers vastly more than the agency can handle—the hallmark of the hazard identification process is casting a broad net—the agency has no choice but to set priorities on its own.

The National Priorities List (NPL) established under CERCLA is a rare example of explicit congressional concern for priority setting, perhaps because even the optimists of 1980 recognized the gulf between the resources available and those needed to clean up all of the Love Canals in the United States. At the very least, the limited Superfund monies had to be protected from "ill-conceived or disorganized cleanup efforts." Congress has in fact been able to establish meaningful criteria for the ranking of sites for Superfund cleanup. Under CERCLA, clean-ups financed by the Superfund itself must meet several criteria for techniques and degree of safety. The threshold requirement, however, is that the site be included on the National Priorities List (NPL) of sites.

CERCLA originally gave EPA very little guidance in choosing priorities for the NPL, so EPA created on its own a Hazard Ranking System (HRS) to facilitate the identification and ordering of NPL sites. The HRS is a quantitative scoring system for estimating relative risk. Several pathways of exposure to hazardous chemicals are separately evaluated for toxicity, waste quantity, and exposed population. Factors are assigned numerical values, weighted, and ultimately combined according to formulas set out in the regulations. The intended result is a system for developing a uniform metric for comparing Superfund sites. In the 1986 Superfund Amendments and Reauthorization Act (SARA), Congress officially recognized the HRS and set out several characteristics for it. Congress emphasized relative risk, but added some special concerns, for example, that the highest state priorities be reflected in high placement on the national list.

390. For general descriptions of the NPL and its role in the CERCLA process, see Eagle-Picher Indus. v. EPA, 759 F.2d 922, 932-33 (D.C. Cir. 1985) (Eagle-Picher II); Eagle-Picher Indus. v. EPA, 759 F.2d 905, 919-21 (D.C. Cir. 1985) (Eagle-Picher I); City of Stoughton v. EPA, 858 F.2d 747, 749 (D.C. Cir. 1988).
393. See 42 U.S.C. §§ 9605(a)(8), 9605(c)(1)-(2). To assist in this effort, SARA also revitalized the Agency for Toxic Substances and Disease Registry (ATSDR). One of ATSDR's main functions is to develop
The NPL/HRS program has three basic strengths. First, it recognizes the central importance of priority setting to effective agency operations with limited resources. While the goal of the HRS is "accurately to assess relative risks," Congress recognized that priority setting under these circumstances cannot mean perfect accuracy in risk assessment. Rather, "the NPL is simply a rough list of priorities, assembled quickly and inexpensively." Congress recognized the difference in the SARA amendments, and it urged EPA to determine relative risk "to the maximum extent feasible." Scoring systems are an appropriate means to accomplish this task. Like priority setting, listing is essentially a preliminary step entitled to substantial deference, but it is nevertheless a final agency action which is reviewable for consistency with congressional policy.

Second, the program seeks to achieve a compromise between agency flexibility to exercise expertise and congressional authority to establish basic policy. It serves the former goal by letting the agency set the priorities and the priority-setting criteria; it serves the latter goal by allowing Congress to enact ex ante standards for the priorities and by mandating an explicit and public process for ex post review. The existence of an open, agency-created priority-setting system enabled Congress, finding itself dissatisfied with the policies underlying the HRS, to require EPA to revise its priorities better to reflect Congress' views.

a rank-ordered list of the 100 most hazardous chemicals commonly found at Superfund sites, as a means of assisting in (among other things) revision of the NPL. See 42 U.S.C. § 9604(i)(2)(A). Congress required ATSDR to consider basic components of chemical risk (degree of toxicity and potential human exposure, in addition to the frequency of its occurrence at Superfund sites), which the agency has developed into its own scoring system. See Revised Priority List of Hazardous Substances, 56 Fed. Reg. 52,166, 52,167 (1991).


395. See Eagle-Picher II, 759 F.2d at 932; see also B & B Tritech, 957 F.2d 882 (D.C. Cir. 1992); Washington State Dept't of Transp. v. EPA, 917 F.2d 1309, 1310 (D.C. Cir. 1990); City of Soughton, 858 F.2d at 751; Eagle-Picher I, 759 F.2d at 921; Linemaster Switch Corp. v. EPA, 938 F.2d 1299, 1304 (D.C. Cir. 1991) (finding that Congress did not want improvement of accuracy of HRS to interfere with identification of new sites in the interim); Hazard Ranking System, supra note 254, at 51,963-64 (distinquishing the HRS score from quantitative risk assessment).


397. See Hazard Ranking System, supra note 254; see also Rosenblum & Lapp, supra note 252, at 183-85 (describing advantages of risk indexing over risk assessment in setting priorities).

398. See S. REP. NO. 848, 96th Cong., 2d Sess. 60 (1980); see also U.S. Ecology, Inc. v. Carlson, 638 F. Supp. 513 (C.D. Ill. 1986). The courts have granted EPA considerable latitude in establishing the HRS. See, e.g., Eagle-Picher I; Eagle-Picher III.


400. SARA required revision of the HRS, 42 U.S.C. § 9605(c)(1) (1988), because Congress was dissatisfied with EPA's treatment of high-volume, low-toxicity waste sites as a high priority. See S. REP. NO. 11, 99th Cong., 1st Sess. 40 (1985); H.R. REP. NO. 962, 99th Cong., 2d Sess. 200 (1986), and other sources cited in Linemaster Switch Corp. v. EPA, 938 F.2d 1299, 1303-04 (D.C. Cir. 1991). See Fiorino, supra note 96, at 83 ("For theoretical perspective, risk-based planning can be seen as a version of mixed scanning, with elements both of rational-comprehensive and incremental decision making.")

SARA, incidentally, also reveals the darker side of congressional control—high-volume, low-toxicity wastes are mainly the result of mining operations, and it may be inferred that the operative dissatisfaction was less Congress' than the mining industry's.
Third, the HRS establishes criteria for setting priorities that are derived from a general congressional policy but are specific enough to be enforceable in court should the ranking system itself be challenged. Moreover, despite the broad discretion which must remain with the agency, an individual can obtain searching judicial review of actual placement on the NPL under the congressionally mandated criteria.

The National Priorities List is a promising development, but it is limited to one program and involves a relatively homogenous group of risks to rank. Since EPA’s responsibilities are spread among statutes and constituencies, interprogram priority setting is also needed. EPA has already undertaken a large amount of research on this subject. EPA’s Unfinished Business, and the subsequent evaluation by its Science Advisory Board, Reducing Risk, identified numerous environmental problems and sought to estimate the extent of four types of risk posed by each. The resulting ranking of relative risk was compared to existing EPA priorities (as measured by funding levels) and public perceptions of risk. Not surprisingly, EPA’s priorities matched public perceptions much better than the pure risk-based approach. The practical and theoretical limitations of the risk-based methodology, substantial as they are, do not undermine the point that, faced with scarce resources, EPA must develop some way of allocating them in a sensible manner. Thus, far more important than the rather unsurprising results of Unfinished Business and other comparative studies, is EPA’s interest in the problem and the stated intention of its leadership to be guided by the results of these studies.

EPA’s interest in interprogram priority setting goes hand in hand with its interest in intermedia (or integrated) pollution control. Integrated pollution control is an important subject in its own right, and it is beginning to receive considerable attention in the legal literature. For present purposes, it is most relevant that the twin aims of integrated environmental management and overall risk reduction have been taken up in a proposal by the Conservation Foundation for a single environmental statute. The idea has been endorsed by the present

was less Congress’ than the mining industry’s.

401. See Eagle-Picher Indus., Inc. v. EPA, 759 F.2d 905 (D.C. Cir. 1985) (holding that EPA’s Hazard Ranking System was ripe for review upon promulgation and that it was improper to wait for actual application to challenge it).

402. See Tex Tin Corp. v. EPA, 935 F.2d 1321, 1324 (D.C. Cir. 1991) (remanding listing decision for failure to explain basis of certain assumptions); see also Linemaster Switch Corp. v. EPA, 938 F.2d 1299, 1307 (D.C. Cir. 1991) (affirming listing decision after detailed discussion of agency’s analysis); Eagle-Picher III (same); City of Stoughton (same).

403. See Reilly, The Turning Point, supra note 2, at 1389; Reilly, Aiming Before We Shoot, supra note 2, at 3-4; SAB, REDUCING RISK, supra note 2, at 1.

404. Hornstein’s “normative critique” of risk-based priority setting leaves little doubt that a purely quantitative approach to priority setting is deeply flawed. See Hornstein, supra note 3, at 584-629.


406. See Symposium, supra note 5; Guruswamy, supra note 10.
The Administrator of EPA. The Conservation Foundation draft would bring the many responsibilities of EPA under a unified regulatory structure, guided by a single safety standard, the familiar "unreasonable risk." This structure is primarily intended to facilitate integrated, intermedia pollution control, but it is also intended to help "set rational priorities among different programs." In this respect, the draft's approach is very much in the technocratic, rationalist tradition. The agency "shall be guided by the goal of improving overall environmental quality as effectively and efficiently as possible." The basis for setting priorities and measuring safety is risk, and the unreasonable risk standard takes account of a wealth of factors including types of risk, costs, innovation, availability of substitutes, and administrability. Indeed, while disclaiming reliance on quantitative measures and formal cost-benefit balancing, the draft puts its faith in the agency's "judgment" and attempts to circumscribe judicial review.

The most important limitation, both theoretical and practical, on inter-program priority setting is the difficulty in comparing health risks in very different contexts. Within a single program, choices are relatively easy because the chemicals at issue have the same kinds of benefits, raise similar issues of cost (necessity and ability to substitute), and pose similar risks. Crop pesticides, for example, not only save farmers money, but make agriculture possible at in certain places and for certain crops. They also assure a reliable, plentiful, and affordable food supply, which is a health benefit of inestimable value. The risks they pose include poisoning of farm workers, land and groundwater contamination and runoff, and residue on agricultural commodities. Even among pesticides, however, wood preservatives, crop dusts, and marine antifoulants, for instance, present very different cost, risk, and benefit issues.

Moving beyond pesticides simply magnifies the difficulties of comparing risks. An agency like EPA with diffuse responsibilities experience great diffi-

407. Administrator Reilly is the former president of the Conservation Foundation. He appointed the principal author of the draft to a top policy position at EPA. See Single Statute Pushed by Reilly to Replace Existing Environmental Laws, 20 ENV'T REP. (BNA) 1351 (Dec. 1, 1989).

408. See CONSERVATION FOUNDATION, THE ENVIRONMENTAL PROTECTION ACT (SECOND DRAFT 1988) [hereinafter CONSERVATION FOUNDATION, SECOND DRAFT].

409. See Guruswamy, supra note 10, at 521; Thomas L. Adams Jr. & M. Elizabeth Cox, The Environmental Shell Game and the Need for Codification, 20 ENVTL. L. REP. (Envtl. L. Inst.) 10367, 10367-68. Little has been accomplished if air pollutants are reduced by discharging the chemicals into the sewer or landfilling them.

410. See CONSERVATION FOUNDATION, SECOND DRAFT, supra note 408, at 2.

411. See id. § 301(b).

412. See id. §§ 801(b)(1)(B) and 801(c).

413. See id. § 801(b)(2). This aspect of the rationalist model is discussed in McGarity, Regulatory Analysis, supra note 61, at 1255; see also supra Part II(A)(1).

414. See CONSERVATION FOUNDATION, SECOND DRAFT, supra note 408, at § 801(c).

culty in reconciling all of the environmental effects that it must regulate. \(^{416}\) Beyond the relatively straightforward criterion of risk, \(^{417}\) very different considerations are relevant to different areas of exposure to toxic substances. \(^{418}\) Simply in determining costs, it is very difficult to measure the value of life and health in the first place. It is hard to see how one can meaningfully compare human health risks with natural resources damage, or quantify voluntariness of risk exposure. The cost-risk-benefit metric itself excludes several relevant considerations in the acceptability of risk, for example, the distribution of risk-bearing and control costs, intergenerational equity, and the ethics of risk creation. \(^{419}\) EPA's studies of inter-program priorities, which are premissed on the commensurability of risks, return again and again to the problems of comparisons. \(^{420}\)

Whatever its limitations, the Conservation Foundation proposal establishes a framework for priority setting. The draft itself stops far short of mandated priority setting \(^{421}\) and gives only general guidance to the priority setter. \(^{422}\) Moreover, the politics of environmental regulation may foreclose unification. \(^{423}\) Nevertheless, Congress' recent deliberations on a new Cabinet-level Department of the Environment raise the possibility that further integrating and

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\(^{416}\) Even a narrowly focused agency like OSHA must allocate its resources between the worker-safety and worker-health sides of its mandate. This is a highly controversial choice, and the emphasis often changes with the leadership. See Graham et al., supra note 6, at 82-84.

\(^{417}\) Actually, measurement of risk is not as obvious as it might seem. See Cross et al., supra note 27, at 73-75; Baram, supra note 70, at 12.

\(^{418}\) See Hornstein, supra note 3, at 587-616; see also Baram, supra note 70, at 33-37 (1987) (describing problems of measurement, comparison, and administration).

\(^{419}\) Faced with the daunting task of the allocating the entire outer continental shelf, the Secretary of the Interior initially declined to make inter-region comparisons of "environmental sensitivity." He could not, he said, meaningfully compare the Alaska fishery with the New England fishery, because they were entirely different, to say nothing of comparing Arctic whales with Gulf of Mexico coral. See Watt 1, 668 F.2d at 1311-12. The court rejected this claim, first because the Department had in the past developed criteria for just such comparisons, and, second, because Congress required the Department to do it:

Lack of information, lack of time, and methodological imperfections all may make the consideration highly speculative, as will the difficulties inherent in comparing, to use the Secretary's example, coral reefs with arctic whales. But the difficulties inherent in this comparison were recognized by Congress.... The statute does not require the Secretary to compile a top-to-bottom ranking among all OCS regions, but he must at least attempt to identify those areas whose environment and marine productivity are most and least sensitive to OCS activity.

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\(^{420}\) See EPA, Unfinished Business, supra note 3; EPA, Comparative Risk, supra note 3; SAB, Reducing Risk, supra note 2; see also GAO, Limited Resources, supra note 1.

\(^{421}\) See Conservation Foundation, Second Draft, supra note 408, § 203(i) (requiring annual reports to Congress of agency's "goals, priorities, and plans," together with a progress report).

\(^{422}\) See id. § 801(b)(2) ("In exercising the judgment necessary to decide whether an action under this Act should be taken the Secretary shall give greatest weight to the benefits of the proposed action.").

\(^{423}\) Guruswamy concludes that integration is more likely to be accomplished through existing legislation. See Guruswamy, supra note 10, at 519-30. EPA is currently making some efforts in this direction. See Adams & Cox, supra note 409, at 10368-69; Applegate, supra note 12, at 330-32 (advocating a wider role for TSCA in information development).
consolidating legislation will be forthcoming. Most important, it shows that Congress and EPA recognize the centrality of scarcity to the regulatory structures they must develop, and further recognize the need to make explicit judgments and to act on them. The interprogram studies of relative risk, for all their inadequacy, have focused attention on the need to confront directly the need for allocation and priority setting across the various areas of EPA's responsibility. These choices must be made, and in fact are made, because resources are limited. Our task is to see that they are made in a sensible and appropriate way.

Conclusion

There is nothing particularly mysterious about the uncertainty that afflicts the regulation of toxic substances. It does not necessarily require unique or drastic regulatory strategies. Rather, uncertainty stems from the lack of adequate information concerning the nature and extent of the health effects of toxic substances. The data gap for toxic substances is much larger than most, and perfect knowledge is unobtainable as a practical matter. But where in regulation is perfect knowledge obtainable? The information problem for toxic substances is unusually great, which makes it a particularly interesting setting in which to study regulatory systems, but it is like other information deficits in three ways: (1) more information will improve the efficiency and effectiveness of regulation; (2) the deficit may be reduced by obtaining more information; and (3) the effects of the deficit may be mitigated by better allocation of resources. Since the government's ability to generate more information is sharply limited, Congress and EPA must face up to the central problem of allocating scarce resources.

The present regulatory structure naturally focuses on the most obvious regulatory phases of toxic substances control: the substantive predicates for agency action to protect industry from administrative zealotry, and target levels of safety to protect the public from administrative lassitude. These are critically important, of course, but the systematic application of both has been undermined by inadequate resources and undirected priority setting. Therefore, this Article has suggested that we turn away from predicates and targets in exercis-


ing congressional control except at the outer limits, and that we look instead to the process of setting regulatory priorities. For regulators, this approach provides useful discretion in achieving the most effective protection of public health. For Congress, it reestablishes legitimating political control over fundamental policy choices in toxic substances regulation. For both, relocating control to priority setting focuses attention on the part of the regulatory process that is most directly concerned with the fundamental problem of allocating scarce resources.

The present proposal is admittedly novel in the control of toxic substances, but it has antecedents in other areas of environmental law. Planning and priority-setting schemes can be found in general regulatory reform measures. Of even greater interest, planning has become the centerpiece of federal natural resources management. This experience, together with an analysis of the relevant administrative law doctrines and policies, suggests that it is both useful and feasible to exercise policy control through mandated planning. EPA has shown great interest in proceeding along these lines. Where resources are limited, fundamental choices must be made. This Article aims to focus attention on these choices and to provide a regulatory structure that encourages Congress and EPA to make their choices wisely.