



Environmental, Health, and Safety Tradeoffs: A Discussion of Policymaking Opportunities and Constraints

name redacted

Coordinator of Division Research and Specialist in Resources, Science and Industry

name redacted

Section Research Manager

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Summary

A policymaker making a decision on approving a program may face the questions, What are the tradeoffs? What alternatives are foregone by committing resources to that program? This issue has been sharpened in environmental, health, and safety policy because studies indicate that some programs are more cost-effective than others, suggesting that redirecting resources from less efficient to more effective programs would increase overall national economic welfare.

Actually making implied tradeoffs has proved difficult, however. One reason is continuing controversy over methods for evaluating the risks, costs, and benefits of alternative programs—leaving uncertainty about exactly what would be gained and lost in a tradeoff. Other constraints affecting tradeoffs include variations in regulatory standards among environmental, health, and safety statutes and political responses to nonquantifiable values such as equity. Legislative efforts to revise the statutes or to establish more comprehensive reviews of tradeoffs have moved slowly.

Two further factors constrain the ability to make a tradeoff at a particular time and in a particular institutional context. One consists of institutional structures and procedures that impose limits on possible ranges of decisions within the legislative and executive branches. For example, an appropriations subcommittee typically weighs spending tradeoffs only among programs within its jurisdiction, but not tradeoffs with programs in the jurisdiction of other subcommittees even if the programs are related. Similarly, statutes authorizing environmental, health, and safety regulations may be written by separate committees, leading to variations in cost-effectiveness standards for protecting the public health and environment.

A second complicating factor occurs when a program's alternative(s) would require a shift in who can decide on the use of the resources involved, as when a regulatory program is considered in lieu of a tax-supported program. Deciding to regulate industrial air pollutants mandates spending by industry and consumers; choosing not to regulate leaves those monies available to the industry's executives and consumers, who can invest/spend them according to their own preferences. Having little control over alternative expenditures, a decisionmaker tends to focus on each program as self-contained, not to compare options.

The actual tradeoff faced by a legislator or policymaker at a particular time and place is constrained by institutional structure and rules, and by the fact that most decisions are up-or-down, not between program options. Many putative tradeoffs exist only in a theoretical sense: they are tradeoffs not then and there available to that policymaker. Making environmental, health, and safety tradeoffs on the basis of cost-benefit analyses implies restructuring decisionmaking processes, but such restructuring is very difficult in itself, and it is unclear whether the results would more accurately reflect the informed preferences of Congress—or the citizenry.

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Preface

Government programs are no exception to the constraints of opportunity costs: that is, investing resources in any one program means that those resources cannot be used for some other program. A policymaker deciding whether to support a new action; a legislator deciding whether to vote for a new program; a regulator deciding whether to impose a stringent standard: each decisionmaker faces the question, What will be foregone if I decide to commit the resources for this activity?

Especially with respect to environmental, health, and safety programs, increasing sensitivity to the costs of regulations has led some pundits, analysts, and stakeholders to challenge initiatives on the grounds that alternative choices are available that would provide more risk reduction or other benefits at lower cost.

Background Note

The original version of this report was prepared in the mid-1990s when regulatory reform and the budget were high-profile congressional issues. CRS was receiving numerous requests in the general format of, "If regulatory program X were rescinded, how much of some other good Y (e.g., mammograms) could we buy?" The theoretical answer is a relatively straightforward calculation and may give a sense of relative benefits. But in most cases the answer has little practical application for actually redirecting dollars from program X to program Y: this report examined why.

Given the probability that regulatory programs and budgetary constraints will again be high-profile for the 112th Congress, similar questions are likely to arise. This report has therefore been updated and reissued. While many of the examples are from earlier years, the principles examined remain the same.

When Congress voted on the Clean Air Act Amendments of 1990, columnist George F. Will wrote, "Policy makers face difficult tradeoffs. Comparative returns to health must be considered. The \$21 billion spent on cleaner air cannot be spent on immunization, infant mortality, care for poor pregnant women."¹

At a 1997 hearing concerning the Environmental Protection Agency's (EPA's) proposal to tighten the National Ambient Air Quality Standards (NAAQS) for ozone and particulate matter, a Congressman commented, "What are the alternatives to the ... rulemaking? There are clearly better investments that can be made to promote public health. Eight billion dollars could save 3 or 4 times as many women from breast cancer by paying for mammograms."²

In a "viewpoint" article in Exxon's magazine for shareholders, its author states that sound science and sound economics could lead to smarter regulation by reallocating regulatory expenditures: for example, "it may be smart to invest more in smoking-cessation education for pregnant women and less in making the groundwater in a Michigan rail yard cleaner than drinking water."³

¹ George F. Will, "Your Money and Your Life," *Washington Post* (March 8, 1990), p. A27.

² Hon. David McIntosh, in U.S. Congress, House, Subcommittee on National Economic Growth, Natural Resources, and Regulatory Affairs, Committee on Government Reform and Oversight, *EPA's Particulate Matter and Ozone Rulemaking: Is EPA above the Law?* Hearing, 105th Congress, 1st session, April 16, 1997 [Serial No. 105-37] (Washington, D.C.: U.S. Govt. Print. Off., 1997), p. 36.

³ "Bringing Reason to Regulation," *The Lamp* (Winter 1997-1998), 13.

In a debate counterposing environmental and economic tradeoffs, Paul Portney of Resources for the Future said, “A hundred dollars spent on environmental protection is \$100 that can’t be spent on housing, or space, or health, or other alternatives.”⁴

In 1992 Stephen Breyer (who became a Supreme Court Justice in 1994) addressed the need to improve the effectiveness of risk regulation in The Oliver Wendell Holmes Lectures, given at Harvard. His solution featured a centralized administrative group in the federal government to oversee and guide risk regulation. One of the group’s missions could be to

create a “risk agenda” ... that looks for tradeoffs among programs that will lead overall to improved health or safety. It might, for example, look for practical ways to settle some toxic waste dump cases, thereby obtaining funds that might be used to help pay for vaccinations, or prenatal care, or mammograms.... It might, in other words, look for ways to reallocate, transfer, or combine health resources so that they perform more effectively.⁵

In the early 1990s the then-head of the Harvard Center for Risk Analysis, John D. Graham, together with his student and colleague Tammy O. Tengs, went beyond the rhetoric and studied these potential tradeoffs. They analyzed the cost-effectiveness of 185 life-saving interventions (including, for example, laws, regulations, and building codes) for which national cost and benefit estimates were available. They found that these interventions cost \$21.4 billion per year and averted 56,700 premature deaths and saved 592,000 years of life annually; but there was no relationship between the cost-effectiveness of the interventions and their implementation. Tengs and Graham concluded that if the \$21.4 billion per year were devoted only to the most efficient interventions, approximately twice as many lives and years of life could be saved. Alternatively, they found that the nation could maintain the current level of survival benefits—averting 56,700 deaths per year—and “save \$31.1 billion over the status quo, because there are many untapped investment opportunities that save both lives and money. That is, not only would we save the \$21.4 billion that we are currently spending, but another \$10 billion—all the while maintaining our present level of survival benefits.”⁶

Graham asserted that failing to follow through on the implications of studies showing that tradeoffs could improve the cost-effectiveness of health, environmental, and safety regulations was a “perverse pattern of investment [that] amounts to ‘statistical murder’ of American citizens.”⁷ Graham concluded—

Legislators should pass broad-based legislation requiring the use of risk analysis and cost-benefit analysis in government decisions. The President and Congress should reexamine

⁴ Paul R. Portney, representing the economist’s perspective in a debate *Does Environmental Policy Conflict with Economic Growth? Two Views*, Resources for the Future (1 December 1993); a printed version is David Gardiner and Paul R. Portney, “Does Environmental Policy Conflict with Economic Growth?” *Resources* (Spring 1994, no. 115), pp. 19-23

⁵ Stephen Breyer, *Breaking the Vicious Circle: Toward Effective Risk Regulation* (Harvard University Press, 1993).

⁶ Tammy O. Tengs and John D. Graham, “The Opportunity Costs of Haphazard Social Investments in Life-Saving,” in Robert W. Hahn, ed., *Risks, Costs, and Lives Saved: Getting Better Results from Regulation* (Washington, D.C.: The AEI Press, 1996), pp. 173-174; Tammy Tengs, et al., “Five-Hundred Life-Saving Interventions and Their Cost-Effectiveness,” *Risk Analysis*, Vol. 15, no. 3 (1995), 369-390. For an explicit critique of the analysis, see Lisa Heinzerling, “Five-Hundred Life-Saving Interventions and Their Misuse in the Debate Over Regulatory Reform,” *Risk* Vol. 13, no. 1/ 2 (Spring 2002), 151-175.

⁷ John D. Graham, “Comparing Opportunities To Reduce Health Risks: Toxin Control, Medicine and Injury Protection,” National Center for Policy Analysis, Policy Report No. 192 (June 1995), p. 2.

annual appropriations to public health and environmental agencies to determine how reallocations of dollars could offer more health protection and no greater costs to the taxpayer or private sector.

This view has been broadly accepted among those promoting risk assessment and cost-benefit analysis as ways of rationalizing regulatory activities. For example, summarizing a volume analyzing risk-benefit tradeoffs, Robert W. Hahn, a long-time student of regulatory costs, concluded: “We could save a substantial number of lives and money by reallocating resources from ineffective domestic regulations to other life-saving interventions in the United States or the developing world.”⁸ Similarly, legal scholar Cass Sunstein observed that studies like Tengs’ and Graham’s create “a presumption that the current system of regulation suffers from serious misallocation of resources.”⁹ Sunstein has promoted cost-benefit analysis as a way to require people “to look globally at the consequences of apparently isolated actions.”¹⁰

Thus, going beyond rhetoric, analysts like Hahn and Tengs and Graham see quantitative analysis of tradeoffs as a practical way of achieving greater societal efficiency for health, safety, and environmental protection investments. Graham, in particular, has been a strong advocate of using risk and cost-benefit assessments of tradeoffs to improve decisionmaking¹¹—a view which he was in a position to further between 2001 and 2006 as Administrator of the Office of Information and Regulatory Affairs in the White House’s Office of Management and Budget. And Cass Sunstein likewise has had, since 2009, the opportunity to apply his views on rationalizing regulation with cost-benefit analysis as Administrator of the Office of Information and Regulatory Affairs in the White House’s Office of Management and Budget for the Obama Administration.

Certainly, risk assessment and cost-benefit analyses of health, safety, and environmental policies have advanced substantially over the past several years, leading to efforts at quantifying tradeoffs to identify the most efficient/least efficient ones. But legislators and other policymakers have found it difficult to effect overt tradeoffs among environmental, health, and safety programs. One reason for this difficulty, and perhaps the one most often cited, is the perceived inadequacy of the assessments themselves. Problematic issues include incomplete assessment of costs and, especially, benefits; discounting future benefits; monetization of noncommercial benefits such as health and environmental amenities; the resources and time necessary to conduct analyses; and a utilitarian bias to the technique, among others.¹²

⁸ Robert W. Hahn, “Regulatory Reform: What Do the Government’s Numbers Tell Us?” in Robert W. Hahn, ed., *Risks, Costs, and Lives Saved: Getting Better Results from Regulation* (Washington, D.C.: The AEI Press, 1996), p. 239.

⁹ Cass Sunstein, *Risk and Reason: Safety, Law, and the Environment* (Cambridge University Press (2002), p. 31.

¹⁰ *Ibid.*, p. 40.

¹¹ E.g., Graham, “Edging Toward Sanity on Regulatory Risk Reform,” *Issues in Science and Technology* (Summer 1995), 61-66; Graham, “Legislative Approaches to Achieving More Protection Against Risk at Less Cost,” *University of Chicago Legal Forum* (1997), 1-47; testimony on provisions of H.R. 9 [104th Congress] that would create a system of risk assessment and cost-benefit analysis for Federal agencies engaged in health, safety, and environmental regulations: Committee on Science, U.S. House of Representatives, *Risk Assessment and Cost Benefit Analysis* (104th Cong., 1st sess.) January 3, 1995 [No. 3] (Washington, D.C.: U.S. Govt. Print. Off., 1995), pp. 69-71.

¹² E.g., for a review of the difficulties in applying these techniques, see Lester B. Lave, “Benefit-Cost Analysis: Do the Benefits Exceed the Costs?” in Robert W. Hahn, ed., *Risks, Costs, and Lives Saved: Getting Better Results from Regulation* (Washington, D.C.: The AEI Press, 1996), pp. 104-134; Lisa Heinzerling, “The Perils of Precision,” *The Environmental Forum* (September/October 1998), 38-43; and Frank Ackerman and Lisa Heinzerling, *Priceless: On Knowing the Price of Everything and the Value of Nothing* (New Press, 2004).

But leaving aside a more detailed discussion of how accurately it is possible to evaluate potential tradeoffs, or how fair such tradeoffs might be,¹³ this report examines two institutional reasons why policymakers may be disinclined to make tradeoffs—or may even find it impossible. For even if the tradeoffs can be defined and defended, difficulties in effectuating them remain. One institutional barrier is the limited authority of policymakers to affect decisions across institutional boundaries. For example, in part because of independent decisions made at different times by the relevant congressional committees of jurisdiction, the various health, safety, and environmental statutes manifest differing standards of acceptable risk and differing criteria for assessing them.

The second barrier arises from the divergence in decision criteria applied by the different institutional decisionmakers involved in tradeoffs. Health, safety, and environmental policies can involve both public financing (e.g., appropriated grants or loans) and regulations that require private sector investments; they can involve a range of federal, state, local, and private decisionmakers. As tradeoffs change those responsible for making decisions, the bases for acting or financing programs shift as well. A decisionmaker can rarely if ever prescribe that resources freed up by his or her not supporting an environmental protection program or not choosing a regulatory option—or a more stringent option—will go to a more beneficial alternative.

These constraints that arise from institutional contexts in which legislators and other policymakers address tradeoffs both limit alternatives that can usefully be considered, and tend to push decisionmakers to make up-or-down, case-by-case decisions rather than choosing among tradeoffs. Typically, a decisionmaker's only option is to approve or disapprove an action, to vote for or against a program, or to implement or delay a regulation—with little power to redirect the resources to a more cost-effective alternative if the choice at hand is rejected.

Institutional and Structural Limits on Choosing among Tradeoffs

The rules and structures of organizations channel decisions in ways that limit the options of decisionmakers. In Congress, rules of procedures and committee structures can limit tradeoffs available to Members. In particular, jurisdictional limitations affecting congressional subcommittees' and committees' choices and procedural requirements governing floor actions—including especially the “germaneness” rule of the House¹⁴—impede treating comprehensively the many environmental, health, and safety statutes. These procedural and structural limits play key roles in determining the availability of potential tradeoffs both among program goals and among alternatives for federal expenditures of treasury funds. Similarly, procedures and the bureaucratic structure of the executive branch limit choices of administrators and program managers.

¹³ Stakeholders affected by regulations and tradeoffs are likely to weigh in on deliberations by policymakers, potentially skewing perceptions of impacts and of fairness. See, e.g., Cass Sunstein, *Risk and Reason*, pp. 91-95, 113-114.

¹⁴ “No motion or proposition on a subject different from that under consideration shall be admitted under color of amendment.” Clause 7 of rule XVI of the rules of the House of Representatives. Thus an amendment substituting language concerning, say, a health program for an environmental action could be subject to a point of order as not germane, thereby putting at risk any effort to trade off among unrelated health, safety and environmental programs.

Appropriations for Federal Programs

The process by which Congress considers annual appropriations illustrates how structure can constrain tradeoffs. While the President, Congress as a whole, each Chamber, and the full Committees on Budget and on Appropriations have the ability to view comprehensively funding priorities and consider tradeoffs, only in exceptional cases can those with comprehensive authority devote attention to the level of detail at which most environmental, health, and safety tradeoffs occur.¹⁵

The House and Senate Appropriations Committees¹⁶ each divide the total amount of funds available for discretionary spending among their subcommittees (12 since the 109th Congress; previously, 13). These 302(b) allocations, as they are known, set the funding limit for each subcommittee handling one of the 12 bills annually appropriating funds for the federal government. As a practical matter, most tradeoffs among programs—whether to spend dollars here or there—occur within each subcommittee’s jurisdiction.¹⁷ For example, the Subcommittee on Interior, Environment, and Related Agencies has combined responsibility for the Department of the Interior, the Environmental Protection Agency (EPA), the Forest Service, the Indian Health Service, the Smithsonian, and the National Endowments for the Arts and the Humanities. The subcommittee may make judgments on the best use of a dollar within an agency’s appropriation, or across agencies within its domain—so that EPA’s dollars may be affected by appropriations decisions concerning Interior or the Forest Service, for example. Thus the ability to weigh the effectiveness of funds to be spent on water quality, for example, could balance EPA and Department of the Interior water programs, since they are under the jurisdiction of one appropriations subcommittee; but there would not be the ability to comparatively weigh the effectiveness of water programs managed by the Department of Agriculture, which is under the jurisdiction of a different subcommittee. Thus an option of spending money through the USDA for water pollution control is only theoretically an opportunity cost of a choice to spend money on sewage treatment grants through EPA: those choosing to spend the money through EPA did not have the option of spending those dollars through USDA. For an actual example, see the textbox “Clean Water Initiative Tradeoff.”

¹⁵ At many steps of congressional (and administration) decisionmaking, Members implicitly or explicitly tradeoff programs, issues, and/or funding. But, as measured by cost benefit analyses and risk assessments such as Tengs and Graham’s, some environmental, health, and safety programs empirically seem relatively inefficient compared to other programs. The question addressed here, then, is why has the purported identification of superior tradeoffs not led to changes resulting in a potentially more efficient array of programs.

¹⁶ For more details, see CRS Report 97-684, *The Congressional Appropriations Process: An Introduction*, by (name redacted), and CRS Report RS201444, *Allocations and Subdivisions in the Congressional Budget Process*, by (name redacted); also, Richard Munson, *The Cardinals of Capitol Hill* (New York: Grove Press, 1993).

¹⁷ The Office of Management and Budget, which constructs the President’s Budget, is analogously split into compartments, each of which focuses on tradeoffs within its allotment of the full budget.

Clean Water Initiative Tradeoff

To illustrate, in 1997 the Administration proposed a Clean Water Initiative to improve and strengthen water pollution control efforts. EPA and USDA, working with other agencies, developed a coordinated action plan. To implement the plan, the President proposed a total of \$568 million in increases for various water programs in the FY1999 budget. However, these programs were under the jurisdictions of five separate subcommittees of each chamber's Appropriations Committee, so "there is no single opportunity for making funding tradeoffs where the several agencies are concerned, e.g., more for USDA, less for EPA."¹⁸ In the end, each subcommittee weighed its component of the plan against its own priorities, so each agency's program was treated separately. EPA's programs got most of their proposed increases, while most of USDA's programs did not. The "coordinated action" of the plan was lost.¹⁹

The competition among alternatives is not just on the basis of relative costs and benefits: there is also political reality. In an interview about federal research and development, Senator Bennett Johnston was asked about R & D tradeoffs among departments. Johnston observed:

There is no research budget as such. So what happens at National Science Foundation, the National Institutes of Health and the Department of Energy are not connected to each other. You know, those silly scientists who said kill the SSC [Superconducting Super Collider] so there would be more money for something else. They did not fail economics 101, they failed freshman high school arithmetic. I mean [the budget process] just does not work that way.²⁰

Similarly, when an Appropriations subcommittee proposed cutting the NASA budget by \$1 billion in the late 1990s, a commentator said:

Researchers unable to imagine their own discipline ever being graced with billion dollar budgets in the first place may simply shrug, or even smile. Some may even think that less money spent on space means more money on some worthier form of research. They'd be flying in the face of decades of experience, but then that's optimism for you.²¹

These bounded tradeoffs become explicit in floor amendments to add funds in an appropriations bill: as net dollars within the bill cannot exceed a ceiling, offsetting funds must be found elsewhere in the bill, so tradeoffs typically are restricted to programs within the subcommittee's jurisdiction. For an example from 1998, when there were 13 appropriations subcommittees, see the textbox, "Tradeoff Within a Subcommittee."

Tradeoff Within a Subcommittee

For example, during consideration of H.R. 4194, in the 105th Congress, the FY1999 appropriations bill for the Departments of Veterans Affairs, Housing and Urban Development, and Independent Agencies (including EPA and NASA), an amendment was approved by the House to increase VA grants to construct state extended care facilities by \$21 million and offset the increase from the Housing Opportunities for Persons with AIDS program funding. An alternative amendment, which was withdrawn, would have offset the \$21 million increase for VA extended care facilities with a decrease in Space Station funding. Thus funds originally allocated to a HUD AIDS program were traded off to VA, in lieu of an alternative proposal that they come from funds originally allocated to the Space Station. In this way tradeoffs are typically contained within each of the appropriations bills.

¹⁸ CRS Report 98-745, *Clean Water Action Plan: Budgetary Initiatives*, by (name redacted), p. 4. [Not in print; available from the author.]

¹⁹ In theory, either full Appropriations Committee could have addressed the funding comprehensively, but more often would defer to subcommittee decisions.

²⁰ *The Energy Daily* (Jan. 25, 1994), p. 4.

²¹ Oliver Morton, "Life without NASA," *New Scientist* (August 21, 1999), p. 45.

Authorizations for Federal Programs

The situation is analogous for authorizations of programs—that is, the statutes that establish their intent, rules, and limitations: jurisdictions are divided among committees (and their subcommittees). For environmental, health, and safety statutes, tradeoffs are largely determined by the statutes/programs of the subcommittee/committee of jurisdiction.²² Opportunities for tradeoffs across committee jurisdictional lines can be limited, especially in the House.

At one level, legislative constraints hinder consideration of tradeoffs between regulatory impacts of programs; an example is the separate jurisdictions in the House for air pollution (Committee on Energy and Commerce) and water pollution (Committee on Transportation and Infrastructure). At the level of choosing between policy instruments, jurisdiction also has implications. Although most economists and many other policy analysts believe pollution reductions could be more efficiently achieved through economic mechanisms, such as pollution taxes, than through “command and control” regulations, the latter have been most often chosen. This tradeoff is constrained in large part because of split jurisdictional authorities. The committees establishing pollution control programs and policies can authorize regulations but cannot levy taxes. Adoption of pollution taxes would depend on favorable action by the House Ways and Means Committee—an added step with uncertain outcome that the authorizing committee can avoid by employing regulations only.²³ Jurisdiction can also affect choices between regulatory programs and federally funded programs. Authorizing committees can authorize regulatory programs themselves. But when they authorize federally funded programs, the final funding decisions reside with the appropriations committees, whose priorities on such programs may differ from the authorizing committees’ priorities.²⁴ One way authorizing committees have effected their view of the appropriate funding priority for their programs is to establish entitlement programs, which are not subject to annual appropriations.

Tengs and Graham tried to take institutional constraints into account in their assessment of cost-effective alternatives. They analyzed savings achievable if five government agencies²⁵ each independently invested its regulatory efforts most cost-effectively. The analysis examined 134 agency rules that result in about \$4.11 billion spent per year by those regulated and save 94,000 life-years. In the analysis, the marginal cost per life-year saved by each agency’s regulations varied from \$1,510,000 for the Consumer Product Safety Commission to \$11,300 for the National Highway Traffic Safety Administration, but the more cost-effective application of those dollars *within* each agency’s regulatory authorities would mean that the \$4.11 billion in resource consumption would nearly double the life-years saved, to about 180,000.²⁶

But even this agency-by-agency assessment of tradeoffs does not fully reflect the limitations on tradeoffs—especially for EPA. EPA’s authorities derive from over a dozen statutes. Jurisdiction

²² David C. King, *Turf Wars: How Congressional Committees Claim Jurisdiction* (Chicago: University of Chicago Press, 1997).

²³ See Steven Kelman, *What Price Incentives?* (Boston: Auburn House Publishing Co., 1981).

²⁴ Authorizing committees frequently specify annual appropriations for a program; for the appropriations committees, however the authorization for appropriation is in effect a ceiling with actual funding subject to available monies and competing programs.

²⁵ The Consumer Product Safety Commission, the Environmental Protection Agency, the Federal Aviation Agency, the National Highway Traffic Safety Administration, and the Occupational Safety and Health Administration.

²⁶ Tengs and Graham, p. 176.

over these statutes is divided among several committees in the House; while jurisdiction over environmental laws is considerably more concentrated in the Senate, jurisdictional splits remain. **Table 1** presents the House and Senate Committees that are among those with jurisdictions over selected environmental, health, and safety statutes. While this list may not capture all relevant committees with jurisdiction, it illustrates that programs often cited as candidates for tradeoffs are subject to separate legislative panels. One result is that each act containing regulatory programs has its own criteria for decisions on setting standards, cleanup, etc. With strong leadership, negotiations may lead to cross-committee deals to coordinate program authorities, but this is the exception, not the rule.

Table 1. Congressional Committee Jurisdiction for Selected Environmental, Health, and Safety Statutes

Environmental, Health, and Safety Statutes	House Committee of Jurisdiction	Senate Committee of Jurisdiction
Clean Air Act	Energy and Commerce	Environment and Public Works
Clean Water Act	Transportation and Infrastructure	Environment and Public Works
Safe Drinking Water Act	Energy and Commerce	Environment and Public Works
Solid Waste Disposal Act/Resource Conservation and Recovery Act	Energy and Commerce	Environment and Public Works
Superfund	Energy and Commerce; Transportation and Infrastructure; Ways and Means (taxes)	Environment and Public Works; Finance (taxes)
Federal Insecticide, Fungicide, and Rodenticide Act	Agriculture; Energy and Commerce (food tolerances)	Agriculture, Nutrition & Forestry; Commerce, Science, and Transportation (food tolerances)
Toxic Substances Control Act	Energy and Commerce	Environment and Public Works
Occupational Safety and Health Act	Education and the Workforce	Health, Education, Labor and Pensions
Food and Drug Act	Energy and Commerce	Commerce, Science, and Transportation

Note: This table simplifies many jurisdictional complexities. The identified committees may not have exclusive jurisdiction over the indicated statutes, and some committees with jurisdiction extending over environmental, health, and safety statutes may not be included. Subcommittee jurisdictions are omitted. Also, specific provisions in a bill may lead to multiple referral to other committees for consideration of those provisions. Finally, some programs have elements that may be affected by separate legislative enactments, such as mass transit programs under transportation legislation having consequences for Clean Air Act programs.

Thus both legislators and EPA officials have limited opportunities to compare and make consistent standards and decision criteria among statutes. The resulting fragmented regulatory structure precludes EPA from proceeding with many putative tradeoffs and from weighing the costs and benefits decisions under different authorities on the same scales. Hence, at least for EPA, Tengs and Graham’s analysis showing that regulatory actions could be more cost effective appears to be more conceptual and hortatory than implementable. EPA has some power to comprehensively assess the effectiveness of its programs, but the existing statutory patchwork that shapes EPA’s administrative structure²⁷ goes far to explain the variability in the cost-

²⁷ Concluding that coordinated decisions among the programs can scarcely be achieved without changes in the authorizing statutes and their diverse standards for decisionmaking, some analysts have proposed combining EPA’s (continued...)

effectiveness of its many programs—at least as measured by available cost-benefit analyses and risk assessments.

Coordinating or Centralizing Decisionmaking for Tradeoffs

Both Congress and the White House have tried to bring more coherence and rigor to regulatory decisionmaking. A series of executive orders over the past 40-plus years have led to a process for assessing the impacts of regulatory proposals (most recently, President Clinton's E.O. 12866, with new implementing guidelines issued by the George W. Bush Administration). Congress has sought, with mixed success, to impose risk assessment and cost-benefit analysis requirements on the regulatory agencies, and to provide some centralized oversight of the process: the Unfunded Mandates Reform Act (P.L. 104-4) requires agencies to prepare cost-benefit analyses for regulations costing \$100 million or more—in effect codifying a part of E.O. 12866. However, in some cases statutory language prohibits the consideration of costs in regulatory decisions.²⁸ Agency-by-agency attention to the effectiveness of regulations has been heightened by the Government Performance and Results Act (GPR, P.L. 103-62), as well.

Writing in 1995, Graham, along with Jonathan Baert Wiener, discussed possible reforms “to enable and impel decisionmakers to pursue a more comprehensive analysis of risk.”²⁹ They made proposals concerning Congress,³⁰ the judiciary,³¹ and the executive branch. For the executive branch, Wiener and Graham suggested more forceful implementation by the Office of Information and Regulatory Affairs of the executive orders requiring cost and risk analysis (E.O.

(...continued)

diverse statutory authorities into one comprehensive “organic act.” This idea was explored in “Integrated Pollution Control: A Symposium”—but while the contributors raised the issue of EPA's structure in constraining consistent decisions across media, they did not consider the implications of the committee structure of Congress. The multiple committee jurisdictions make integrating risk reductions, as envisioned by an EPA “organic act,” difficult. See Frances H. Irwin, “An Integrated Framework for Preventing Pollution and Protecting the Environment” and David Clarke, “Chasing Rainbows: Is an Integrated Statute the Pot of Gold for Environmental Policy?” *Environmental Law*, Vol. 22, no. 1 (1992), 1-76 and 281-300.

²⁸ E.g., in the setting of National Ambient Air Quality Standards; decision by the Supreme Court, *Whitman v. American Trucking Associations, Inc.* 531 U.S. 457 (2001).

²⁹ In Jonathan Baert Wiener and John D. Graham, eds., *Risk versus Risk* (Cambridge, Mass: Harvard University Press, 1995), p. 243. For the ensuing discussion, see pp. 246-265.

³⁰ For example, they proposed that a risk tradeoff analysis be required at some stage of the legislative process; it would be conducted by staff of a relevant committee or by one of the congressional support agencies. See also Timur Kuran and Cass R. Sunstein, “Availability Cascades and Risk Regulation,” *Stanford Law Review*, vol. 51 (April 1999), p. 752, for a proposal that Congress “create a [congressional] risk regulation committee that would be entrusted with compiling information about a wide range of risk levels and helping to produce priorities. This committee would have authority over both substantive statutes and the appropriations process.” In the 105th Congress, legislation (H.R. 1704) was proposed in the House that would have created a congressional office “to provide the Committee on Government Reform and Oversight ... information that will assist the committee in the discharge of all matters within its jurisdiction, including information with respect to its jurisdiction over authorization and oversight of the Office of Information and Regulatory Affairs of the Office of Management and Budget.” This office would also have taken over congressional review of agency rulemaking and prepared an annual report on an estimate of the total costs and benefits of all existing federal regulations.

³¹ For example, they argued for the interpretation that even for statutes that forbid considerations of cost, that risk tradeoff assessments should be required under these laws, “because risk tradeoffs are part of the effectiveness of the rule in attaining its risk-reduction goals, rather than a financial cost of the rule.” They also suggested that those who are disadvantaged when an agency fails to consider tradeoffs in promulgating a rule be given standing to challenge such agency action.

12866). They noted that a more radical reform would be to reorganize “the executive branch to integrate the array of health and environmental protection agencies.” Further, they observed that a centralized oversight unit for risk assessments, perhaps located in the White House or the U.S. Public Health Service, could enhance coordination. Several years later, Cass Sunstein proposed that Congress “create a new subcommittee entrusted specifically with the power to assess aggregate risk levels, to compare risks, and to initiate revision of statutes that increase net risks,” and to “address the problem of health-health tradeoffs through a new directive in the Administrative Procedure Act”; and, in the executive branch, that the Office of Information and Regulatory Affairs [of the Office of Management and Budget], “should see, as one of its central assignments, the task of overcoming governmental tunnel vision, but ensuring that aggregate risks are reduced and that agency focus on particular risks does not mean that ancillary risks are ignored or increased.”³² These proposals have particular salience since Graham was appointed by President George W. Bush to head up the Office of Information and Regulatory Affairs, and Cass Sunstein was appointed to the same position by President Barack Obama.

Graham and Sunstein have both focused on making more transparent the regulatory decisionmaking process, on ensuring the soundness of the science underlying decisions, and on more rigorous cost- and risk-benefit analyses. These are essential parts of making not only better decisions, but also could lead to consciously made tradeoffs. So far, however, there is no example of an explicit, practical tradeoff across programs on the basis of the cost-effectiveness of lives saved. Even with the overarching authority of the White House behind the Director of the Office of Information and Regulatory Affairs, the Director’s efforts are constrained by institutional boundaries and statutory dictates.

Despite executive orders and legislated requirements for cost-benefit studies, advances in evaluating potential tradeoffs have not resolved the issue of how requiring risk assessment and cost-benefit analysis can be applied coherently across the many environmental, health, and safety programs, given the differences among the statutes. The decision to diminish resources and effort in one area is usually separate from a decision and authority to apply those or related resources and effort in another area. Reconstituting congressional and/or administrative structures to integrate risk reduction—so that programs now handled more or less independently would go onto the same table for possible tradeoffs—would imply legislators reallocating their authorities and responsibilities.³³ This is a rare undertaking of uncertain outcome.³⁴

³² Cass Sunstein, *Risk and Reason* (2002), pp. 117, 150-151.

³³ This was highlighted in the difficulties experienced by the House and Senate as they realigned responsibilities in order to address the creation of the Department of Homeland Security.

³⁴ Congress recognizes these difficulties, and at times has tried to overcome them. For example, noting the difficulties that Congress experienced in changing governmental structures, which shifted Member and committee responsibilities, Congress granted the President limited authority to reorganize the government (98 Stat. 3192). When exercised, this power, which existed during much of the middle of the 20th Century, often created conflict between the President and Congress, and ultimately the authority was allowed to lapse. See Louis Fischer and (name redacted), “Presidential Reorganization Authority: Is It Worth the Cost?” *Political Science Quarterly*, vol. 96, Summer 1981, pp. 301-318.

Federal Decision Criteria, State and Local Choices, and Private Sector Preferences: When Tradeoffs Change Decisionmakers Controlling Resources

In choosing among alternative tax-supported federal programs (e.g., grants, Superfund cleanups), federal decisionmakers decide where to direct resources from monies they control. In choosing among alternative federal environmental, health, and safety *regulatory* programs, federal decisionmakers mandate expenditures by state and local governments, the private sector, and/or individuals. It can be tempting to pose tradeoffs across these two situations—between federally funded programs and federal regulatory programs. Thus, among the examples cited in the preface, immunization, infant mortality, and care for poor pregnant women are rhetorically proposed as tradeoffs against clean air; mammograms against stricter air regulations; smoking-cessation education of pregnant women against groundwater cleanup; and housing, or space, or health against environmental protection. The putative tradeoffs counterpose public programs paid for primarily by federal (sometimes state) tax dollars with environmental protection programs paid for primarily by dollars mandated to be spent by individuals, state and local governments, and/or the private business sector.

The conceptual commingling of federally funded programs and of federal regulatory mandates ignores a fundamental obstacle to making tradeoffs. This obstacle arises from the distinct identities and interests between those who establish the mandate and those who control the use of the money necessary to meet the mandate. In the case of tradeoffs among established federally funded programs, the decisionmaker for spending monies remains the same for selected alternatives: the appropriator and, ultimately, Congress. If Congress decides not to spend the money on option A, it can spend it on option B, subject to institutional constraints previously described.

In the case of tradeoffs between federally funded programs and regulatory programs (or between regulatory programs), however, the legislative decisionmaker mandating the program and the appropriator ultimately responsible for expenditures to meet regulations are separated. And the administrator responsible for drafting regulations may find his or her options constrained not only by the statutes and by funding, but also by explicit congressional directions, which can include statutory authorizing language specifying deadlines and the inclusion or exclusion of certain options; appropriations language that earmarks or withholds monies for certain options; and report language that gives guidance that, even if not binding, may have considerable sway. Finally, the party which must meet a health, safety, or environmental regulation has to consider the consequences for the business and owners or stockholders. Each decisionmaker thus faces a set of incentives and options constrained by the institutional context.

As a result, the alternative of spending tax monies on a federal program versus establishing a regulatory program not only trades off program benefits, but also changes the payer who decides on the alternative use of the dollars. From the different settings, each decisionmaker can be expected to employ different criteria in judging the return on the use of the monies. A federal program decisionmaker presumably makes tradeoffs on the basis primarily of national values and needs; a state or local program decisionmaker presumably makes tradeoffs on the basis primarily of state or local values and needs; a private sector business decisionmaker presumably bases

tradeoffs primarily on profit and loss considerations; and an individual presumably bases tradeoffs on personal needs and preferences. These differences are shown in **Table 2**.

To propose tradeoffs between an environmental regulation and a potential alternative federal program disregards the different circumstances of the decisionmakers involved. For the regulatory mandate, the federal decisionmaker knows what purpose the dollars will be spent on; if the federal decisionmaker decides not to impose that mandate, those dollars remain available to the state/local, private sector, or individual decisionmaker to spend. If the regulatory mandate is not imposed or is rescinded as not cost-effective, there is little reason to assume that the state/local, private sector, or individual decisionmaker controlling those dollars will view an alternative public service program as a preferred destination for the monies freed up. As a practical matter, the alternative to a specific federal regulatory mandate is some unknown option(s) on which other decisionmakers responding to other values or pursuing other goals will spend those unmandated dollars.

Table 2. Decisionmakers and Decisionmaking Criteria Determining Regulatory Expenditures to Abate Pollution

Regulated Party	Decision-maker mandating regulatory cost	Criteria for requirement to spend money	Decision-maker for alternative expenditure	Criteria for alternative expenditure
Consumer	Congress, EPA, state/local governments	public interest, national/state welfare	consumer	personal preference
State/local mandates	Congress, EPA, state/local	public interest, national welfare, state/local welfare	state/local policymaker	public interest, state/local welfare
Private industry regulations	Congress, EPA, state/local	public interest, national/state /local welfare	corporate management	corporate interest

It is certainly possible—some would say highly likely, even indisputable—that some portion of dollars spent to meet federal requirements could be better spent otherwise by state and local governments, private businesses, or individuals. Underlying this tradeoff is the debate over the share of incomes that most effectively and efficiently advances national interests by being spent by government (federal or state or local) rather than privately (individually or corporately). Compare the following viewpoints (referring to taxes, but the principles expressed apply analogously to regulation, often called a “hidden tax”):

... Given a choice between keeping taxes high so the government has more money to spend and ... reducing the tax burden so families can put more money aside to invest in their own child-care needs, retirement needs, health-care needs or whatever needs they choose, my preference is the latter....

Letting people keep their money is the best way to address the social problems that confront us, now and in the future.³⁵

* * * * *

³⁵ Bill Archer, “Paying Down the Debt,” *The Washington Post* (2 Feb. 1998), p. A18.

Sen. Pete Domenici (R-N.M.) publicly tells me I “ought to pay less taxes, ought to keep more” of my money because I “can make better decisions than we [our elected leaders in Washington] can.”

Thank you, Sen. Domenici, but I emphatically and sincerely disagree. My federal government does well hundreds of things I want done and which I would not have any idea of how to do by keeping every cent to myself. Because of the taxes we pay, the Great Lakes, the Chesapeake Bay, the Charles River, the Chicago River and the Potomac River are all cleaner, healthier and more alive than they were just a generation ago.³⁶

What seems clear is that even if state and local, corporate, or private investments in alternatives to pollution control mandates would contribute equally—or even more—to net national welfare, there is little reason to assume the alternatives would be selected from more cost-effective environmental, health, or safety programs such as immunization, education, or care for poor pregnant women.

As Thomas O. McGarity, a student of the legal implications of regulations, has noted:

Even under the highly contestable assumption that a cost-benefit criterion would eliminate waste, no vehicle exists for channeling the savings to the most deserving social programs. The savings will invariably go to the regulatees, who may or may not spend them on activities that benefit society. Absent some governmental vehicle for directing how regulated entities spend the resources saved by less stringent regulation, they will devote resources to things that make their shareholders happy.³⁷

The other side of the argument that money necessary to meet regulations could be spent more effectively on alternatives³⁸ is that the beneficiaries of a regulation also have more money to spend. For example, if because of an air pollution regulation people avoid adverse health effects, any monies that would have been spent on consequent visits to doctors or hospitals are saved and available for alternative uses. But again, even if these beneficiaries can be identified, how they will use the savings is unknown.

In short, there are tradeoffs for each dollar paid out to abate and control pollution. But it is not \$1 for pollution control versus \$1 for some comparable or superior public good. Rather, it is \$1 for pollution control on the one hand, versus \$1 for an unknown purpose on the other—with the probability that the criterion for deciding on how otherwise to spend the money will not be national welfare. (Which is *not* to say that the alternative expenditure would necessarily fail to equally or better serve national wellbeing: one just cannot know.) As a practical matter, it is not usually possible to specify tradeoffs for dollars expended on regulatory programs. Tradeoffs exist, but except through imposing alternative mandates, the policymaker seeking to protect the environment, health, or safety, is not in a position to direct those funds to particular options.³⁹

³⁶ Mark Shields, “Taxes Well Spent,” *The Washington Post* (4 August 1997), p. A19.

³⁷ Thomas O. McGarity, “A Cost-Benefit State,” *Administrative Law Review*, Vol. 50, no. 1 (1998), pp. 34-35.

³⁸ The disposition of the monies may have another implication for risk. Income levels correlate negatively with mortality, presumably because lower income means people have less to spend on health. If regulations lead to slower economic growth, the lower income levels imply there will be statistical loss of life. Isolating this tradeoff has proven highly problematic. The idea of incorporating an income-mortality tradeoff in actual policymaking has been broached but so far remains largely academic. See W. Kip Viscousi, “The Dangers of Unbounded Commitments To Regulate Risk,” in Robert W. Hahn, ed., *Risks, Costs, and Lives Saved: Getting Better Results from Regulation* (Washington, D.C.: The AEI Press, 1996), pp. 159-162.

³⁹ I.e., Congress enacting in lieu a comparable mandate, or an administrator imposing in lieu a comparable regulation.

Consequently, the policymaker is motivated to achieve whatever is possible through the program at hand: "... [R]egulators are not empowered to maximize collective welfare by allocating public funds among all manner of social problems. They face discrete issues that demand concrete responses. Even legislators, with their broad lawmaking authority, must work within the constraints of the political process."⁴⁰

Weighing Tradeoffs: Where Does It Lead?

In the end, comparative assessments of costs (and benefits and risks) of alternative programs benefitting the public welfare, or of alternative regulatory mandates, provide information to policymakers and the public.⁴¹ The information can promote better understanding of risks, costs, and benefits. It may allow policymakers, within their constraints, to focus resources on the most cost-effective environmental, health, and safety interventions. But comparative risk information does not mean that a tradeoff can be or will be accomplished. A study of state and local comparative risk projects to establish environmental priorities concluded that

Successes to date include increasing environmental awareness among participants; building consensus and establishing collaboration among diverse stakeholders; and establishing novel means of public involvement. *However, no project that we evaluated has, as yet, documented achievement of a system for developing and implementing environmental priorities in order to mitigate their most significant environmental problems* [italics added].⁴²

For the decisionmaker, a dollar is being spent on "this" rather than on "something else." While the "this" is in the decisionmaker's purview, the "something else" may well be either outside his or her purview, or it may be completely open-ended, in the realm of the marketplace. The debate over enactment of the Clean Air Act Amendments of 1990 was not over whether the \$21 billion tab⁴³ should be spent on clean air *or* on immunization, infant mortality, care for poor pregnant women, or something else; it was over whether to require \$21 billion to be spent on clean air *or* more or less (or not at all).⁴⁴ Similarly, the mid-1990s debate over proposed National Ambient Air Quality Standards for ozone and particulate matter was not over whether the multibillion dollar tab should be spent on cleaner air *or* on mammograms or some particular thing else, it was over

⁴⁰ Douglas A. Kysar, "Some Realism About Environmental Skepticism: The Implications of Bjorn Lomborg's *The Skeptical Environmentalist* for Environmental Law and Policy," *Ecology Law Quarterly*, Vol. 30, no. 223 (2003), p. 258.

⁴¹ Tenges and Graham, op. cit., pp. 191, 193; Sunstein, op. cit., p. 107.

⁴² David Lewis Feldman, et al., "Environmental Priority-Setting Through Comparative Risk Assessment," *Environmental Management*, vol. 23, no. 4 (1999), 483.

⁴³ These are not federally appropriated dollars provided by taxpayers; these are (estimated) costs of regulations and arise from foregone profits from alternative investments, lost wages or rents, and/or consumer expenditures to cover higher prices of goods.

⁴⁴ During the 1990 debate on the Clean Air Act Amendments, a working agreement emerged that the bill could impose some \$25 billion in costs per year after 2000. Some legislators argued that this was too much and others that this was not enough; but as a practical matter, the majority accepted this as a reasonable pricetag for the program. Given the difficulties in assessing costs and benefits, it is not surprising that estimates of costs of the legislation ranged greatly, from the low 20s to 90 billion dollars per year. E.H. Pechan & Associates, *Clean Air Act Amendment Costs and Economic Effects: A Review of Published Studies* (Prepared for National Clean Air Coalition, National Clean Air Fund, Washington, D.C.), in *Congressional Record* (October 27, 1990), S16963-S16969 [daily ed.] The test of the bill's adherence to \$25 billion in costs was EPA's "official" estimate.

whether to set standards that would result in those regulated to spend more (or less) money on cleaner air.

For a legislator who faces a vote on imposing costs—for example, the Clean Air Act Amendments of 1990—or a policymaker who faces a decision on a regulation—for example, the ozone and particulate matter standards—the choice is basically up-or-down and more-or-less, not on tradeoffs with other programs. To turn down the amendment or defer the regulation does not mean more cost-effective environmental, health, or safety alternatives will take its place: it is a question of following through or starting the policy process anew (see text box, “A Policymaker’s Options”). With choices tending to be up-or-down and limited only to alternatives germane within relevant jurisdictional boundaries, proponents of environmental, health, and safety initiatives are loathe to forego or reduce any program, even if its cost-effectiveness is questionable, because they so seldom can ensure reinvestment of any saved resources in more cost-effective alternatives.

Only in the abstract, then, is any and every alternative an opportunity cost of each federal dollar spent and of every federal regulation imposing costs. In reality, the actual tradeoff faced by a policymaker at a particular time and place—subcommittee, committee, or the floor of Congress; or Commission or Agency—is effectively limited by institutional structures and rules and by the incommensurable criteria brought by different decisionmakers who would ultimately decide on the actual alternatives for spending any dollars the tradeoffs make available.

The question, How much of “this” could you buy if one didn’t impose regulation “x,” can therefore be answered in two divergent ways:

A Policymaker’s Options

Someone has compared a decisionmaker facing a vote or policy choice to a person on the eve of being married and who is asked: “Out of the millions of prospective spouses, can you be confident that the one you are taking to the altar could not be replaced by someone more attractive, or more companion-able, or more intelligent, or sexier, or richer, or offering better genes to mix with yours?”

This analogy contains two important parallels to policymakers weighing tradeoffs. First, in both cases, the decisionmaker has presumably weighed the merits of the choice across a spectrum of qualities (of which cost is just one). And second, in both cases, the decisionmaker has really only the option of going ahead or starting over: the choice is not this spouse or, say, Emmanuelle Chriqui/James Franco, it is a question of following through on the engagement, or starting the courtship — or policy process — anew.

One way is to take an estimated cost of regulation “x” and divide by the unit cost of “this,” resulting in the equivalent number of mammograms, inoculations, or whatever. That number is information that may help to give perspective on the magnitude of the cost of regulation “x”—but at the same time it may give a sense that a tradeoff is feasible when it is not.

The second way of answering the question is to put the compared costs into context, examining whether the monies involved in “x” and “this” are really fungible. Whether those expenditures are truly alternatives depends on the options posed, the decisionmakers involved, and the institutional setting. There may be definite options, as when an appropriations subcommittee allocates dollars among programs in its jurisdiction; but in other cases the tradeoff may be between an intended outcome and the nebulous consequence of not opting for that outcome. Putting the label “statistical murder” on the failure to make tradeoffs is rhetorically powerful, connoting a wilful choice to choose a less protective or more costly option. But in reality, legislators and administrators rarely if ever are in a position to select among the implied options as they authorize, fund, and implement health, safety, and regulatory programs.

The problem is depicted in **Figure 1**: Putative tradeoffs among environmental, health, and safety expenditures presume that *all programs are on the table*, as shown in **Figure 1-A**, each with a specified dollar amount per unit that gives one measure of potential cost-effectiveness; but the voting legislator typically has only *a single program on the table* at a time, the result of a deliberate, formal process of agenda setting, as shown in **Figure 1-B**; and the administrator(s) of diverse programs generally finds *each program on a separate table*, with the boundaries of each defined by a separate statute that gives little or no authority to an administrator to compare and reallocate resources across them, as illustrated in **Figure 1-C**.

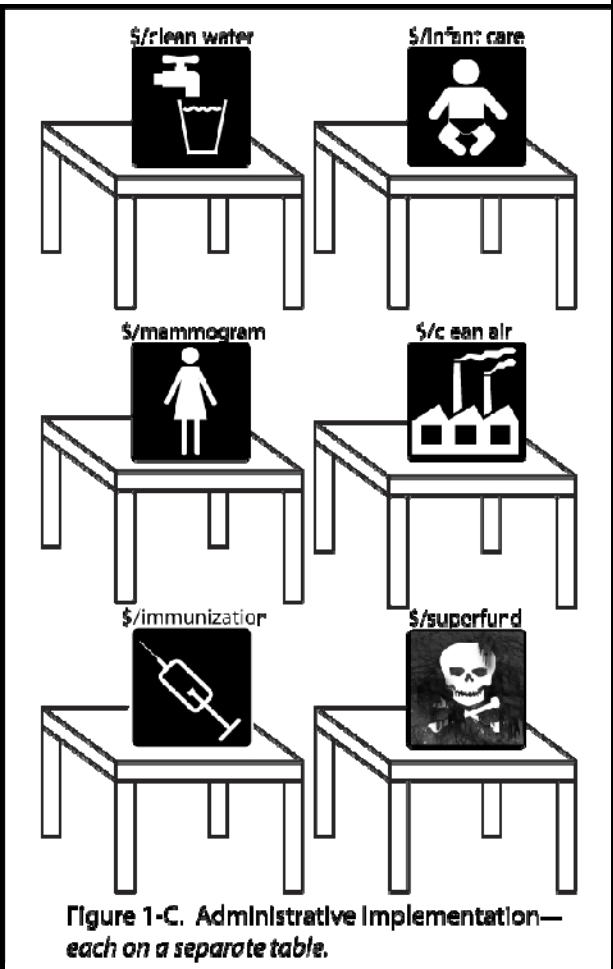
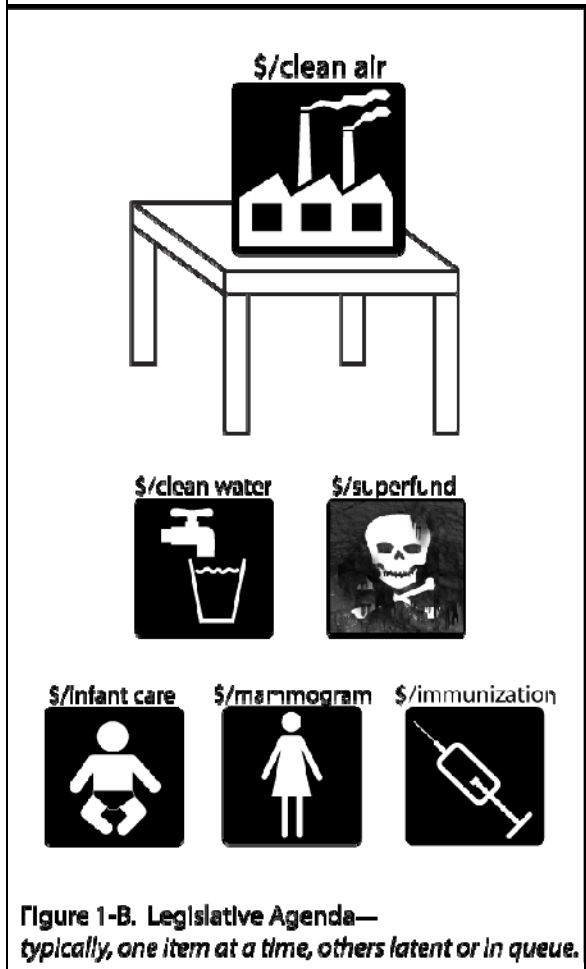
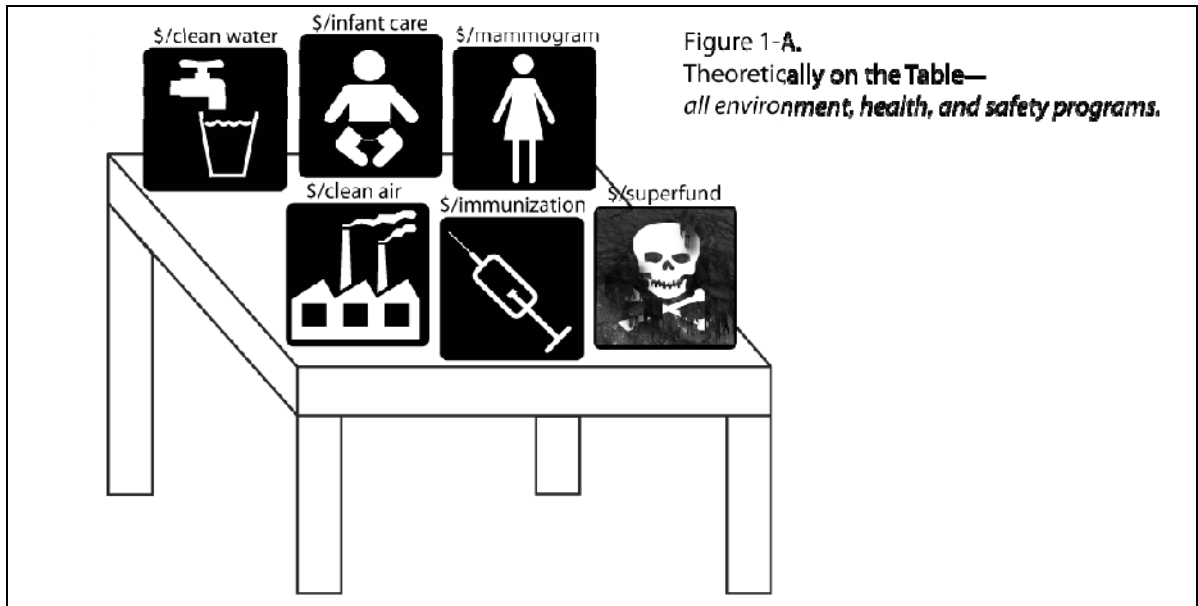
In the end, the underlying issue of environmental, health, and safety cost-effectiveness is how to foster decision processes and structures that enable tradeoffs that reflect the informed preferences of the citizenry. Evidence indicates that programs vary in cost-effectiveness. However, given that there is more to comparing programs than just costs, one could argue that the current environmental, health, and safety program mix—the result of the present decisionmaking structure—may in fact reflect citizen preferences (though not necessarily expert opinion).

Where tradeoffs would appear to result in more consistent, cost-effective protection of health, safety, or the environment, better information may in the short run contribute to improved decisions in allocating resources, but legislators' and administrators' options are limited. There is a big gap between identifying a potential tradeoff and being able to make the tradeoff. The stakes are high for winners and losers, especially for those who gain or lose authority to make decisions about expenditures. In the long-run, better information about desirable tradeoffs may suggest realignments of decision structures—leading to a different, complex, and difficult set of institutional decisions.⁴⁵

In the meantime, if an existing or a proposed program is identified as insufficiently cost-effective and therefore appropriate for trading off, there is rarely any way to actually terminate it while concomitantly creating a more cost-effective one. The most likely result of a “tradeoff” would be either to kill one program without gaining the more cost-effective alternative; or to create a new more cost-effective program while also maintaining the program with inferior cost-effectiveness. For either option, there is a stakeholder with a natural resistance—depending on whether one is more concerned about costs or benefits.

⁴⁵ See Giandomenico Majone, *Evidence, Argument & Persuasion in the Policy Process* (Yale University Press, 1989), pp. 95-115; and Victor P. Goldberg, “Institutional Change and the Quasi-Invisible Hand,” 17 *J. of Law and Economics* (1974), pp. 461-492.

Figure 1. Environmental, Health, and Safety Tradeoffs



Source: CRS.

Author Contact Information

(name redacted)
Coordinator of Division Research and Specialist in
Resources, Science and Industry
[redacted]@crs.loc.gov, 7-....

(name redacted)
Section Research Manager
[redacted]@crs.loc.gov, 7-....

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