Saving Lives, Preserving the Environment, Growing the Economy: The Truth About Regulation

By CPR Member Scholar Sidney Shapiro, Ruth Ruttenberg, and CPR Policy Analyst James Goodwin

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This white paper is a collaborative effort of the following individuals: **Sidney Shapiro** holds the University Distinguished Chair in Law at the Wake Forest University School of Law, is the Associate Dean for Research and Development, and is a member of the Board of Directors of the Center for Progressive Reform. **Dr. Ruth Ruttenberg** is a professor at the National Labor College and is an economist specializing in labor economics and occupational safety and health. **James Goodwin** is a Policy Analyst with the Center for Progressive Reform.

For more information about the authors, see page 37.

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www.progressivereform.org

For media inquiries, contact Matthew Freeman at mfreeman@progressivereform.org or Ben Somberg at bsomberg@progressivereform.org.

For general information, email info@progressivereform.org.

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Introduction

The United States has recently suffered from two extraordinary calamities caused by the failure to regulate effectively: the 2008 Wall Street collapse, which precipitated the worst recession since the Great Depression, and the explosion of BP's Deepwater Horizon oil rig, which precipitated the largest oil spill in the country's history. These twin disasters, and other regulatory failures in recent years, indicate the very real dangers of under-regulation and lax enforcement. But rather than seek to strengthen the regulatory system that safeguards people and the environment, the U.S. House of Representatives—now under Republican control and steeped in anti-government sentiment, thanks to the influx of Tea Party freshmen—has mounted a full-throated attack on those safeguards during the past few months, convening dozens of hearings focused on the alleged evils of government regulation and offering numerous bills designed to slow down the regulatory process and weaken regulation.

In an attempt to persuade Americans that government regulation is choking off the economic recovery, regulatory opponents have cited time and again a study that claims that regulation has an annual cost of $1.75 trillion. In any earlier CPR White Paper, we demonstrated why this estimate is unreliable and exaggerated.[1] Regulatory opponents resort to this scare tactic because they cannot demonstrate that the country is ill served by government regulation. Still, public opinion polling tells us that many Americans are suspicious of government regulation in the abstract, a reaction on which regulatory opponents seek to capitalize.[2] But, when asked about specific regulatory initiatives, such as limits on greenhouse gas emissions and stricter regulations on oil drilling, a significant majority of Americans are supportive.[3]

The second reaction is understandable—and of more relevance to policymakers. Government regulation has greatly benefited the American public, while the failure to regulate has cost us dearly. This reality is easily missed because no one statistic or set of numbers can prove this point. But, when the available evidence is compiled, it demonstrates the importance of regulation in protecting people and the environment, and the improved conditions that regulations have produced. This CPR White Paper is the first report to assemble this evidence and consider its significance.

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The evidence we have compiled paints a compelling picture in favor of how government has and can benefit our society:

- The White House Office of Management and Budget (OMB) estimates that regulatory benefits exceed regulatory costs by 7 to 1 for significant regulations. The Environmental Protection Agency (EPA) estimates that the regulatory benefit of the Clean Air Act exceeds its costs by a ratio of 25 to 1. Similarly, a study of EPA rules issued during the Obama Administration found that their regulatory benefits exceeded costs by a ratio as high as 22 to 1.
- In the 40 years since Congress enacted health, safety, and environmental protection laws, regulatory agencies have significantly reduced fatalities, injuries, illnesses, and environmental damage, as several examples of regulatory successes demonstrate.
- The BP Oil Spill and the Wall Street collapse have imposed billions—perhaps even trillions—of dollars in damages, far more than the cost of regulation that would have prevented these tragedies. Similarly, the failure to regulate day-to-day hazards results in thousands of deaths, tens of thousands of injuries, and billions of dollars in economic damages every year.
- Dozens of retrospective evaluations of regulations by the EPA and the Occupational Safety and Health Administration (OSHA) have found that the regulations were still necessary and that they did not produce significant job losses or have adverse economic impact on the regulated industries, including on small businesses.
- Agency estimates of the prospective economic benefits and costs of regulations nearly always find that their benefits exceed their costs. This result is especially significant because limitations in the methodology used to produce these estimates systemically underestimate benefits while overestimating costs. On the rare occasion when a regulation fails a cost-benefit test, the methodological problems associated with prospective cost-benefit analysis are usually the reason.

Much of the evidence that we present is not in the form of a cost-benefit analysis—the prevailing approach to evaluating the value of regulations in the federal government. Nearly four decades of experience has demonstrated that this approach is deeply flawed for a variety of reasons, including, as just noted, that regulatory benefits are understated in many analyses and regulatory costs are overstated.[4] These and other limitations counsel that policymakers should take an approach to evaluating regulation that considers all relevant information, as we have done.

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The United States is better off because of the regulation it has in place, and it would be even better off if current regulatory gaps were closed. This reality, however, has not slowed the assault on regulation, driven largely by corporate interests. Because regulatory opponents cannot deny the actual record, they have pursued another tactic: They claim that high regulatory costs are responsible for slowing down the economic recovery and for slowing job growth. This contention, however, fails in three ways:

- Genuine public policy arguments must take into account both economic benefits and costs. Rather than engage in genuine public policy arguments, however, regulatory opponents seek simply to reduce or eliminate government regulation in order to benefit regulated industries' bottom lines. Lacking in their argument is a principled effort to compare costs to benefits. After advocating for years that regulations should be measured solely by means of a cost-benefit test, regulatory opponents are now ignoring the benefits, effectively moving the goal posts in this debate.
- Contrary to the claims of regulatory opponents, regulatory costs usually do not translate into job and other economic losses. This result makes sense, since the money spent on regulation spurs economic activity in the form of goods purchased and services rendered. This is why most studies indicate that regulation does not decrease employment and that it can lead to increases in employment in some cases.
- The $1.75 trillion cost estimate used by regulatory opponents to justify their opposition to regulation is based on unreliable data, as the nonpartisan Congressional Research Service has recently pointed out.

This White Paper focuses on the real record of government and regulation, proceeding in three steps. We first present several kinds of evidence of what government regulation has accomplished and what it could accomplish in protecting the American public and the environment. Next, we defend this holistic approach to evaluating government regulation and explain why our approach is preferable to the narrower cost-benefit approach favored by economists. Finally, we summarize the available evidence of the impact of regulation on job creation, which demonstrate that regulation does not lead to a net loss of jobs and may even increase the number of jobs.

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The Impact of Government Regulation

Although the success of government regulation cannot be captured in a single number or metric, we do have several tools available for evaluating the impact of regulation. The impact of regulation can be evaluated by looking at studies that compare the cumulative benefits and costs for groups of regulations; measurements of the extent to which fatalities, injuries, diseases, and environmental destruction has been reduced; the costs associated with the failure to regulate effectively; retrospective evaluations of the impact of individual regulations; and prospective estimates of the benefits and costs of individual regulations. Only by employing all of these tools can we get a fuller appreciation for the valuable role that regulation plays in our society. This section of the White Paper summarizes what the use of these tools tells us.

In a recent report, the EPA found in 2010 Clean Air Act regulations produced annual benefits of $1.3 trillion at an annual compliance cost of $53 billion.

Cumulative Studies

Three studies present estimates of the cumulative net benefits of a defined group of government regulations. The OMB prepares annually a report to Congress on federal regulations that aggregates the benefits and costs from regulatory analyses that agencies develop as part of the rulemaking process.[5] The OMB's draft 2011 report found that major federal regulations issued between October 1, 2000, and September 30, 2010, produced benefits ranging from $136 billion to $651 billion as compared to costs ranging from $44 billion and $62 billion.[6]

The EPA's recent report, *The Benefits and Costs of the Clean Air Act from 1990 to 2020*, calculates the total annual costs and benefits of regulations issued by the agency pursuant to the Clean Air Act as of 2010, and projects what the total annual costs and benefits will be as of 2020.[7] This report concludes that as of 2010 Clean Air Act regulations produced annual benefits of $1.3 trillion at an annual compliance cost of $53 billion. The report further projects that the value of Clean Air Act regulatory controls will be $2 trillion annually by 2020; costs of compliance in that year will be $65 billion.

A recent report by the Economic Policy Institutes (EPI) evaluates the cumulative impact of "new" major EPA rules.[8] Similar to the OMB's annual report, the EPI report derives its results by aggregating the benefits and costs from the regulatory analyses that the EPA has prepared for the rules under investigation. The EPI report found that the major EPA rules issued during the first two years of the Obama Administration produced total annualized benefits of between $44 billion and $148 billion, as compared to total annualized costs of between just $6.7 billion and $12.5 billion. Similarly, the EPI report found that four of the proposed major rules that the EPA was developing at the time that the report was issued generated total annualized benefits of between $173 billion and $457 billion, as compared to total annualized costs of between just $14 billion and $15 billion.[9]

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In all three studies, benefits exceed costs by large amounts, as Table 1 reveals:

Study	Ratio of Benefits to Costs	Measurement
OMB Annual Report	7:1	Aggregate benefits and costs of major regulations issued between 2000 and 2010[10]
EPA Clean Air Act	31:1	Comparison of central estimate of total annual benefits and costs of Clean Air Act regulations as of 2010[11]
EPI Study of "New" EPA Rules	4:1 – 22:1 (final rules) 12:1 – 32:1 (proposed rules)	Aggregate benefits and costs of several major EPA regulations issued or developed during the Obama Administration[12]

Table 1: Ratio of Benefits to Costs

While these reports do not tell us whether total regulatory benefits would exceed total costs, they do suggest, if data were available to make the necessary calculations, we would find that regulation overall provides a net benefit to the United States.

Reduction in Fatalities, Injuries, and Environmental Damage

It is easy to lose sight of just how many hazards have been restrained by regulation over the years. But it is important to recall what has changed since the dawn of the modern regulatory era, which started in the mid-1960s. During the 1960s and 1970s, rivers caught fire, cars exploded on rear impact, workers breathing benzene contracted cancer, and a chemical haze settled over the industrial zones of the country's cities and towns. Since then, regulatory agencies like the Consumer Product Safety Commission (CPSC), the EPA, the Food and Drug Administration (FDA), the National Highway Traffic Safety Administration (NHTSA), and OSHA have achieved remarkable success in protecting public health, safety, and the environment. Today, the most visible iterations of these threats are under control, and millions of people have been protected from premature death and debilitating injury. Specific examples of regulatory successes abound:

- EPA regulation of the discharge of pollution into water bodies nearly doubled the number of waters meeting statutory water quality goals from around 30 to 40 percent in 1972 (when the modern Clean Water Act was first enacted) to around 60 to 70 percent in 2007.[13]
- EPA regulations protecting wetlands reduced the annual average rate of acres of wetlands destroyed from 550,000 acres per year (during the period from the mid-1950s to the mid-1970s) to 58,500 acres per year (during the period from 1986 to 1997), a nearly 90-percent reduction.[14]
- EPA Clean Air Act rules saved 164,300 adult lives in 2010, and will save 237,000 lives annually by 2020.[15]

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- EPA air pollution controls saved 13 million days of work loss and 3.2 million days of school loss in 2010. By 2020, they will save 17 million work loss days and 5.4 million school loss days.[16]
- Working together, the EPA and the state of California have reduced the number of Stage 1 Smog Alert days in Southern California from 121 days in 1977 to zero days since 1997.[17]
- EPA regulations phasing out lead in gasoline helped reduce the average blood lead level in U.S. children aged 1 to 5 from 14.9 micrograms of lead per deciliter of blood (µg/dL) during the years 1976 to 1980 to 2.7 µg/dL during the years 1991 to 1994. Because of its harmful effect on children's brain development and health, the Center for Disease Control considers blood lead levels of 10 µg/dL or greater to be dangerous to children. During the years 1976 to 1980, 88 percent of all U.S. children had blood lead levels in excess of this dangerous amount; during the years 1991 to 1994, only 4.4 percent of all U.S. children had blood lead levels in excess of 10 µg/dL.[18]
- Thanks to its effective implementation of the 1938 Food, Drug, and Cosmetics Act, the FDA blocked thalidomide from being marketed in the United States, where it likely would have caused thousands of birth defects.[19]
- Improved regulation of slaughterhouses and meat-processing plants by the Department of Agriculture significantly decreased the incidence of food-borne illnesses caused by tainted beef between 1996 and 2001, including a 49-percent decrease traced to Yersinia, a 35-percent decrease traced to Listeria, a 27-percent decrease traced to Campylobacter, and a 15-percent decrease traced to Salmonella.[20]
- NHTSA's vehicle safety standards have reduced the traffic fatality rate from nearly 3.5 fatalities per 100 million vehicle miles traveled in 1980 to 1.41 fatalities per 100 million vehicle miles traveled in 2006.[21]
- Effective regulation of fireworks by the CPSC more than halved the average number of injures per 100,000 pounds of fireworks sold from 42.8 during the period of 1976 to 1978 to 21.2 during the period of 1991 to 1993.[22]
- OSHA workplace regulations helped reduce worker fatality rates from 18 deaths per 100,000 workers in 1970 to four deaths per 100,000 workers in 2006.[23]
- MSHA mining safety regulation reduced miner fatality rates from 0.2 deaths per 200,000 hours worked in 1970 to an average of 0.03 deaths per 200,000 hours worked during the period of 2001 to 2005.[24]
- An Endangered Species Act recovery program developed by the U.S. Fish and Wildlife Service helped increase the Bald Eagle population from just 400 nesting pairs in 1963 to 10,000 nesting pairs in 2007, enabling the Service to remove Bald Eagles from the Endangered Species List.[25]
- An Endangered Species Act recovery program developed by the U.S. Fish and Wildlife Service helped save the Whooping Crane from the brink of extinction, increasing the population from just 16 individuals in 1963 to 384 individuals in 2009.

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These results are illustrative. Similar examples can be found throughout the government, both within the agencies cited as well as others.

The High Cost of the Failure to Regulate

An important indication of the value of regulatory benefits is what happens when no regulation exists or when an existing regulation is too weak or under-enforced. In these instances, the country often ends up spending far more money to remediate the damages than it would have cost to have reasonable regulation in the first place. Of course, for many of the consequences of the failure to regulate, such as loss of life or species extinction, true remediation is impossible.

The failure to regulate can contribute to the occurrence of a single catastrophic event that imposes massive costs on society in terms of lives lost, money wasted, or environment irreparably damaged, as Table 2 demonstrates.

Catastrophe	Estimate	Costs
BP Oil Spill	Total Spill Costs	$11-100 billion[26]
Wall Street Collapse	Jobs Lost	8.4 million jobs[27]
	Troubled Asset Relief Program (TARP) Costs	$64 billion[28]
	Pension Fund Losses	$2.8 trillion (32 percent of the funds' value)[29]

Table 2: Catastrophic Costs of Failure to Regulate

Undoubtedly, the real cost of the BP Oil spill is much larger, since no cost estimate can truly account for such harm as lost lives, the disruption of entire communities, and the irreparable destruction of vital ecosystems. Similar monetization problems prevent a proper accounting of the full costs of the Wall Street collapse.

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Likewise, the failure to regulate day-to-day hazards imposes significant harms on the American public and the environment. Each year, dozens of workers are killed, thousands of children harmed, and millions of dollars wasted because of agency delays in issuing effective regulation, as Table 3 illustrates.

Agency	Risk	Adverse Consequences
EPA	Environmental Disease in Children[30]	• $76 billion - $105 billion in children's health care costs
	Mercury Air Pollution[31]	• 1.6 million babies born with dangerous levels of mercury in their blood • 3,927 children with mental retardation • Up to 6,460 fatal heart attacks and 3,570 non-fatal heart attacks • Death and abnormalities in bald eagles, loons, kingfishers, osprey, otters, minks, and the endangered Florida panther
	Ballast Water Discharges and Invasive Species[32]	• $38 billion worth of damages to industrial and municipal facilities • Ecological damages including harm to native species and disruption of ecosystems/food webs
OSHA	Collapsing Cranes and Derricks[33]	• 126 deaths and 1,050 non-fatal injuries
CPSC	Three-Wheeled ATVs[34]	• More than 2,500 fatalities and up to 750,000 injuries • At least $859 million in damages

Table 3: The Costs of Delaying Effective Regulation

As these data suggest, regulatory agencies have failed to promulgate regulations that are likely to save thousands of lives and prevent millions of illnesses. Unfortunately, these are not the only foregone opportunities that could yield substantial benefits for the American public.

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The Japanese Earthquake and Nuclear Power Plan Crisis

The Japanese earthquake and the resulting nuclear power plant crisis highlight both the benefits of good regulation and the catastrophic costs of failing to regulate effectively. Japan has some of the strictest building codes in the world, requiring buildings to employ cutting-edge technologies, such as giant rubber pads and hydraulic shock absorbers, to better enable them to withstand powerful earthquakes. Other regulations seek to protect Japanese citizens against tsunamis, including those requiring the construction of large seawalls along the coast and the establishment of well-marked escape routes for regions that are susceptible to flooding. Japanese citizens are also well prepared for how to respond to natural disasters, thanks to regulations requiring periodic earthquake and tsunami drills. These and other regulations undoubtedly saved countless lives.[35]

At the same time, the country's lax regulatory oversight of the nuclear power industry, and particularly the degree to which industry dominated its government overseers, appears to be responsible for creating the second worst nuclear crisis in history, following only the Chernobyl power plant disaster in 1986.[36] Just weeks before the earthquake, government regulators approved a 10-year extension for the oldest of the six reactors at the Fukushima nuclear power plant facility, despite being aware of several problems with crucial components of the reactor's cooling system. Regulators were also aware that the company that owned and operated the facility, Tokyo Electric Power Company (TEPCO), had not adequately inspected several of these components as well. After the earthquake and tsunami, the reactor's cooling system ultimately failed, allowing the reactor pool to overheat and emit radioactive materials.

The accident prompted the Japanese government to evacuate everyone located within 20 kilometers (12 miles) of the stricken plant, displacing more than 78,000 people and leaving behind eerie, empty ghost towns.[37] The radioactive fallout from the plant has tainted parts of the food and drinking water supply, further compounding the country's misery.[38] The monetary costs of this catastrophe will be enormous. TEPCO has already pledged to compensate each of the evacuated households about $12,000 each, and some estimate that the costs of cleaning up the contamination could exceed $10 billion—most of which will be borne by the Japanese taxpayer, instead of by TEPCO—and take up to several decades to complete.[39]

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Retrospective Evaluations

Several statutory provisions mandate regulatory look-backs, including section 610 of the Regulatory Flexibility Act.[40] When agencies have performed these look-backs, they have almost invariably found that the regulations have been effective. OSHA's section 610 reviews of its Grain Handling Standard and its Cotton Dust Standard, summarized in Table 4, are typical of the positive results that agencies have found.

Regulation	Benefits	Impact on regulated entities
Grain Handling	70% reduction in fatalities from explosions 44% reduction in suffocations[41]	• Sales and profits increased • No substantial change in number of firms • No substantial change in employment • No different impact on small business[42]
Cotton Dust	99% decline in brown lung disease[43]	• Productivity growth rate increased from 2.5 percent to 3.5 percent per year[44] • Sales and profits increased • No substantial change in number of firms • No substantial change in employment • Increase in number of small businesses[45]

Table 4: OSHA Section 610 Reviews

Appendix A, which provides an overview of 38 section 610 reviews conducted by OSHA and the EPA, establishes the following:

- Each review concludes that there is a "continued need" for the regulation, meaning that a significant risk to public health, safety, or the environment exists, and that the controls called for in the regulation continue to be successful in reducing that risk.
- In every case but one, the reviews concluded that the rule did not require any major modification to increase its effectiveness or reduce its costs.[46]
- The regulations have not been unduly costly on industry, and none had a significant adverse impact on the industry. In a few cases, the actual cost of complying with the regulation was significantly lower than what was projected at the time the rule was under development.[47]
- Existing regulations were often supported by regulated entities,[48] and when this was not the situation, regulated entities supported reform of the regulation, not its elimination.[49] In several cases, the agency received no comments from regulated entities when it reviewed a regulation.[50]

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Prospective Regulatory Analyses

The prospective cost-benefit analyses that agencies produce during the rulemaking process find that the estimated benefits of a rule usually are greater than the estimated costs. During a recent Senate hearing on regulation, Cass Sunstein, the current Administrator of the Office of Information of Regulatory Affairs (OIRA), said that the Obama Administration had only issued one rule as of April of 2011 that failed to produce net benefits.[51] Table 5 indicates the longer-term track record:

Years	Net Benefits (Percentage of Rules)	Source
2000-2010	74%	OMB Annual Report[52]
1995-1999	80% (annualized) 75% (net present value)	Shapiro & Glicksman (2003)[53]

Table 5: Percentage of Prospective Regulatory Analyses Finding Positive Net Benefits

In reality, the percentage of significant regulations that produced positive net benefits is likely much larger, since the agencies that issued these regulations were unable to estimate values for many of the rules' most important benefits. For example, the Department of Agriculture's 2001 Roadless Conservation rule was found to produce negative net benefits, even though the only benefits that were estimated for the rule were the resulting cost savings from reduced road maintenance activities. The more important benefits of the rule—such as improved air and water quality, enhanced recreational opportunities, and protected wildlife habitat—were left out of the equation completely.[54] Similarly, NHTSA's 2002 Tire Pressure Monitoring Systems (TPMS) rule was found to produce negative net benefits, even though the only benefits that were estimated were those associated with fuel savings and reduced tire wear. The fact that the rule might save as many as 124 lives and prevent as many as 8,722 injuries every year was not included in the final cost-benefit equation.[55]

More broadly, as explained in greater detail below, prospective cost-benefit analyses usually underestimate benefits and overestimate costs. The high percentage of prospective regulatory analyses that find positive net benefits is therefore particularly striking.

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How to Evaluate Regulation

This White Paper utilizes multiple perspectives to evaluate government regulation. The available data clearly establish that government regulation has greatly benefited the American public, and that the failure to regulate has cost us dearly. This evidence of the benefits of government regulation, however, does not fit into the cost-benefit perspective that economists prefer, but it nevertheless provides a more reliable and more meaningful method for evaluating regulation.

According to economic theory, a given regulation is socially valuable as long as its economic benefits exceed its economic costs. This method of evaluating regulation is known as a cost-benefit analysis. Because this approach is deeply flawed, a number of CPR scholars have endorsed an alternative approach, which is based on a pragmatic methodology.[56] Pragmatism refers to a methodology of evaluating public policy that has been developed and championed by a significant number of social scientists for more than half a century. In contrast to cost-benefit analysis, a pragmatic regulatory analysis takes into account all data relevant to the assessing the value of government regulation, regardless of whether it can be used in a cost-benefit formula.

Section I of this White Paper uses a pragmatic approach for evaluating the U.S. regulatory system as a whole. It compiles a mosaic of information that is relevant to assessing the value of regulation. This includes various measures of how the United States has benefited from regulation, whether or not they are expressed in dollar terms, and information about the costs of such regulation. Pragmatism understands that once the relevant information is assembled, decision-makers must assess it holistically and judge what it tells them about the value of regulation. In the real world, decision-makers have no simple formula that indicates what to do once the numbers are fed into it.

In contrast, cost-benefit analysis provides a less effective approach for evaluating the U.S. regulatory system as a whole. A significant problem with cost-benefit analysis is that it tends to underestimate regulatory benefits, and often substantially so. The benefits that environmental, health, and safety regulations produce—lives saved, asthma attacks averted, ecosystems protected—involve values that cannot adequately be reduced to monetary terms. This situation exists for several reasons. One is that scientific estimates of risk are not precise enough to permit analysts to make reasonable estimates of the monetary benefits. While the science is sufficient to instruct us that a significant risk exists, the benefits of addressing that risk cannot be accurately measured.

When regulatory benefits cannot be measured, the agencies simply drop them from the cost-benefit equation, arbitrarily assigning them a value of zero dollars. This occurred with the benefits estimate for NHTSA's 2006 rule setting new fuel efficiency standards for light trucks. The benefits estimate for this rule did not include global warming impacts, because NHTSA deemed them too difficult to quantify.[57] This meant the cost-benefit analysis

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assigned no dollar value whatsoever to one of the most important reasons for promulgating a rule in the first place. Its value simply disappeared from the tally.

To make matters worse, cost-benefit analyses typically shrink benefits estimates even more by "discounting" those benefits that occur in the future. The OMB requires agencies to apply a 3- or 7-percent discount rate to these future benefits to reflect how much we would have to invest today to have that much money when the benefit is delivered. But as a matter of arithmetic, if these discount rates are applied for a long enough time horizon, then any regulatory benefit, no matter how large, can be shrunk to virtually nothing. Thus, regulations to address climate change or prevent cancers with a latency period of 20 or 30 years would be considered to have very little, if any, value.[58]

While regulatory benefits are underestimated, costs tend to be overestimated. To generate cost estimates for their cost-benefit analyses, agencies primarily rely on surveys of representative companies that the regulation will likely affect. Because companies know the purpose of the surveys, they have a strong incentive to overstate costs in order to skew the final cost-benefit analysis toward weaker regulatory standards.[59] Agencies must also fill in any data gaps they encounter by making various assumptions. Due to fear of litigation over the regulation, they tend to adopt conservative assumptions about regulatory costs, and the cost assessment ends up reflecting the maximum possible cost, rather than the mean.[60]

As Table 6 indicates, several retrospective studies of regulatory costs have found that the pre-regulatory cost estimates are often too high.

Study	Cost Estimates	Results
PHB, 1980[61]	Capital expenditures for pollution controls	• Costs were overestimated more than underestimated • Forecasts ranged from 26-126% too high
OTA, 1995[62]	Total expenditures for OSHA regulations	• Costs overestimated for 4 of 5 regulations • Forecasts ranged from $5.4 million to $722 million too high
Goodstein & Hodges, 1997[63]	Pollution prevention costs	• Costs overestimated for 24 of 24 regulations • Forecasts ranged from 30% to >100% too high
Resources for the Future, 1999[64]	Costs of environmental regulation	• Costs overestimated for 12 of 25 regulations • Costs underestimated for 2 of 25 regulations

Table 6: Retrospective Cost Studies

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The Attack on Government Regulation

Virtually every tool we have available for evaluating federal regulations indicates that regulation has substantially benefited the American public and that the lack of regulation is responsible for causing extraordinary damage to people, the environment, and the economy. Rather than deny these facts, regulatory opponents contend that the cost of regulation is slowing the economic recovery. They support this claim by pointing to what they consider to be the high costs of regulation. But three major flaws are apparent in this argument.

First, cost estimates used by regulatory opponents to justify their opposition to regulation are based on unreliable data. Second, as discussed earlier, even if regulatory costs are high, economic theory supports regulation if the benefits are larger than the costs. Regulatory opponents ignore the benefits of government regulation, but as Section II demonstrates, available comparisons indicate benefits nearly always exceed costs. Finally, regulatory costs do not translate into job losses because money spent on regulation stimulates economic activity. This is why most studies indicate that regulation does not decrease total employment and that it can even lead to increased employment in some instances.

Incredible Costs

Regulatory opponents cite a 2010 study by Nicole Crain and Mark Crain, done for the Office of Advocacy of the Small Business Administration (SBA), which stated, among other claims, that the annual cost of federal regulations in 2008 was about $1.75 trillion.[65] In fact, this estimate is the centerpiece of their antiregulatory campaign.[66] This tactic dates back to Ronald Reagan's campaign for president, when he also pointed to an estimate of the cost of regulation as evidence that government was inhibiting economic growth.[67]

A recent CPR White Paper found that the methods used by Crain and Crain to arrive at their cost figure were sufficiently flawed that their estimate must be regarded as unreliable.[68] Subsequently, the nonpartisan Congressional Research Service (CRS) published its own report examining the study, which found the same flaws as identified in the CPR report, and additional problems as well.[69] OIRA Administrator Cass Sunstein has characterized Crain and Crain as "deeply flawed" and referred to the study as an "urban legend."[70]

The more serious problem is with the methodology Crain and Crain used to construct a hypothetical cost of economic regulation, which constitutes 70 percent of their total $1.75 trillion cost figure. The basis for their estimate is polling data published in a World Bank study concerning the regulatory climate of different countries. In an email to the CRS, one

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of the authors of the World Bank study confirmed that Crain and Crain had misinterpreted the World Bank data. He went on to indicate that the data would not support the use to which Crain and Crain had put it, and that the data are too unreliable to be the basis for the type of estimate that Crain and Crain have produced. In addition, the regression formula that Crain and Crain used to make their estimate is too simplistic, ignoring several critical factors that would likely affect their result.

Missing Benefits

According to economic theory, the existence of a regulatory cost estimate, however high, is meaningless without knowing the amount of regulatory benefits that the regulation produces. Furthermore, a net social gain results whenever total regulatory benefits exceed total costs. In an email to the CRS, Nicole Crain and Mark Crain said that their study was "not meant to be a decision-making tool for lawmakers or federal regulatory agencies to use in choosing the 'right' level of regulation," because they made no attempt to estimate regulatory benefits.[71] Nevertheless, this is precisely the use to which regulatory opponents have put it, repeatedly citing it as if it were, in and of itself, an adequate measure of regulation in general.

Employment Impacts

Regulatory opponents contend that environmental, health, safety, and other regulations slow economic growth and contribute to job losses. But, as with any type of spending, regulatory compliance generates economic activity. While it is difficult to measure whether on balance job gains from this spending offset any job losses, existing studies do not support the conclusion that regulation retards economic recovery. Instead, the studies find either no overall impact or, in some cases, an actual increase in employment.[72] This should not be surprising. After all, money spent on regulation contributes to the economy, because firms must buy equipment and labor services in order to comply with regulation. In some cases, regulations can also increase employment by making the affected industry more profitable and more productive. For example, compliance with OSHA's Cotton Dust Standard led the textile industry to modernize their facilities. The investments in new equipment increased the industry's productivity and profitability, enabling it to invest in additional job creation.[73]

In some cases, regulations can increase employment by making the affected industry more profitable and more productive.

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Most of the evidence concerning the impact of regulation on employment comes from studies of environmental regulation. Table 7 summarizes the findings of the key studies:

Source	Segment of Economy Affected by Environmental Regulation	Net Impact on Employment
Bezdek et.al. (2008)[74]	Entire economy	Increase
Morgenstern et.al. (2000)[75]	Four polluting industries	Increase in petroleum and plastics No statistically significant impact in pulp and paper and steel
Berman & Bui (2001)[76]	Los Angeles area (Clean Air Act)	No evidence of decrease Probable slight increase
Goodstein (1999)[77]	Entire economy	7 of 9 available studies found increase 1 study found decrease 1 study found mixed results

Table 7: Impact of Environmental Regulation on Employment

According to Department of Labor data, an average of only 0.3 percent of workers lost their jobs because of government regulations or intervention during the years 2007-2009.

In addition to the above studies, the Environmental Policy Institute (EPI) found that Department of Labor data suggest that few jobs are lost because of regulation.[78] The Bureau of Labor Statistics has developed an "extended mass layoff" data series, which examines the reasons why companies lay off 50 or more workers for more than 30 days. Since 2007, about 1.5 million workers per year have lost their jobs in such layoffs. Significantly, the data series is based on employer-supplied information. According to this information, an average of only 0.3 percent of workers lost their jobs because of government regulations or intervention during the years 2007-2009. This result is similar to data concerning layoffs prior to 2007.[79] As the EPI notes, it is "striking" how few of these layoffs employers attribute to government regulations or intervention.[80] (By comparison, the same data find that extreme weather events have caused more extended mass layoffs.[81]) Moreover, the small number of workers who lost their jobs because of government regulation "pales in comparison to any accounting of the jobs lost in this period due to the regulatory failures that contributed to the economy's financial crisis."[82]

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Regulation During a Recession

Stephen Meyer of MIT compared the economic performance of states with strong environmental regulation to states with weaker regulations. After examining five primary indicators of economic growth and prosperity, he found that there was no evidence that the states with stronger environmental standards fared less well than those with weaker environmental standards.[83] After the 1990-1991 recession, he updated his study to consider whether regulation slowed economic recovery. The results were the same. Meyer found that "stronger environmental standards have not limited the relative pace of economic growth and development among the states over the past twenty years."[84] Moreover, he found that "[e]nvironmentally stronger states [did] not experience more precipitous declines in employment during the recession. Nor [did] they demonstrate a higher rate of business failure." Meyer therefore concluded: "[C]ontrary to what many argue *environmentally stronger states are not more vulnerable to economic decline.*"[85]

Another alleged impact of regulation is that it drives companies to transfer manufacturing overseas in order to remain competitive in international markets, which causes job losses at home. Economists have attempted to confirm that businesses flee to "pollution havens" to avoid domestic environmental regulation, but it is difficult to isolate this reason for moving manufacturing overseas from other factors, such as the availability of natural resources, new markets, and the supply and cost of local employees. The studies summarized in Table 8 indicate what economists have found:

Source	Environmental Regulation and Competitiveness
Jaffee et.al (1995)[86]	Relatively little evidence of negative impact
Brunnermeier & Levinson (2004)[87]	Studies find some negative impacts
Pasurka (2008)[88]	Studies split concerning negative impact
Hanna (2010)[89]	Small negative impact

Table 8: Impact of Environmental Regulation on Competitiveness of Domestic Firms

The evidence about outsourcing due to regulation is mixed at best, and it does not suggest that regulation causes a large shift of manufacturing jobs abroad.[90] Moreover, the fact that environmental regulation may impact the competitiveness of domestic firms does not mean that regulation is the United States is unreasonable. Indeed, firms in the United States spend about the same amount of money on environmental regulation as do the countries of the Organization for Economic Cooperation and Development (OECD).[91] While the cost of regulation may be less in China, few Americans would want to live in a country with the appalling air and water pollution present in China. Finally, regulation can increase competitiveness, rather than decrease it. There is considerable evidence that as firms innovate in response to regulatory requirements, they become stronger international competitors because of the innovation.[92]

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Conclusion

The evidence assembled in this White Paper demonstrates that regulation has greatly benefited the American public, while the failure to regulate has cost us dearly. Nevertheless, regulatory opponents, often citing a misleading estimate of the costs of regulation, support legislation that would reduce and weaken government regulation. Rather than disagree with the evidentiary record presented in this White Paper, regulatory opponents claim that regulation causes job losses and that it is therefore slowing the economic recovery. In fact, as discussed, the available evidence simply does not support this claim. Instead, regulatory costs usually do not translate into job and other economic losses. This result makes sense, since the money spent on regulation spurs economic activity. The available evidence finds that regulation typically has a net neutral impact on jobs or that it can even lead to net increases in the number of jobs in some cases.

Regulation has brought great benefit to the United States without any significant economic dislocation.

This report assembles all of the relevant information about the value of government regulation about which we are aware, and it is the first to collect and holistically analyze this mosaic of information. The picture that emerges from this holistic assessment is that regulation has brought great benefit to the United States without any significant economic dislocation. We know this because:

- Estimates of regulatory benefits—even though they are significantly understated—exceed estimates of regulatory costs—even though they are usually overstated—and often by a substantial amount. This is true whether one looks at aggregated estimates of the benefits and costs of several regulations or at estimates of the projected benefits and costs of individual regulations.
- Regulation has substantially reduced the number of fatalities, diseases, and injuries attributable to health and safety risks as compared to when regulation for these risks did not exist. Similarly, the environment is substantially cleaner and healthier than it was prior to the formation of the EPA and other environmental agencies.
- The failure to regulate produces harms that are undoubtedly greater than the cost of having regulation in place that would help us avoid these harms.
- Regulatory opponents cannot point to any persuasive evidence that government regulation has an unreasonable price tag. One widely cited study claiming that regulation has an annual cost of $1.75 trillion dollars is based on such an unreliable methodology that its estimate should be disregarded. Retrospective studies of regulation have not found any substantial number of firms that have gone out of business, and this holds true for small businesses as well. More generally, the available evidence suggests that regulation has a net neutral impact on jobs, producing news jobs that offset any job losses. In some cases, regulation has actually increased employment.

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- The pursuit of lower regulatory costs rarely motivates manufacturing firms to move their operations outside of the United States. Rather, this factor is a relatively minor consideration as compared to relative labor costs. In any event, retaining such jobs would require the United States to drop most existing environmental and worker health and safety regulations, returning the country to the overwhelming pollution problems and hazardous workplaces that could be found in the United States prior to the formation of the EPA and OSHA.

What is striking about these various strands of information is that they all point to the same conclusions: Americans have benefited greatly from government regulation; the failure to regulate has had tragic consequences for our economy and our environment; and, when evaluated retrospectively, regulation has not caused significant economic dislocations for regulated industries, or even small businesses.

No one number or set of statistics can convey the value of government regulation. In particular, it is not possible to measure with accuracy and precision the value of regulation using cost-benefit analysis because of serious methodological limitations in that approach. Instead, policymakers should employ the pragmatic approach that we have used, which takes into account all relevant information and evaluates it holistically.

The Republicans who control the House of Representatives, emboldened by their Tea Party supporters, prefer to reward their corporate sponsors by seeking to reduce the role of government in protecting people and the environment. As this White Paper establishes, such a bargain would be foolhardy.

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Appendix A – Summary of Regulatory Flexibility Act Section 610 Reviews of EPA and OSHA Rules

Rule (Agency)	Does the Rule Effectively Address the Hazard Targeted?	Should the Rule be Significantly Amended or Rescinded to Minimize Burden on Small Businesses?	Does the Rule Impose Excessive Costs?	Nature of the Public Comments About the Rule
Effluent Guidelines and Standards for the Ore Mining and Dressing Point Source Category, Gold Placer Mine Subcategory (EPA)	Yes, the effluent limits are a necessary component of the comprehensive program to restore and maintain the quality of our Nation's waters.	No, the rule should be continued without change.	No	No public comments received.
Effluent Guidelines and Standards for the Organic Chemicals, Plastics and Synthetic Fibers Category (EPA)	Yes, the rule contributes significantly to pollutant reductions, accounting for reductions of more than 100 million pounds per year. The Toxic Release Inventory indicates that releases from affected facilities to surface waters and to publicly owned treatment works remain an environmental concern, and that the effluent limitations should remain in place.	No, the rule should be continued without change.	No	No adverse public comments; major stakeholders, including the permitting authorities and the regulated community, expressed no need for a rule change.
National Primary Drinking Water Regulations: Stage I Disinfectant/ Disinfection By-Products Rule (EPA)	Yes, there is a continued need for the rule.	No, the rule should be continued without change.	No	No public comments received.

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Rule (Agency)	Does the Rule Effectively Address the Hazard Targeted?	Should the Rule be Significantly Amended or Rescinded to Minimize Burden on Small Businesses?	Does the Rule Impose Excessive Costs?	Nature of the Public Comments About the Rule
Revisions to the Underground Injection Control (UIC) Requirements for Class V Wells (EPA)	Yes, there is a continued need for the rule.	No, the rule does not currently have a significant impact on small businesses.	No	Only one public comment appears in the review's electronic docket; it asserts that there is a continued need for the rule and that industry has not criticized the rule.
National Primary Drinking Water Regulations: Radionuclides (EPA)	Yes, the rule serves as an important tool to protect the health of people who get their drinking water from public systems using sources of water with high levels of radionuclides.	No, the review revealed no reason to amend or rescind the rule; however, the agency is evaluating the need to provide additional guidance and clarification on issues raised by the commenters to assist in the rule's implementation.	No	None of the commenters expressed a need to rescind the rule; however, most of the comments suggested that the agency make clarifications in certain areas of the rule to aid small entities in their rule compliance.
Criteria for Municipal Solid Waste Landfills (EPA)	Yes, there is a continued need for the rule.	No, the rule should be continued without change. The agency considered and rejected revisions to provide more flexibility to small businesses, finding that the rule provides adequate flexibility for small businesses and that the amendments would undermine the rule's effectiveness.	No	None of the commenters expressed a need to rescind the rule; however, several commenters requested that the rule be amended in several ways to provide more flexibility for small businesses.
Land Disposal Restrictions Phase III: Decharacterized Wastewaters, Carbamate Wastes, and Spent Potliners (EPA)	Yes, there is a continued need for the rule.	No, the rule does not currently have a significant impact on small businesses.	No. Costs are well below 1 percent of annual revenues for small companies, with the highest being 0.56 percent	No public comments received.

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Rule (Agency)	Does the Rule Effectively Address the Hazard Targeted?	Should the Rule be Significantly Amended or Rescinded to Minimize Burden on Small Businesses?	Does the Rule Impose Excessive Costs?	Nature of the Public Comments About the Rule
Land Disposal Restrictions Phase II: Universal Treatment Standards, and Treatment Standards for Organic Toxicity Characteristic Wastes and Newly Listed Wastes (EPA)	Yes, there is a continued need for the rule.	No, the rule does not currently have a significant impact on small businesses.	No. Costs average less than 0.1 percent of annual revenues for all the identified small businesses impacted by the rule.	No public comments received.
Land Disposal Restrictions for First Third Scheduled Wastes (USTs) (EPA)	Yes, there is a continued need for the rule.	No, the rule should be continued without change.	No	Information not available.
Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (EPA)	Yes, the rule continues to be a vital component of State-EPA efforts to ensure effective detection, remediation, and prevention of UST releases in order to protect human health and the environment.	No, the rule should be continued without change.	No	Information not available.
Accidental Release Prevention Requirements: Risk Management Programs Under the Clean Air Act, Section 112(r)(7) (EPA)	Yes, there is a continued need for the rule.	No, the rule should be continued without change.	No	No public comments received.
NESHAP: Perchlorethylene Dry Cleaning Facilities (EPA)	Yes, the rule is mandated under the Clean Air Act to protect public health by reducing harmful emissions. The rule has resulted in emissions reductions beyond those initially estimated.	No. Some of the commenters expressed concern with the rule's recordkeeping and monitoring requirements, but the agency concluded that adding flexibilities to these requirements would undermine the rule's effectiveness.	No	All of the public comments supported the rule, and some even recommended that it be strengthened. Some of the commenters expressed concern with the rule's recordkeeping and monitoring requirements.

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Rule (Agency)	Does the Rule Effectively Address the Hazard Targeted?	Should the Rule be Significantly Amended or Rescinded to Minimize Burden on Small Businesses?	Does the Rule Impose Excessive Costs?	Nature of the Public Comments About the Rule
Standards for Reformulated and Conventional Gasoline (EPA)	Yes. Unhealthy smog levels are a significant concern in this country, with over 53 million people living in counties with air quality that does not meet the 1-hour ozone standard. The rule has provided annual emission reductions in volatile organic compounds and oxides of nitrogen of 105,000 tons during the ozone season, and at least 24,000 tons of toxic air pollutants year-round.	No. One commenter suggested ways to simplify the rule, but these suggestions were either beyond the agency's legal authority or were being addressed in a separate rule.	No	Both public comments supported the rule. One of the commenters suggested ways that the agency could simplify the rule.
Inspection/ Maintenance Program Requirements (EPA)	Yes, the rule is helping to improve air quality in some of the most populous areas in the country.	No, the rule should be continued without change.	No	No public comments received.
Control of Emissions of Air Pollution From Nonroad Diesel Engines (EPA)	Yes. Many areas of the country do not meet the National Ambient Air Quality Standards for ozone or particulate matter. The rule has effectively reduced these emissions.	No, the rule should be continued without change.	No	No public comments received.
VOC Regulation for Architectural Coatings (EPA)	Yes. Many areas of the United States have not met ozone standards. The rule controls VOC emissions, which are precursors for tropospheric ozone formation.	No. One commenter suggested an alternative approach for implementing the rule, but the agency rejected this suggestion, because it would not reduce costs for small businesses.	No	The agency received only one public comment, which suggested an alternative approach for implementing the rule.

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Rule (Agency)	Does the Rule Effectively Address the Hazard Targeted?	Should the Rule be Significantly Amended or Rescinded to Minimize Burden on Small Businesses?	Does the Rule Impose Excessive Costs?	Nature of the Public Comments About the Rule
Tier II Light-Duty Vehicle and Light-Duty Truck Emission Standards and Gasoline Sulfur Standards (EPA)	Yes, there is a continued need for the rule.	No, the rule should be continued without change.	No	No relevant public comments received.
Fuels and Fuel Additives Registration Regulations (EPA)	Yes. The Agency registers about 500 new fuel additives, and 50 new gasoline and diesel fuels, each year. Without these regulations, new fuels and additives could enter commerce without any health-effects screening, with the potential for subjecting the public to harmful emissions.	No. The agency did not identify any changes that could be made that would reduce the costs of the rule without compromising the functions the rule fulfills under the Clean Air Act.	No	No public comments received.
Emission Standards for New Nonroad Spark-Ignition Engines At or Below 19 Kilowatts (EPA)	Yes. Many areas of the country do not meet the 8-hour ozone pollution limits and there are even areas which still do not meet the carbon monoxide pollution limits. Both of these environmental problems are addressed in part by the rule.	No, the rule should be continued without change.	No	No public comments received.

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Rule (Agency)	Does the Rule Effectively Address the Hazard Targeted?	Should the Rule be Significantly Amended or Rescinded to Minimize Burden on Small Businesses?	Does the Rule Impose Excessive Costs?	Nature of the Public Comments About the Rule
NESHAP: Secondary Lead Smelting (EPA)	Yes, the rule is estimated to reduce hazardous air pollution emissions by 1,300 megagrams per year.	No, the rule should be continued without change.	No. Although there is some labor burden for small businesses imposed by certain monitoring and recordkeeping requirements within the rule, these requirements are necessary to ensure ongoing compliance with the rule, and do not pose significant economic cost on the industry.	No public comments received.
NESHAP: Petroleum Refineries (EPA)	Yes, the rule has been effective in reducing hazardous air pollution.	No, the rule should be continued without change. One commenter recommended that the reporting requirements be changed to reduce the complexity of these requirements, but the agency concluded that this issue would be better addressed in a separate rulemaking.	No. Although there is some labor burden for small businesses imposed by certain monitoring and recordkeeping requirements within the rule, these requirements are necessary to ensure ongoing compliance with the rule, and to make possible the multiple compliance options desired by the industry.	The agency received only one relevant public comment, which recommended a small technical change to the rule.
NSPS for Industrial Surface Coating: Metal Coils (EPA)	Yes, the rule continues to be necessary to reduce emissions of smog-causing volatile organic compounds as required by the Clean Air Act.	No, the rule should be continued without change. The agency could not identify any changes to the rule that would benefit small entities.	No	No public comments received.

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Rule (Agency)	Does the Rule Effectively Address the Hazard Targeted?	Should the Rule be Significantly Amended or Rescinded to Minimize Burden on Small Businesses?	Does the Rule Impose Excessive Costs?	Nature of the Public Comments About the Rule
NSPS for Industrial Surface Coating: Metal Furniture (EPA)	Yes, the rule continues to be necessary to reduce emissions of smog-causing volatile organic compounds as required by the Clean Air Act.	No, the rule should be continued without change. The agency could not identify any changes to the rule that would benefit small entities.	No	No public comments received.
NSPS for Industrial Surface Coating: Large Appliances (EPA)	Yes, the rule continues to be necessary to reduce emissions of smog-causing volatile organic compounds as required by the Clean Air Act.	No, the rule should be continued without change. The agency could not identify any changes to the rule that would benefit small entities.	No	No public comments received.
Lead Phasedown (EPA)	Yes, the rule continues to be necessary to maintain the ban on lead in gasoline under the Clean Air Act.	No, the rule should be continued without change. The agency could not identify any changes to the rule that would benefit small entities.	No	No public comments received.
Lead; Requirements for Lead-Based Paint Activities in Target Housing and Child-Occupied Facilities (EPA)	Yes, there is a continued need for the rule.	No, the rule should be continued without change.	No	No public comments received.
Pesticide Worker Protection Standard (WPS) Rule (EPA)	Yes, there is a continued need for the rule.	No, the rule should be continued without change.	No	No public comments received.
Asbestos Worker Protection Rule (EPA)	Yes, the rule continues to be necessary to protect human health and the environment from potential unreasonable risks associated with exposure to asbestos.	No, but the agency plans to propose some "streamlining" amendments to the rule in response to some of the comments it received.	No	The agency received a few comments, some of which recommended that the rule be "streamlined" in various ways.

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Rule (Agency)	Does the Rule Effectively Address the Hazard Targeted?	Should the Rule be Significantly Amended or Rescinded to Minimize Burden on Small Businesses?	Does the Rule Impose Excessive Costs?	Nature of the Public Comments About the Rule
Asbestos Model Accreditation Plan (EPA)	Yes, the rule continues to be necessary to protect human health and the environment from potential unreasonable risks associated with exposure to asbestos.	No, but the agency plans to propose some "streamlining" amendments to the rule in response to some of the comments it received.	No	The agency received a few comments, some of which recommended that the rule be "streamlined" in various ways.
Polychlorinated Biphenyls (PCBs) Disposal Amendments (EPA)	Yes, the rule is needed to provide options for the safe disposal of PCBs and to protect human health and the environment from potential unreasonable risks associated with exposure to PCBs as required by the Toxic Substances Control Act.	No, the rule should be continued without change. The agency had recently amended the rule to institute changes that are anticipated to provide significant cost savings to the regulated community including small entities.	No	No public comments received.
Cotton Dust Standard (OSHA)	Yes. Health studies confirm that high exposure to cotton dust would increase textile workers' risk of developing byssinosis. The number of byssinosis cases declined from approximately 50,000 in the early 1970s and 12,000 in 1978 (when the standard was published), to around 700 in the mid-1980s.	No, but the agency will make a minor amendment to partially exempt cotton that has been washed in a new process developed after the original rule was issued. The agency considered and rejected other suggestions for adding flexibilities to the rule.	No. In fact, the standard helped spur modernization in textile factories that has made the industry more profitable and productive.	The agency received several public comments on the standard, all of which supported the rule. Some of the commenters suggested small technical changes that could be made to the rule.

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Rule (Agency)	Does the Rule Effectively Address the Hazard Targeted?	Should the Rule be Significantly Amended or Rescinded to Minimize Burden on Small Businesses?	Does the Rule Impose Excessive Costs?	Nature of the Public Comments About the Rule
Ethylene Oxide Standard (OSHA)	Yes. Workers exposed to ethylene oxide continue to be at risk of cancer, genetic changes, reproductive effects, neurotoxicity, and sensitization. The rule has been effective in reducing exposure to ethylene oxide thereby achieving the predicted health benefits.	No, the rule should be continued without change.	No. The rule has not had a negative economic impact on the industries affected by the standard, generally, or on small businesses in those industries. The rule encouraged the development of new technology, which achieved compliance and cost less than other sterilizers. The newer equipment costs about half the cost of the older equipment with add-on controls. This reduced costs for all employers including small businesses.	The agency received several public comments on the standard, all of which supported the rule. Some of the commenters suggested that the rule be strengthened. Others requested that the agency provide additional compliance assistance.
Excavation Standard (OSHA)	Yes. The rule has reduced excavation- and trenching-related fatalities by more than 40 percent. Although the standard has improved safety, it remains needed in light of the ongoing occurrence of related fatalities, most of which result from violations of the standard.	No, the rule should be continued without change.	No. The rule has not had negative impacts on small businesses or construction activity, generally. The number of small businesses engaged in excavation work has increased in numbers and as a percentage of businesses. Excavation activity has increased, and the cost of various types of safety equipment has declined in real terms. New, safer technology has been developed.	The agency received several public comments on the standard, all of which supported the rule. Some of the commenters suggested that the rule be strengthened. Others requested that the agency provide additional education, training, and outreach.

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Rule (Agency)	Does the Rule Effectively Address the Hazard Targeted?	Should the Rule be Significantly Amended or Rescinded to Minimize Burden on Small Businesses?	Does the Rule Impose Excessive Costs?	Nature of the Public Comments About the Rule
Grain Handling Facilities Standard (OSHA)	Yes. Workers continue to be at risk of death and injury from grain explosions, fires, and engulfments. There has been a 70 percent decrease in fatalities from grain explosions and a 44 percent decrease in suffocations since the rule was promulgated.	No, but the agency is considering making a few minor technical amendments to clarify or simplify the rule.	No. The rule has not had a negative economic impact on the grain handling industries, generally, or on small businesses in those industries. Small businesses in these industries have remained economically competitive. The number of small business firms and employment in small business firms, generally, did not decline, and the percentage of firms that were small businesses increased.	The agency received several public comments on the standard, all of which supported the rule. Some of the commenters suggested that the rule be strengthened. Others suggested technical changes to the rule, which could simplify or clarify its requirements.
Lead in Construction (OSHA)	Yes, the rule is needed to reduce both lead exposures in construction employees and disease resulting from these lead exposures. The standard has reduced blood lead levels of exposed employees. Retention of the standard is necessary to continue to achieve that goal because certain construction jobs still have high airborne lead exposures, and compliance data indicate that there are still instances of non-compliance with the standard.	No, the rule should be continued without change. The agency rejected a recommendation to make the rule less stringent, since it found that the rule in its current form was still needed to protect workers.	No. The rule has not had a negative economic impact on business, including small businesses, in most sectors affected. The construction sector overall is growing in terms of profits, revenues and employment. Small businesses are retaining their share of the business.	The agency received several public comments on the standard, all of which supported the rule. Some of the commenters suggested that the rule be strengthened. Others requested additional compliance assistance. A few recommended that the rule be amended to make it less stringent.

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Rule (Agency)	Does the Rule Effectively Address the Hazard Targeted?	Should the Rule be Significantly Amended or Rescinded to Minimize Burden on Small Businesses?	Does the Rule Impose Excessive Costs?	Nature of the Public Comments About the Rule
Lockout/Tagout Standard (OSHA)	Yes. 600,000 more workers are exposed to lockout/tagout related hazards than was the case when the rule was first issued. Several studies have found that since the rule was issued, lockout/tagout related fatalities have decreased substantially.	No, the rule should be continued without change. The agency rejected a recommendation to amend the rule to follow industry consensus standards, because it would not increase the cost-effectiveness of the rule enough to justify a new rulemaking.	No. Technological advancements have made it cheaper to comply with the rule. Some businesses noted that compliance with the rule had actually increased their profitability.	The agency received several public comments on the standard, all of which supported the rule. Some of the commenters suggested that the rule be strengthened. Others requested additional compliance assistance. A few recommended amending the rule so it followed industry consensus standards.
Methylene Chloride (OSHA)	Yes, the rule protected workers from adverse health effects resulting from exposure to methylene chloride in the workplace.	No, the rule should be continued without change.	No. The does not impose an unnecessary or disproportionate burden on small businesses or on industry in general.	The agency received a few public comments on the standard, all of which supported the rule. Some of the commenters requested additional compliance assistance.
Presence Sensing Device Initiation (PSDI) Provisions of Mechanical Power Presses Standard (OSHA)	Yes, the rule, if implemented, would protect workers against injury and increase worker productivity.	Yes, the rule should be continued, but the approval process for third-party validators needs to be amended, so that affected industries will be able to install and use PSDI systems.	No. The rule imposes no costs, since it has not been implemented.	The agency received a few public comments. They all suggested ways that the rule could be improved, but none of them recommended rescinding the rule. Many of the comments noted that the rule was too complex.

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Endnotes

[1] Sidney Shapiro et al., *Setting the Record Straight: The Crain and Crain Report on Regulatory Costs* (Ctr. for Progressive Reform, White Paper 1103, 2011) *available at* http://www.progressivereform.org/articles/SBA_Regulatory_Costs_Analysis_1103.pdf.

[2] *See, e.g.*, Frank Newport, *Americans Leary of Too Much Gov't Regulation of Business*, Gallup, Feb. 2, 2010 (finding that 57% of Americans are worried that there will be too much government regulation of business, while 37% worry that there will not be enough), *available at* http://www.gallup.com/poll/125468/americans-leery-govt-regulation-business.aspx.

[3] *See, e.g.*, Jason Dick, *Support For Addressing Climate Change Holds Firm*, National Journal, August 2, 2010 (reporting on a Society for Human Resource Management/National Journal Congressional Connection Poll, conducted with the Pew Research Center, that found that 65 percent of the public favor "limits on carbon dioxide or greenhouse gas emissions," while only 28 percent oppose such limits, and that 69 percent of the public favors "stricter regulations on oil drilling"), *available at* http://congressionalconnection.nationaljournal.com/2010/08/support-for-addressing-climate.php.

[4] *See* Sidney A. Shapiro & Robert L. Glicksman, Risk Regulation at Risk: Restoring a Pragmatic Approach 92-120 (2003) (explaining why benefits are underestimated and costs are overestimated); Sidney A. Shapiro & Christopher H. Schroeder, *Beyond Cost-Benefit Analysis: A Pragmatic Reorientation*, 32 Harv. Env. L. Rev. 433 (2008) (svvame); Rena Steinzor et. al., *A Return to Common Sense: Protecting Health, Safety, and the Environment Through "Pragmatic Regulatory Impact Analysis"* (Ctr. for Progressive Reform, White Paper 909, 2009), *available at* http://www.progressivereform.org/articles/PRIA_909.pdf (same). While economics uses a cost-benefit test to analyze regulation, it is unwise to base public policy solely on a cost-benefit test. *See* discussion *infra* Section III (explaining pragmatic regulatory analysis).

[5] OMB produces these estimates as part of its annual *Report to Congress on the Benefits and Costs of Federal Regulations and Unfunded Mandates on States, Local, and Tribal Entities*, as required by the Regulatory Right-to-Know Act of 2001, Pub. L. No. 106-554, §624.

[6] Office of Mgmt. & Budget, Executive Office of the President, Draft 2011 Report to Congress on the Benefits and Costs of Federal Regulations and Unfunded Mandates on State, Local, and Tribal Entities (in 2001 dollars) [hereinafter OMB, Draft 2011 Report], *available at* http://www.whitehouse.gov/sites/default/files/omb/legislative/reports/Draft_2011_CBA_Report_AllSections.pdf. Significantly, these cumulative estimates include only those major federal regulations for which the issuing agency was able to provide some quantified and monetized estimate of both benefits and costs. Major federal regulations are generally those that have some annual impact on the economy of $100 million or more, and among those rules, agencies are only able to produce quantified and monetized estimates of costs and benefits for a small percentage. *Id.* at 8, 12.

[7] *See* Envtl. Protection Agency, The Benefits and Costs of the Clean Air Act from 1990 to 2020 (Mar. 2011) [hereinafter EPA, Clean Air Act, *available at* http://www.epa.gov/oar/sect812/feb11/fullreport.pdf.

[8] Isaac Shapiro, *Tallying Up the Impact of New EPA Rules: Combined Costs of Obama EPA Rules Represent a Sliver of the Economy and are Far Outweighed by Cumulative Benefits* (Econ. Pol'y Inst., Briefing Paper No. 311, 2011), *available at* http://w3.epi-data.org/temp2011/BriefingPaper311.pdf.

[9] Note that the four rules included in the EPI's report do not represent all of the proposed major rules that the EPA was developing at the time the EPI report was issued. One such rule is the EPA's proposed revision to the Ozone National Ambient Air Quality Standard, which the EPI report excluded because it would lead to double counting of regulatory costs and benefits (many of the rule's benefits and costs would be achieved by other proposed regulations). Another is the EPA's proposed Coal Ash Disposal Rule, which the EPI report excluded, because the EPA is considering a wide array of regulatory options for that rule, making it impossible to predict the rule's impacts. *See id.* at 5-6.

[10] OMB, Draft 2011 Report, *supra* note 6, at 3.

[11] EPA, Clean Air Act, *supra* note 7, at 7-8.

[12] Shapiro, *supra* note 8, at 4, 5.

[13] G. Tracy Mehan, *The Clean Water Act: An Effective Means To Achieve a Limited End*, Water Environment & Technology, Oct. 2007, *available at* http://www.wef.org/publications/page_wet.aspx?id=4692&page=ca&section=CWA%2035th%20Anniversary.

[14] William L. Andreen, *Water Quality Today—Has the Clean Water Act Been a Success?*, 55 Ala. L. Rev. 537, 584-85 (2004).

[15] EPA, Clean Air Act, *supra* note 7, at 5-25 (Table 5-6).

[16] *Id.*

[17] South Coast Air Quality Management District, State of California, About South Coast AQMD: Progress So Far, http://www.aqmd.gov/aqmd/index.html#progress (last visited June 14, 2011); Air Res. Bd., California Envtl. Protection Agency, Fact Sheet: Reducing Emissions from California Vehicles, *available at* http://www.arb.ca.gov/msprog/zevprog/factsheets/reducingsmog.pdf.

[18] U.S. Envtl. Protection Agency, Blood Lead Level, http://cfpub.epa.gov/eroe/index.cfm?fuseaction=detail.viewInd&lv=list.listbyalpha&r=224030&subtop=208 (last visited June 15, 2011); Steinzor et al., *supra* note 4, at 17-18.

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[19] Maureen Rouhi, *The Top Pharmaceuticals That Changed the World: Thalidomide*, Chem. & Engineering News, June 20, 2005, *available at* http://pubs.acs.org/cen/coverstory/83/8325/8325thalidomide.html. In 1960, the drug company Richardson-Merrell Inc. applied to the FDA to have its new drug thalidomide approved for sale in the United States with the goal of having it approved by early 1961. At the time, the 1938 Federal Food, Drug, and Cosmetic Act required proof of a drug's safety before it could be approved for sale. Frances Oldham Kelsey, the FDA pharmacologist assigned to review the application, refused to approve the drug, because the application failed to establish its safety in light of emerging evidence that the drug caused birth defects. She insisted that Richardson-Merrell conduct additional safety tests. Over the next two years, the harmful effects of thalidomide became well known. Consequently, in 1962, Richardson-Merrell withdrew its application. *Id.* Thalidomide was widely available in the United Kingdom between 1958 and 1961, and during that time approximately 2,000 babies were born with birth defects, and roughly half of those died within months after their birth. Nick Triggle, *Apology to Thalidomide Survivors*, BBC News, Jan. 14, 2010, *available at* http://news.bbc.co.uk/2/hi/health/8458855.stm. These numbers suggest the catastrophic results that might have occurred if thalidomide was quickly approved and available on the market in the United States for one or two years. Instead, effective regulation of thalidomide by the FDA (though weak in comparison to modern standards) likely prevented thousands of birth defects to American babies, perhaps half of which would have died.

[20] Ctrs. for Disease Control & Prevention, U.S. Dept. of Health & Human Servs., *Preliminary FoodNet Data on the Incidence of Foodborne Illnesses — Selected Sites, United States, 2001*, 51 Morbidity & Mortality Wkly. Rep. 325, 327 (2002), *available at* http://www.cdc.gov/mmwr/PDF/wk/mm5115.pdf. Officials from the Centers for Disease Control and Prevention (CDC) attribute much of this reduction in food borne illnesses to a new health and safety program for slaughterhouses and meat-processing plants called the Hazard Analysis and Critical Control Point (HACCP) program, which the Department of Agriculture's Food Safety and Inspection Service began implementing in 1996. Robert Roos, *Foodborne Bacterial Disease Rates Dropped 23% from 1996 to 2001, CDC Says*, Ctr. for Infectious Disease Res. & Pol'y, http://www.cidrap.umn.edu/cidrap/content/fs/food-disease/news/foodnet.html (last visited June 2, 2011).

[21] Rena Steinzor & Sidney Shapiro, The People's Agents and the Battle to Protect the Public: Special Interests, Government, and Threats to Health, Safety, and the Environment 12 (2010).

[22] U.S. Consumer Product Safety Commission, *CPSC Stops Hazardous Products At the Docks: Preventing Fireworks Injuries and Deaths*, http://www.cpsc.gov/cpscpub/pubs/success/firework.html (last visited June 2, 2011). Starting in 1988, the CPSC began working aggressively to prevent fireworks that violate agency regulations from reaching market. In all, the agency estimates that it confiscated more than 40 million pounds of illegal fireworks between 1988 and 1994. These efforts have significantly reduced fireworks-related injuries and deaths. *Id.*

[23] Steinzor & Shapiro, *supra* note 21, at 18. OSHA regulation is not entirely responsible for the reduction in fatalities. For example, one crucial trend that has undoubtedly contributed to the reduced number of workplace fatalities is the loss of American jobs in relatively dangerous industries such as heavy manufacturing and agriculture.

[24] Mine Safety & Health Admin., U.S. Dept. of Labor, Injury Trends in Mining, http://www.msha.gov/mshainfo/factsheets/mshafct2.htm (last visited in June 2, 2012).

[25] Press Release, Fish & Wildlife Serv., U.S. Dept. of the Interior, Bald Eagle Soars Off Endangered Species List Secretary Kempthorne: The Eagle has Returned (June 28, 2007), *available at* http://www.fws.gov/news/newsreleases/shownews.cfm?newsid=72a15e1e-f69d-06e2-5c7b052db01fd002. The successful conservation of the Bald Eagle is due in part to regulations issued by the Fish and Wildlife Service under the Endangered Species Act and the Bald and Golden Eagle Protection Act, as well as to regulations issued by the EPA to ban DDT, a harmful pesticide that impaired eagle's ability to reproduce.

[26] Aaron Smith, *BP: We've Spent $2 Billion on Clean-Up*, CNNMoney, June 21, 2010, *available at http://money.cnn.com/2010/06/21/news/companies/bp_oil_spill/index.htm*. In June of 2010, Credit Suisse predicted that the total costs would be around $37 billion, with $23 billion in clean-up costs and $14 billion in settlement claims. Linda Stern, *Gulf Oil Spill Could Cost BP as Much as $37 Billion*, MoneyWatch.com, *available at* http://moneywatch.bnet.com/economic-news/blog/daily-money/gulf-oil-spill-could-cost-bp-as-much-as-37-billion/728/.

[27] Heidi Shierholz, *Unemployment Drops to 9.7% Despite More Job Losses*, Econ. Pol'y Institute, http://www.epi.org/publications/entry/jobs_picture_20100205/ (last visited June 28, 2011).

[28] Office of Management & Budget, Fiscal Year 2012: Analytical Perspectives: Budget of the U.S. Government47 (2011), *available at* www.whitehouse.gov/sites/default/files/omb/budget/fy2012/assets/spec.pdf. The Congressional Budget Office (CBO), which employs a different methodology for calculating costs than does the OMB, estimates the costs of TARP to be $19 billion. Cong. Budget Office, Report on the Troubled Asset Relief Program—March 2011, 1 (2011), *available at* http://www.cbo.gov/ftpdocs/121xx/doc12118/03-29-TARP.pdf.

[29] Barbara Butrica, Karen E. Smith, & Eric Toder, How Will the Stock Market Collapse Affect Retirement Incomes? 1 (The Urban Institute, Older Americans' Economic Security Report No. 20, 2009), *available at* http://www.urban.org/uploadedpdf/411914_retirement_incomes.pdf.

[30] Leonardo Transande & Yinghua Liu, *Reducing The Staggering Costs Of Environmental Disease In Children, Estimated At $76.6 Billion In 2008*, 30 Health Affairs 863, *available at* http://content.healthaffairs.org/content/early/2011/05/02/hlthaff.2010.1239.abstract.

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[31] The 1990 Clean Air Act instructed the EPA to determine whether mercury and other hazardous air pollution emissions from coal-fired power plants posed a threat to public health by November of 1994, and if it found such a threat, to adopt regulations imposing a strict Maximum Achievable Control Technology (MACT) standard to limit those emissions. The agency only just published a proposed regulation in May of 2011, a delay of 17 years. National Emission Standards for Hazardous Air Pollutants From Coal- and Oil-Fired Electric Utility Steam Generating Units, 76 Fed. Reg. 24976 (May 3, 2011) (to be codified at 40 C.F.R. pts. 60 & 63), *available at* http://www.epa.gov/ttn/atw/utility/fr03my11.pdf. Regulation of mercury emissions from U.S. power plants could have prevented around 94,000 American babies every year from being born with elevated blood mercury levels—levels high enough to leave them with irreversible brain damage—or 1.6 million babies over 17 years. It could also have prevented as many as 231 children from developing mental retardation every year or 3,927 children over 17 years. *See* Leonardo Trasande et al., *Applying Cost Analyses to Drive Policy That Protects Children: Mercury as a Case Study*, 1076 Ann. N.Y. Aca d. Sci . 911, 916, 919 (2006); Leonard Trasande et al., *Mental Retardation and Prenatal Methylmercury Toxicity*, 49 Am. J. Indust. Med. 153, 153 (2006). Limiting power plant mercury emissions to 15 tons per year would have prevented per year up to 380 fatal heart attacks and 210 non-fatal heart attacks, or 6,460 fatal heart attacks and 3,570 non-fatal heart attacks over 17 years. *See* Ne. States for Coordinated Air Use Mgmt., Economic Valuation of Human Health Benefits of Controlling Mercury from U.S. Coal-Fired Power Plants 168 (2005). Lastly, the failure to regulate mercury pollution from power plants has contributed to significant environmental damage. This pollution can cause brain damage, reproductive system damage, behavioral abnormalities, and even death in birds and mammals that depend on fish, such as bald eagles, loons, kingfishers, osprey, otters, minks, and the endangered Florida panther. Office of Air Quality Planning & Standards & Office of Research & Dev., Envtl. Protection Agency, 5 Mercury Study Report to Congress: Health Effects of Mercury and Mercury Compounds 3-43 – 3-45 (1997), *available at* http://www.epa.gov/ttn/caaa/t3/reports/volume5.pdf.

[32] In 1973, the EPA issued a regulation exempting ballast water from the regulation under the Clean Water Act, a decision that a federal appeals court unanimously struck down in 2008. Nw. Envtl. Advocates v. U.S. E.P.A., 537 F.3d 1006 (9th Cir. 2008). The EPA responded by issuing a general National Pollution Discharge Elimination System (NPDES) permit for most commercial ships that weakly regulated ballast water discharges. Environmental groups successfully challenged the permit requirements, and in March of 2011, the EPA agreed to issue a stronger regulation by late 2012 (though it would not take effect until December 2013). Bettina Boxall, *EPA Agrees to Strengthen Ship Ballast Rules*, L.A. Times, Mar. 8, 2011, *available at* http://latimesblogs.latimes.com/greenspace/2011/03/epa-agrees-to-toughen-ballast-rules-to-keep-out-invasive-species.html. This 38-year failure to regulate ballast water discharges has allowed the spread of invasive species like the zebra mussel and the quagga mussel., which have ravaged the waterways of 25 states and caused an estimated $1 billion in losses each year, from clogged water pipes to expensive equipment installed to clean-up and prevent infestations, totaling $38 billion over 38 years. Catherine O'Neill et al., *The Hidden Human and Environmental Costs of Regulatory Delay* 11 (Ctr. for Progressive Reform, White Paper 907, 2009), *available at* http://www.progressivereform.org/articles/CostofDelay_907.pdf.

[33] In 2004, a committee of industry, labor, and government representatives reached agreement on a new draft proposed standard for the use and operation of cranes, derricks, and other heavy machinery at construction sites, but OSHA did not issue a final rule until August of 2010—more than 6 years later. Cranes and Derricks in Construction, 75 Fed. Reg. 47906 (Aug. 9, 2010) (to be codified at 29 C.F.R. pt. 1926), *available at* http://www.osha.gov/FedReg_osha_pdf/FED20100809.pdf; *see* O'Neill et al, *supra* note 32, at 13-16. During this time, by OSHA's own estimates, the failure to regulate cranes and derrick safety in a timely fashion may have resulted in as many as 126 preventable deaths and 1,050 preventable non-fatal injuries. Cranes and Derricks in Construction, 75 Fed. Reg. 47906, 47913 (Aug. 9, 2010) (to be codified at 29 C.F.R. pt. 1926), *available at* http://www.osha.gov/FedReg_osha_pdf/FED20100809.pdf.

[34] Although all-terrain vehicles (ATVs) first came on the market in the early 1970s, it was not until 1988 that manufacturers pulled the three-wheeled models from the market—in response to a CPSC warning and several defeats in products liability cases. In the meantime, as many as 2,500 people died and at least three-quarters of a million more reported preventable injuries. Though undoubtedly low, one way of measuring the costs of this failure to regulate is to look at the total settlement payments that three-wheeled ATV manufacturers paid out. On average, courts awarded plaintiffs a settlement of over $859,000. With more than 1,000 cases resolved, three-wheeled ATV manufacturers have paid out at least $859 million. Sidney Shapiro, Ruth Ruttenberg, & Paul Leigh, *The Social Costs of Dangerous Products: An Empirical Investigation*, 18 Cornell J.L. & Pub. Pol'y 775, 814, 816 (2009).

[35] *See* James Glanz & Norimitsu Onishi, *Japan's Strict Building Codes Saved Lives*, N.Y. Times, Mar. 12, 2011, at A1, *available at* http://www.nytimes.com/2011/03/12/world/asia/12codes.html?_r=2.

[36] Hiroko Tabuchi, Norimitsu Onishi, & Ken Belson, *Japan Extended Reactor's Life, Despite Warning*, N.Y. Times, Mar. 22, 2011, at A1, *available at* http://www.nytimes.com/2011/03/22/world/asia/22nuclear.html?pagewanted=1&hp.

[37] Keith Bradsher, *Japan Prohibits Access to Nuclear Evacuation Zone*, N.Y. Times, Apr. 21, 2011, at A6, *available at* http://www.nytimes.com/2011/04/21/world/asia/21japan.html?src=mv.

[38] Kelly Olsen & Joe McDonald, *Japan Finds More Types Of Radiation-Tainted Food*, Huffington Post, Mar. 20, 2011, *available at* http://www.huffingtonpost.com/2011/03/20/japan-nuclear-radiation-food_n_838109.html.

[39] Matt Smith, *Japan Faces Lengthy Recovery from Fukushima Accident*, CNN, Apr. 22, 2011, *available at* http://www.cnn.com/2011/WORLD/asiapcf/04/22/japan.fukushima.future/; Natalie Obiko Pearson & Carolyn Bandel, *Atomic Cleanup Cost Goes to Japan's Taxpayers, May Spur Liability Shift*, Bloomberg, Mar. 23, 2011, *available at* http://www.bloomberg.com/news/2011-03-23/nuclear-cleanup-cost-goes-to-japan-s-taxpayers-may-spur-liability-shift.html.

[40] Section 610 of the Regulatory Flexibility Act (RFA) requires agencies to retrospectively evaluate any regulations they have issued that have a "significant economic impact" on several small businesses. 5 U.S.C. §610. Through this review, agencies are supposed "to determine whether such rules should be continued without change, or should be amended or rescinded . . . to minimize any significant economic impact of the rules upon" small businesses. 5 U.S.C. §610(a).

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[41] Finalized in 1987, OSHA's Grain Handling Standard was designed to address the several types of risks that the storage of large amounts of grain poses to workers. Stored grain can be highly flammable, creating a significant fire hazard, and grain dust, when not properly managed, can be highly explosive. Workers inside grain storage facilities also can easily suffocate if they become trapped in grain (*e.g.*, if a vertical wall of grain collapses on top of them). The section 610 review found a 70-percent reduction in fatalities from grain dust explosions and a 44-percent reduction in suffocations during the 10-year period after the rule was finalized. The review estimates that the rule had prevented, on average, 5.5 explosion-related deaths and 4.4 deaths from suffocation every year. Occupational Safety & Health Admin., Office of Program Evaluation, Regulatory Review of OSHA's Grain Handling Facilities Standard ii, 7-10, 29-35 (2003), *available at* http://www.osha.gov/dea/lookback/grainhandling_final2003.pdf.

[42] *Id.* at ii, 39-42.

[43] The section 610 review for OSHA's Cotton Dust Standard found that since the rule was published in 1978, textile workers' exposure to cotton dust has significantly declined. Workers who are exposed to high levels of cotton dust over extended periods of time can develop byssinosis, commonly referred to as "brown lung disease," a debilitating and potentially fatal disease that significantly impairs lung function. The section 610 review found that the number of byssinosis cases declined from approximately 50,000 in the early 1970s to around 700 in the mid-1980s, a decline of 99 percent. Occupational Safety & Health Admin., Office of Program Evaluation, Regulatory Review of OSHA's Cotton Dust Standard ii, 28-33 (2000) [hereinafter OSHA, Cotton Dust Review], *available at* http://www.osha.gov/dea/lookback/cottondust_final2000.pdf.

[44] Between 1972 and 1979, productivity grew by about 2.5 percent per year; between 1979 and 1991, the productivity growth rate increased to 3.5 percent per year. *Id.* at 22. According to the section 610 review, in order to comply with OSHA's Cotton Dust Standard, textile factories had to make technological investments in their equipment. With modernized facilities, textile factories were able to significantly increase productivity and earn far greater profits. *Id.* at 35-38.

[45] *Id.* at 20-25, 35-39, 40-43.

[46] The one exception is OSHA's Presence Sensing Device Initiation (PSDI) Standard, which allows industry to install presence sensing device (PSD) systems on their mechanical presses as a means for protecting workers from being injured by the press, provided that an OSHA-approved third party validates the system at installation and once per year thereafter. Occupational Safety & Health Admin., Office of Program Evaluation, Regulatory Review of OSHA's Presence Sensing Device Initiation (PSDI) Standard (2004), *available at* http://www.osha.gov/dea/lookback/psdi_final2004.html. In its review, OSHA found that no third party sought approval to serve as a validator, and therefore no industrial facilities had installed a PSD system. Nevertheless, the agency still concluded that there was a continued need for the rule (*i.e.*, because mechanical presses still posed a serious injury risk to workers, which PSD systems could significantly reduce), but that the PSDI standard need to be changed, so that it would actually be implemented and provide the intended worker safety benefits. Accordingly, OSHA proposed to revise the PSDI Standard to make it identical, or similar to, an existing industry consensus standard governing mechanical press safety. *Id.*

[47] For example, the 610 review for OSHA's Excavation Standard found that "the protective systems [for preventing worker fatalities that result in excavation or trench collapses] available in 1990 (when the Excavations Standard was enacted) remain available today and, in fact, cost less in 2001 in real dollars." Occupational Safety & Health Admin., Office of Program Evaluation, Regulatory Review of Regulatory Review of 29 CFR 1926, Subpart P: Excavations 30 (2007), *available at* http://www.osha.gov/dea/lookback/excavation_lookback.pdf. OSHA's Cotton Dust Standard actually increased the profitability of the regulated industry. *See supra* note 44 and Table 4.

[48] At a 1997 stakeholder meeting, for example, a DuPont representative explained that the small entities with which he was familiar had actually saved money from their lockout/tagout programs — due to a successful reduction in injuries and a consequent reduction in healthcare, lost work day, and Workers' Compensation expenses. Ray Jones, E.I. DuPont, Presentation at OSHA's Public Meeting on the Review of the Control of Hazardous Energy Sources (Lockout/Tagout) Standard (June 30, 1997). Similarly, the Ethylene Oxide Industry Council (EOIC), a panel of the Chemical Manufacturers Association that presents ethylene oxide producers, submitted comments to OSHA for its section 610 Review of the agency's Ethylene Oxide (ETO) Standard that strongly endorsed the rule. Ruth Ruttenberg & Anjali Lamba, Summary of Data and Analysis for Section 610 and Executive Order 12866 Review of OSHA's Ethylene Oxide Standard, for OSHA's Office of Regulatory Analysis 39-40 (1998).

[49] For example, members of the textile industry suggested in their comments during OSHA's section 610 review of the Cotton Dust Standard that a provision that exempted certain kinds of "washed cotton" from some of the regulations' requirements be expanded to include cotton that was washed by a new process called "batch kier washing." This washed cotton provision was added to the rule in 1985—seven years after the original Cotton Dust Standard was issued. Following the section 610 review of the Cotton Dust Standard, OSHA agreed with the commenters and announced that it would expand the washed cotton provision to include the new washing process. Such small changes to rules following a section 610 review are not common, but they do show that agencies take the section 610 review process and the public comments they receive seriously. OSHA, Cotton Dust Review, *supra* note 43, at 58-59.

[50] For example, the EPA received no comments for the 610 reviews it conducted on the Control of Emissions of Air Pollution From Nonroad Diesel Engines rule or the Lead Phasedown rule. *See infra* Appendix A.

[51] *Federal Regulation: How Best to Advance the Public Interest? Hearing Before the S. Comm. on Homeland Sec. & Gov't Affairs*, 112th Cong. (2011) (testimony of Cass Sunstein, Administrator, Office of Information and Regulatory Affairs), *available at* http://hsgac.senate.gov/public/index.cfm?FuseAction=Hearings.Hearing&Hearing_ID=627c3215-33df-47d6-b9db-62b9958fcc3d. The exception was a regulation by the Federal Railroad Administration (FRA) requiring certain trains to install Positive Train Control (PTC) technology. PTC technology involves the use of a system of computers and communications technology to control and coordinate train movements in order to prevent collisions. PTC can also increase trains' fuel efficiency. The Obama Administration defended this outcome by pointing out that the regulation as written was specifically mandated by statute, but another explanation is costs were overestimated and the benefits were underestimated. *See* discussion *infra* Section III.

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[52] During this period, agencies issued 119 significant rules for which they were able to estimate at least some of the costs and benefits. Of these, 88 rules produced positive net benefits. The authors of this White Paper followed two rules for determining whether a rule for which either or both the costs and benefits are presented as a range generated positive net benefits. First, we counted a regulation as having positive net benefits if the lower bound estimate of benefits was higher than the upper bound estimate of costs. Second, we also counted a regulation as having a positive net benefit if 70 percent or more of the net benefit range was positive, because this demonstrates that the benefit range is significantly positive. To calculate the lower bound of the net benefit range, we subtracted the highest bound estimate of costs from the lowest bound estimate of benefits. To calculate the higher bound of the net benefit range, we subtracted the lowest bound estimate of costs from the highest bound estimate of benefits.

[53] Shapiro & Glicksman, *supra* note 4, at 90-91. Whenever a rule had either or both the costs and benefits presented as a range, Shapiro and Glicksman employed the same two rules used by the authors of this White Paper for determining whether the rule generated positive net benefit. *See supra* note 52. In contrast, an earlier study by Hahn found that only 57 percent of the significant regulations issued between 1981 and 1996 had a positive net benefit. Robert W. Hahn, *Regulatory Reform: What Do the Government's Numbers Tell Us?*, *in* Risks, Costs, & Lives Saved: Getting Better Results from Regulation 208 (Robert W. Hahn ed., 1996). One possible explanation for the difference in results is that both Shapiro and Glicksman and the authors of this White Paper relied on agency estimates of costs and benefits, whereas Hahn adjusted agency data in order to arrive at his estimate. For instance, in the earlier regulatory analyses that Hahn's study looked at, agencies did not attempt to monetize—that is, put a dollar figure on—many of the benefits that regulations produced, such as lives saved or illnesses prevented. In these cases, Hahn adjusted the agencies' analyses by supplying his own valuations for these benefits, as well as by using a high discount rate—5 percent—to discount the value of future benefits. *See id.* In later regulatory analyses, agencies or the OMB did monetize many of these regulatory benefits. In comparison to the agencies or the OMB, Hahn may have low-balled the value of many regulatory benefits, thus resulting in his relatively low number of regulations that produced positive net benefits. In addition, it is possible that agencies over time have become more proficient in estimating regulatory benefits, which has always been a problem for agencies. The improved estimation techniques have enabled agencies to provide a fuller accounting of regulatory benefits, thus leading to more regulations that produce positive net benefits. To be sure, however, many regulatory benefits for environmental, health, and safety regulations defy quantification and monetization, and thus are often left out of cost-benefit analyses completely.

[54] Office of Mgmt. & Budget, Executive Office of the President, Stimulating Smarter Regulation: 2002 Report to Congress on the Benefits and Costs of Federal Regulations and Unfunded Mandates on State, Local, and Tribal Entities 50 (Table 9) (2002), *available at* http://www.whitehouse.gov/sites/default/files/omb/assets/omb/inforeg/2002_report_to_congress.pdf.

[55] Office of Mgmt. & Budget, Executive Office of the President, Informing Regulatory Decisions: 2003 Report to Congress on the Benefits and Costs of Federal Regulations and Unfunded Mandates on State, Local, and Tribal Entities 12-13 (Table 4) (2003), *available at* http://www.whitehouse.gov/sites/default/files/omb/assets/omb/inforeg/2003_cost-ben_final_rpt.pdf.

[56] *See* Shapiro & Glicksman, *supra* note 4, at 92-120; Shapiro & Schroeder, *supra* note 4; Steinzor et al., *supra* note 4.

[57] *See* U.S. Department of Transportation, National Highway Traffic Safety Administration, *Final Regulatory Impact Analysis, Corporate Average Fuel Economy and CAFÉ Reform for MY 2008-2011 Light Trucks* VIII-64 to VIII-65 (March 2006), *available at* http://www.nhtsa.dot.gov/staticfiles/DOT/NHTSA/Rulemaking/Rules/Associated%20Files/2006_FRIAPublic.pdf.

[58] Although discounting based on inflation and interest rates makes sense for purely monetary costs, there is considerable debate and controversy over the OMB's practice of applying a discount rate to benefits of environmental health and safety regulation, like the value of human life, prevention of harms to future generations, and the prevention of ecological harms. Several of CPR's Member Scholars and other prominent academics have argued that there is no theoretical justification for using any discount rate at all for ecological benefits and other benefits implicating future generations. *See, e.g.*, Lisa Heinzerling, *Discounting Our Future*, 34 Land & Water L. Rev. 39, 40-41 (1999) (arguing that discounting should be abandoned for measuring future lives saved); *see also* Richard Revesz, *Environmental Regulation, Cost-Benefit Analysis, and the Discounting of Human Lives*, 99 Colum. L. Rev. 941, 955–86 (1999). Indeed, use of a discount rate in such circumstances can yield absurd results. Applying a discount rate of 5 percent to the prevention of a billion deaths 500 years from now, for example, yields the conclusion that such a measure is less beneficial than the prevention of one death today.

[59] Thomas O. McGarity & Ruth Ruttenberg, *Counting the Cost of Health, Safety, and Environmental Regulation*, 80 Tex. L. Rev. 1997, 2011, 2044-45 (2002).

[60] *Id.* at 2046.

[61] Winston Harrington, Richard D. Morgenstern, & Peter Nelson, *On the Accuracy of Regulatory Cost Estimates* 6 (Resources for the Future, Discussion Paper 99-18, 1999) (citing Putnam, Hayes, & Bartlett, Inc., Comparisons of Estimated and Actual Pollution Control Capital Expenditures for Selected Industries (Report prepared for the Office of Planning & Evaluation, U.S. Envtl. Protection Agency, 1980)), *available at* http://www.rff.org/documents/RFF-DP-99-18.pdf.

[62] Office of Technology Assessment, Gauging Control Technology and Regulatory Impacts in Occupational Safety and Health: An Appraisal of OSHA's Analytical Approach 58 (1995).

[63] Eban Goodstein & Hart Hodges, *Polluted Data: Overestimating Environmental Costs*, 8 Am. Prospect 64 (Nov./Dec. 1997).

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[64] Harrington, Morgenstern, & Nelson, *supra* note 61. The Resources for the Future study notes that actual compliance costs can also be less than an agency estimates because there can be less regulatory compliance than the agency anticipates. If an agency overestimates the extent of pollution reduction, or some similar benefit, then the regulation may cost less than the agency estimates. In such cases, the original agency estimate might have been accurate, but it turns out to be wrong because the regulated industry does not obey the regulation to the extent that the agency predicted. *Id.* at 14-15.

[65] Nicole V. Crain and W. Mark Crain The Impact of Regulatory Costs on Small Firms (2010) *available at* http://www.sba.gov/sites/default/files/rs371tot.pdf.

[66] *See* Curtis W. Copeland, *Analysis of an Estimate of the Total Costs of Federal Regulations* 2 (Cong. Research Serv., R41763, Apr. 6, 2011) (reporting that the $1.75 trillion estimate has been widely quoted in the press, by witnesses at congressional hearings, and by Members of Congress, and that it has been cited as evidence of the need for regulatory reform legislation and congressional oversight actions), *available at* http://www.progressivereform.org/articles/CRS_Crain_and_Crain.pdf.

[67] *See* Sidney A. Shapiro, *Administrative Law after the Counter-Reformation: Restoring Faith in Pragmatic Government American Regulatory Policy*, 48 U. Kan. L. Rev. 689, 701-702 (noting that Ronald Reagan repeatedly cited a $120 billion cost of regulation to suggest that regulation imposed unreasonable and unwarranted costs on the economy).

[68] Shapiro et al., *supra* note 1.

[69] Copeland, *supra* note 66.

[70] *Unfunded Mandates, Regulatory Burdens and the Role of Office of Information and Regulatory Affairs, Hearing Before the Subcomm. on Tech., Info. Pol'y, Intergovernmental Relations & Procurement Reform of the H. Comm. on Oversight & Gov't Reform*, 112th Cong. (2011) (testimony of Cass Sunstein, Administrator, Office of Information and Regulatory Affairs), *available at* http://oversight.house.gov/index.php?option=com_content&view=article&id=1299%3A5-25-2011-qunfunded-mandates-regulatory-burdens-and-the-role-of-office-of-information-and-regulatory-affairsq&catid=14&Itemid=1; James Goodwin, *Sunstein Denounces SBA's 'Deeply Flawed' Study of Regulatory Costs*, CPRBlog, http://www.progressivereform.org/CPRBlog.cfm?idBlog=5758C6D6-AC7E-4BAF-CF1DA8672B3AB937 (last visited June 21, 2011).

[71] *Id.* at 26

[72] *See* Isaac Shapiro & John Irons, *Regulation, Employment & and the Economy: Fears of Job Loss Are Overblown* (Envtl. Pol'y Inst., Briefing Paper No. 305, 2011) (summarizing the evidence), *available at* http://epi.3cdn.net/961032cb78e895dfd5_k6m6bh42p.pdf; Frank Ackerman & Rachel Massey, *Prospering with Precaution: Employment, Economics, and the Precautionary Principle* (Global Dev. & Env't Inst., Working Paper, 2002) (same), *available at* http://www.healthytomorrow.org/attachments/prosper.pdf.

[73] OSHA, Cotton Dust Review, *supra* note 43, at 22, 35-38.

[74] Roger H. Bezdek, Robert M. Wendling, & Paula Di Perna, *Environmental Protection, the Economy, and Jobs: National and Regional Analyses*, 86 J. Envtl. Mgmt. 63 (2008).

[75] Richard D. Morgenstern, William A. Pizer, & Jhih-Shyang Shih, *Jobs versus the Environment: An Industry-level Perspective* (Resources for the Future, Discussion Paper 99-01-REV, 2000), *available at* http://www.globalurban.org/Jobs_vs_the_Environment.pdf.

[76] Eli Berman & Linda T.M. Bui, *Environmental Regulation and Labor Demand: Evidence from the South Coast Air Basin*, 79 J. Pub. Econ. 265 (2001).

[77] Eban Goodstein, The Trade-off Myth: Fact and Fiction About Jobs and the Environment (1999).

[78] Shapiro & Irons, *supra* note 72, at 20.

[79] *Id.*; *see* Goodstein, *supra* note 77, at 35-37 (summarizing data from 1970-90 and finding similarly small numbers of workers being laid off because of environmental regulations).

[80] Shapiro & Irons, *supra* note 72, at 20.

[81] *Regulations Do Not Hinder U.S. Job Market, Paper Finds*, OMB Watch, http://www.ombwatch.org/node/11615 (last visited June 1, 2011)

[82] Shapiro & Irons, *supra* note 72, at 20.

[83] Stephen M. Meyer, *Environmentalism and Economic Prosperity: Testing the Environmental Impact Hypothesis* (Mass. Inst. Tech. Project on Envtl. Politics & Pol'y, Working Paper, 1992), *available at* http://web.mit.edu/polisci/mpepp/Reports/eep.pdf.

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[85] *Id.* at 9 (emphasis in original).

[86] Adam B. Jaffe et al., *Environmental Regulation and the Competitiveness of U.S. Manufacturing: What Does the Evidence Tell Us?*, 33 J. Econ. Literature 157 (1995).

[87] Smita B. Brunnermeier & Arik Levinson, *Examining the Evidence on Environmental Regulations and Industry Location*, 13 J. Env't. & Dev. 6 (2004).

[88] Carl Pasurka, *Perspectives on Pollution Abatement and Competitiveness: Theory, Data, and Analyses*, 2 Rev. Envtl. Econ. & Pol'y 194 (2008).

[89] Rema Hanna, *U.S. Environmental Regulation and FDI: Evidence from a Panel of U.S.-Based Multinational Firms*, 2 Am. Econ. J.: Applied Econ. 158 (2010) (finding regulation has caused 5.3 percent increase in foreign assets).

[90] Shapiro & Irons, *supra* note 72, at 19.

[91] *Id.*; Pasurka, *supra* note 88, at 207 (finding the difference between the U.S. and other OECD countries in terms of spending on environmental protection "largely disappeared by the 1990s").

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About the Authors

Sidney Shapiro holds the University Distinguished Chair in Law at the Wake Forest University School of Law and is the Associate Dean for Research and Development. He is a member of the Board of Directors of the Center for Progressive Reform. Professor Shapiro has taught and written in the areas of administrative law, regulatory law and policy, environmental policy, and occupational safety and health law for 25 years. Professor Shapiro has been an active participant in efforts to improve health, safety, and environmental quality in the United States. He has testified before congressional committees on administrative law and occupational safety and health issues.

Dr. Ruth Ruttenberg is a professor at the National Labor College. Dr. Ruttenberg is an economist, specializing in labor economics and occupational safety and health. She is widely published and is an active consultant with a range of unions and government agencies. She holds a BA from the University of Wisconsin and a Master's degree and a Ph.D. from the University of Pennsylvania.

James A. Goodwin works with CPR's "Clean Science" and "Government Accountability" issue groups. Mr. Goodwin joined CPR in May of 2008. Prior to joining CPR, Mr. Goodwin worked as a legal intern for the Environmental Law Institute and EcoLogix Group, Inc. He is a published author with articles on human rights and environmental law and policy appearing in the *Michigan Journal of Public Affairs* and the *New England Law Review*.

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