

Changes incorporated into April 11 version of study.

1. p. 21. Estimate of aggregate reductions in injury/illness rates due to inspections was modified to "about 5 percent".
2. p. 23. Asserted range of expected benefits was changed to clarify that range of 5 to 50 percent refers to reductions achievable in an individual establishment.
3. p. 26. Clarification was added to indicate that the NSC figure includes many of the elements described in previous paragraph.
4. p. 29. Effective dates for state requirements for programs were added to the table.
5. p. 28 and following. Text regarding possible lesser requirements under COSHRA for low hazard establishments was deleted and rewritten. The revised analysis does not base estimates on an expectation of lesser requirements; rather, differences in costs are (more appropriately) the result of differences in circumstances across industries.
6. p. 30. Compliance rates for Subpart 1 (Identifying, Evaluating, and Documenting Hazards) are taken from OSHA's Medical Surveillance Survey, Exhibits II-46 and II-47. Text in the study describing the applicability of these estimates has been reedited to clarify the assumptions underlying their use.
7. p. 28 onwards. Average hourly compensation rates were changed from occupationally-based breakdowns to (more appropriate) industry-based breakdowns. More specifically, average rates for blue collar and service occupation employees were changed to average rates for manufacturing, construction, and service industries to reflect the whole range of occupations within these industries.
8. p. 36. A footnote was added to Table 5 to explain the estimated number of affected establishments.
9. p. 37. The assumption of one hour of additional training required under COSHRA in small establishments was changed to two hours.
10. p. 31 and following. Footnotes have been added to Tables 4 through 8 to clarify the incremental nature of the estimates.
11. p. 32 onwards. Text has been added in several sections in the analysis of Title I costs to clarify that the estimates represent incremental costs.

12. p. 41. Text describing the estimation of costs regarding the designation of safety and health representatives has been modified to clarify the nature of these cost estimates; costs associated with the duties of these representatives are attributable to other COSHRA provisions and existing regulations.
13. p. 49. The nature of the mitigation costs was clarified to include separate estimates of capital costs and annual costs.
14. p. 47 onwards. The discussion of the academic literature underlying the \$5 billion to \$10 billion estimate of current expenditures has been expanded to clarify the reasoning underlying this range.
15. pages 47-50. The representation of additional mitigation costs has been simplified.
16. p. 54. Effective dates have been added to the table listing states with committee requirements.
17. p. 68. A sentence was added to clarify that costs to the federal sector that may produce benefits in the private sector are not included in this study.
18. p. 69. A sentence was added to clarify that although recordkeeping requirements under Title VIII are not expected to add to existing burdens, costs associated with recordkeeping requirements imposed in other Titles are included in corresponding cost estimates.

A STUDY OF THE EFFECTS OF THE
COMPREHENSIVE OCCUPATIONAL
SAFETY AND HEALTH REFORM ACT
(H.R. 1280)

Prepared by the

U.S. Occupational Safety
and Health Administration

April 11, 1994

CONTENTS

I. Executive Summary	3
II. Introduction	11
III. Title by Title Analysis	15
IV. Assessment of Overall Impact	79
V. Bibliography	83
Appendix A: Sensitivity Analysis	87

I. Executive Summary

The Comprehensive Occupational Safety and Health Reform Act (COSHRA)¹ would bring attention to and address the rates of occupational fatalities, injuries, and illnesses occurring in the United States and would reduce the high costs associated with these incidents.

The current burdens imposed on workers, employers, and society by occupational injuries and illnesses are unacceptably high. These burdens include medical and rehabilitation expenses, workers' compensation premiums, lost work time, wage losses, reduced productivity, property damage, employee hiring and training costs, administrative costs for insurance claims and accident investigations, and a host of losses that are difficult to quantify, including lives lost, disabilities, dysfunction, grief, pain, and suffering.

The total economic burden of work-related injuries is estimated to be over \$115 billion annually, in addition to the loss of life and pain and suffering caused, according to the National Safety Council [1]. The inclusion of occupationally-related illnesses would substantially increase this figure. By stimulating employers and employees to reduce the number of occupational injuries and illnesses, COSHRA will result in

¹ This analysis is based on the House Bill, H.R. 1280; minor differences in the Senate version, S.B. 575, would not substantially affect the conclusions.

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substantial benefits to society for a modest investment. The total annual net benefits expected as a result of COSHRA range from \$1.3 billion to \$7.6 billion, plus reduced pain and suffering, and increased quality of life and life expectancy.

COSHRA will achieve these benefits and improvements by strengthening traditional regulatory and enforcement tools and by adding important new dimensions to work place safety and health activities. COSHRA would impose changes on the operations of the Occupational Safety and Health Administration (OSHA), modifying its existing structure and its mandate, to enable the goals of the Agency to be pursued more effectively.

The overall impact will be improved systems for identifying and correcting work place hazards which rely less on government inspectors and more on cooperative employer-employee programs which are built into daily activities and are tailored to specific needs of individual work places. By stressing implementation of comprehensive programs and committees, the COSHRA strategy for achieving improvements in safety and health is more efficient than the alternative heavy-handed strategy of hiring enough inspectors to inspect every work place.

Insofar as COSHRA impacts the overall nature and organization of safety and health activities in each work place, it must be viewed as an integral whole instead of a collection of individual building blocks. Many of the features are mutually reinforcing and synergistic. Therefore, it is not always

possible to identify specific costs and benefits with each title of the legislation.

The primary effects of COSHRA can be grouped into three categories. First, through Titles I, II, V, VI, VII, VIII, IX, XI, and XII, the Bill would strengthen the impetus for employers to address potential safety and health risks in the work place. Changes in penalties and enforcement proceedings would boost employer motivation to comply with OSHA standards which in turn reduce risks. Safety and health programs and committees would act as catalysts by heightening awareness of occupational safety and health issues by both labor and management generally, by directly increasing the level of attention paid to safety and health through added hazard control activity at individual establishments, and by encouraging risks to be addressed for which specific standards may not exist.

Second, under Title III, COSHRA would expand OSHA coverage to public sector employees. Thus, the benefits of OSHA protection and enforcement would be extended to millions of employees whose employers currently are not subject to OSHA regulations.

Third, under Title IV, COSHRA would enable OSHA standards to become more protective. The standard setting process would be expedited for several major regulations, and the criteria under which OSHA sets standards would be modified to allow a greater range of risks to be addressed.

Tables 1 and 2 summarize the estimated benefits and costs, respectively, associated with COSHRA. The primary net effect of the Bill would be the prevention of 871 to 1,163 fatalities and 912,000 to 1.3 million injuries and illness annually. These benefits represent conservative estimates, based on a modest reduction in current injury and illness rates.

A large body of empirical and anecdotal information demonstrates that the implementation of comprehensive safety and health programs and related activities, such as those which would be required by COSHRA, results in substantial reductions in injury and illness rates as well as workers' compensation costs. The level of expected benefits in an affected establishment ranges from roughly 5 percent, as predicted by empirical studies of the impact of OSHA inspections and penalties, to over 50 percent demonstrated in numerous individual workplaces with comprehensive efforts. An injury/illness reduction effect of 15 to 20 percent would be a conservative, reasonable expectation insofar as Hawaii, Alaska, and Oregon experienced such improvements after enactment of requirements with many features of COSHRA. The experience in these states represents an aggregate effect across mixed populations of employers with and without safety and health programs in place at the time statutory requirements went into effect.

The 15 to 20 percent injury/illness reduction factor cannot be applied directly to the full U.S. population because approximately 20 percent of employees work in states where there

TABLE 1

**SUMMARY OF BENEFITS ASSOCIATED WITH THE
COMPREHENSIVE OCCUPATIONAL SAFETY AND HEALTH REFORM ACT**

TITLE / REQUIREMENT	ANNUAL BENEFIT	BASIS OF ESTIMATE
I. Safety and Health Programs II. Safety and Health Committees IV. Promulgation of Standards – Revised PELs V. Enforcement VI. Discrimination Protection VII. Technical Assistance and Training VIII. Recordkeeping and Reporting IX. NIOSH X. State Plans XI. Victim's Rights XIII. Workers' Compensation Study	Combined effects from: Titles I, II, IV, V, VI, VII, VIII, IX, X, XI, and XIII: 815 to 1,050 fatalities prevented 853,000 to 1.2 million injuries / illnesses prevented \$11.3 billion to \$16.9 billion savings. Increased employee morale and empowerment. Facilitate compliance and awareness of hazards. Improved efficiency and effectiveness of enforcement and future rulemakings Increased research and awareness of accident prevention. Equal protection ensured in all states. Increased fairness and involvement of victims.	Estimates are based on a 10 to 15 percent reduction in reported occupational fatalities, injuries, and illnesses, (based on BLS data), plus the prevention of additional fatalities and illnesses through Title IV. Reductions in injuries result in a proportionate reduction in costs attributable to occupational accidents (estimated by the National Safety Council at \$115.9 billion), plus savings from prevented illnesses.
III. Extension of Coverage	11 to 23 fatalities prevented 33,000 to 65,000 injuries / illnesses prevented \$370 million to \$740 million savings	Based on a 5 to 10 percent reduction in injury / illness rates among 7.5 million employees in non-state plan states, in addition to reductions achieved through other titles.
XII. Construction Safety	45 to 90 fatalities prevented 26,000 to 52,000 injuries / illnesses prevented \$350 million to \$700 million savings	Based on a 5 to 10 percent reduction in injury / illness rates in the construction industry, in addition to reductions achieved through other titles.
SUMMARY	• 871 to 1,163 fatalities prevented annually. • 912,000 to 1.3 million injuries / illnesses prevented annually. • \$12.0 billion to \$18.3 billion annual cost savings associated with injuries, including reduced medical costs, hiring / training costs, investigation / litigation costs, administrative costs, work place disruption, and property damage. • Higher employee morale. • Increased productivity. • Creation of "high performance" work places and improved competitiveness and innovation through incorporation of employee safety and health into work place culture and organization.	

NET BENEFITS : \$1.3 billion to \$7.6 billion annually, plus unquantifiable benefits.
(Includes public sector net benefits of \$300 million to \$1.5 billion annually.)

TABLE 2

**SUMMARY OF THE COSTS ASSOCIATED WITH THE
COMPREHENSIVE OCCUPATIONAL SAFETY AND HEALTH REFORM ACT**

TITLE / REQUIREMENT	ANNUAL COST (\$ MILLIONS)		BASIS OF ESTIMATE
	Private Sector	State & Local Government	
I. Safety and Health Programs – Hazard Investigation – Emergency Response – Employee Participation – Training – Employer Representative	\$2,594	\$416	Requirements would affect 93 million employees in 6.2 million private sector establishments, and 15 million employees in state and local governments. Costs reflect current practice and the incremental cost of individual provisions, by type of industry and establishment employment size.
Mitigation Costs	4,500	720	Estimated incremental costs associated with coming into compliance with existing OSHA standards.
II. Safety and Health Committees	1,245	241	Requirements would affect 78 million employees in 1.3 million establishments; costs reflect compensation for 3.7 million committee members to conduct committee business.
III. Extension of Coverage	0	216	OSHA coverage required for 7.5 million additional employees in non-state plan states.
IV. Promulgation of Standards – Revised PELs	500	0	Costs are based on estimates published with the 1989 final rule and the 1992 proposed rule, reduced by 50 percent to reflect current compliance.
V. Enforcement	0	0	Costs of increased compliance are included under Title I.
VI. Discrimination Protection	0	0	
VII. Technical Assistance and Training	0	0	
VIII. Recordkeeping and Reporting	0	0	
IX. NIOSH	0	0	
X. State Plans	0	0	
XI. Victim's Rights	0	0	
XII. Construction Safety	212	21	Costs are based on 3 hours for a safety professional to generate a project-specific safety plan for each of 2.4 million construction projects; supervisory time is added for high hazard jobs to satisfy notification requirements. Other potential employer costs are attributed to duplicate requirements in either Title I or 29 CFR Part 1926, Subpart C.
XIII. Workers' Compensation Study	0	0	
XIV. Administrative	0	0	
XV. Effective Date	0	0	
TOTAL	\$9,051	\$1,613	

**NET BENEFITS : \$1.3 billion to \$7.6 billion annually, plus unquantifiable benefits.
(Includes public sector net benefits of \$300 million to \$1.5 billion annually.)**

are already requirements for some of the elements of COSHRA in place. Corrections were made by assuming that the 80 percent of employees in states without existing COSHRA type requirements would experience the full 15 to 20 percent injury/illness reduction, and that the 20 percent of employees in states with existing COSHRA type requirements would experience only a 5 percent additional benefit. The aggregate national population benefit would therefore be 13 to 17 percent.

To assure that this analysis used conservative, reasonable assumptions, an additional 2 to 3 percent adjustment was made to account for other pre-existing COSHRA type requirements which were not specifically identified such as those associated with various insurance programs. The resulting 10 to 15 percent injury/illness reduction factor was then applied to the best available data on workplace fatalities, injuries, illnesses, and associated workers' compensation and related costs. The total estimated annual cost saving is \$12.0 billion to \$18.3 billion, along with 871 to 1163 fatalities prevented and 912,000 to 1.3 million injuries and illnesses prevented.

These estimates were calculated in part by applying injury reduction factors of 10 to 15 percent to the baseline of occupational fatalities reported by the Bureau of Labor Statistics (BLS). The BLS data do not include approximately 20,000 occupational cancer deaths and 30,000 deaths from other occupational illnesses annually [41, 43, 44]. The actual number

of lives saved is therefore likely to be much higher than 871 to 1,163, perhaps as much as 5,871 to 8,663.

The effects of COSHRA would stretch beyond the direct effects estimated by this analysis. Through changes in OSHA's mandate, structure, and approach, and by generally fostering awareness and drawing national attention to the seriousness of occupational safety and health issues, COSHRA would promote a series of initiatives that would enable the country as a whole to address safety hazards and health risks on the job. By increasing OSHA's effectiveness and promoting an atmosphere of active work place commitment to reducing occupational hazards resulting in fatalities, injuries, or illnesses, the ultimate benefits could be much greater.

II. Introduction

The Comprehensive Occupational Safety and Health Reform Act (COSHRA) represents an enhanced commitment to improving safety and health in the work place. Since 1971, the Occupational Safety and Health Administration (OSHA) has been dedicated to that goal; COSHRA would enable these efforts to be expanded and achieve greater effectiveness.

Under current legislative authority, OSHA works to improve occupational safety and health in a variety of ways. OSHA investigates hazards and the causes of injuries and illnesses; through rulemaking involving public participation, OSHA sets standards to prevent accidents and illnesses associated with health and safety risks; consultation programs are provided to assist employers in identifying and correcting potential hazards; inspections are conducted and fines are imposed to increase incentives for compliance; OSHA also provides training programs, produces publications, and offers many other types of support to reduce risks in the work place.

COSHRA would modify the existing safety and health activities in the private and public sectors to enable the goals of the Act to be pursued more effectively. The primary effects of COSHRA can be grouped into three categories. First, through Titles I, II, V, VI, VII, VIII, IX, XI, and XII, the Bill would

strengthen the impetus for employers to address potential safety and health risks in the work place. Changes in penalties and enforcement proceedings would boost employer motivation to comply with OSHA standards, which in turn minimize risks. Safety and health programs and committees would act as catalysts by heightening awareness of occupational safety and health issues by labor and management generally, by directly increasing the level of attention paid to safety and health through added hazard control activity at individual establishments, and by encouraging risks to be addressed for which specific standards may not exist.

Second, under Title III, COSHRA would expand OSHA coverage to public sector employees. Thus, the benefits of OSHA protection and enforcement would be extended to millions of employees whose employers currently are not subject to OSHA regulations.

Third, under Title IV, COSHRA would enable OSHA standards to become more protective. The standard setting process would be expedited for several major regulations, and the criteria under which OSHA sets standards would be modified to allow a greater range of risks to be addressed.

This study quantifies the major effects of COSHRA by examining such factors as the number of establishments and employees affected, the costs of implementing the changes contemplated, existing conditions at work sites, current rates of compliance with regulations, the number of injuries, illnesses, and fatalities occurring on the job, the potential reductions in

risks that could be achieved, and the corresponding benefits that could be reaped through prevention. The benefits of COSHRA include a better quality of life for people who otherwise would be affected by ailments associated with employment, as well as significant monetary savings produced through prevention efforts.

The costs and benefits of the key changes envisioned by COSHRA are analyzed by Title in the following section. Other parts of COSHRA for which effects are not specifically itemized may nevertheless play an important role in ensuring that the intended effects of the Bill as a whole are achieved.

The structure of the analysis basically mirrors the structure of the Bill (i.e., sequential by Title), resulting in two important implications for the interpretation of the results. First, implementation and impact are, to the extent possible, analyzed for each provision separately. However, costs and benefits cannot be isolated and compared for each provision because the various components of the Bill also generate synergistic effects, especially in their ability to produce benefits. These effects may be significant even though they cannot be isolated. Thus, although the overall net benefits of the Bill are intended to be captured by the analysis, provisions for which no effect is explicitly identified are not necessarily without import.

The second implication for the interpretation of the results of the analysis is that the effects identified by Title do not directly correspond to the effects of the Bill on specific

sectors of the economy. This point is particularly relevant with regard to Title III (Coverage) and Title XII (Construction Safety).

Impacts associated with Title XII refer only to those effects that would be produced by provisions in that part of the legislation. The total estimated costs and benefits of COSHRA for the construction industry (which are also provided in the discussion of Title XII) include a proportionate share of the costs and benefits of Titles affecting establishments in all industries, in addition to the effects identified specifically for Title XII.

Similarly, the effects specifically identified for Title III include the estimated costs and benefits of extending OSHA coverage to public sector employees in the absence of other provisions in the Bill. The total estimated costs and benefits of COSHRA for state and local governments (discussed in Section IV of this analysis) include a proportionate share of the costs and benefits of Titles affecting establishments in all sectors of the economy, in addition to the effects identified for Title III.

III. Title by Title Analysis

Benefits

SUMMARY

A large body of empirical and anecdotal information demonstrates that the implementation of comprehensive safety and health programs and related activities, such as those which would be required by COSHRA, results in substantial reductions in injury and illness rates as well as workers' compensation costs. The level of expected benefits in an affected establishment ranges from roughly 5 percent, as predicted by empirical studies of the impact of OSHA inspections and penalties, to over 50 percent demonstrated in numerous individual workplaces with comprehensive efforts. An injury/illness reduction effect of 15 to 20 percent would be a conservative, reasonable expectation insofar as Hawaii, Alaska, and Oregon experienced such improvements after enactment of requirements with many features of COSHRA. The experience in these states represents an aggregate effect across mixed populations of employers with and without safety and health programs in place at the time statutory requirements went into effect.

The 15 to 20 percent injury/illness reduction factor cannot be applied directly to the full U.S. population because approximately 20 percent of employees work in states where there are already requirements for some of the elements of COSHRA in

place. Corrections were made by assuming that the 80 percent of employees in states without existing COSHRA type requirements would experience the full 15 to 20 percent injury/illness reduction, and that the 20 percent of employees in states with existing COSHRA type requirements would experience only a 5 percent additional benefit. The aggregate national population benefit would therefore be 13 to 17 percent.

To assure that this analysis used conservative, reasonable assumptions an additional 2 to 3 percent adjustment was made to account for other pre-existing COSHRA type requirements which were not specifically identified such as those associated with various insurance programs. The resulting 10 to 15 percent injury/illness reduction factor was then applied to the best available data on workplace fatalities, injuries, illnesses, and associated workers' compensation and related costs. The total estimated annual cost saving is \$12 billion to \$18.3 billion, along with 871 to 1163 fatalities prevented and 912,000 to 1.3 million injuries and illnesses prevented.

DETAILED BENEFITS ANALYSIS

Introduction

The benefits of COSHRA result from the bill's integrated approach in addressing occupational safety and health. Evaluating the impact of each provision would ignore the exciting workplace changes which recent experience has demonstrated will take place when the program/committee titles of COSHRA (Titles I

and II) are implemented together with the bill's other provisions. These are provisions to enhance OSHA's enforcement, standards-setting, technical assistance, and training activities. The total benefits derived from the new configuration of forces that COSHRA would activate in the workplace will exceed the sum of any benefits calculated as though each provision were to be implemented separately. In this instance, the whole is greater than the sum of its parts. As a result, the benefits cannot be isolated for each provision in the legislation. Rather, they are attributed to the effect of implementing a combination of provisions which together deliver a demonstrated effectiveness.

The total benefits of COSHRA are derived from the sum of the benefits associated with three groups of provisions. Titles I, II, IV, V, VI, VII, VIII, IX, X, XI, and XIII form a mutually reinforcing and synergistic whole that encompasses a powerful strategy for safety and health improvement. This body of provisions generates the bulk of the benefits attributable to COSHRA. In addition, Title III and Title XII each produce further benefits for specific sectors of the economy that are separately identified.

Sources of Evidence

The comprehensive approach embodied by COSHRA for dealing with occupational hazards has been shown to result in significant reductions in injuries and illnesses and corresponding savings in workers' compensation premiums and other costs associated with

these incidents. Data to support this conclusion comes from multiple sources.

First, many employers have voluntarily implemented comprehensive safety and health programs including features which would be required by COSHRA. The success of these has been widely reported in the literature.

Companies emphasizing safety and health through comprehensive programs including employee involvement can greatly reduce numbers of accidents. As profiled in a recent article in Industry Week [6], a large food company recently implemented such a program. The number of accidents per 200,000 hours worked dropped from 4.93 in 1990 to 0.36 in 1992, and the number of lost workdays due to injuries dropped in the same period from 169 to 2.16 per 200,000 hours worked. The biggest causes of unsafe work conditions were found to be "little ordinary things" such as frayed electrical cords, slippery surfaces, and subpar lighting.

As reported in another article in Nation's Business [7], there is a lot of room for improvement in occupational safety and health. Within the same industries, the most injury-prone employers have been found to have ten times as many workers' compensation claims as the least injury-prone employers. The main characteristic that distinguished the safer work places was an aggressive program of injury prevention which included many of the elements found in COSHRA.

A steel company in Kansas City revitalized its commitment to safety and health in 1988 with a joint union and management

committee and a safety awareness and training campaign [8]. Within two years, the company experienced a drop in the rate of OSHA recordable incidents of almost 50 percent.

In the construction industry, the experience of the Corps of Engineers provides an example substantiating the extent of benefits achievable through the implementation of comprehensive safety and health programs. Injury rates in the Corps are approximately one fifth of the average national rates, and the savings resulting from the implementation of such of programs are estimated at a minimum of 0.5 to 1.0 percent of total project costs [10].

Second, studies and reports from the insurance industry demonstrate successful reduction in injury and illness rates when employers have established comprehensive safety and health programs in response to requirements or incentives established by workers' compensation carriers.

Because employers' workers' compensation premiums had increased by over 400 percent in a single decade, the Colorado legislature passed the Workers' Compensation Cost Containment Act of 1989. That law was designed to encourage employers to adopt well-planned safety and health programs. If they do so, they are eligible for up-front automatic deductions worth 5 to 10 percent of their workers' compensation premiums. In the program's first three years of operation, over 500 employers have enrolled. These employers have reduced their accident frequency by 23

percent and their compensation costs by 62 percent. Total first year savings were \$24 million.

Studies conducted by insurance companies [5] have demonstrated the benefits achievable through increased attentiveness to hazards, including safety and health programs and committees similar to those in COSHRA. One insurance company hired an outside consultant to compare the performance of ten accounts that had worked with the insurance company in establishing a management accountability program with ten other accounts that did not change their traditional approach of delegating responsibility for safety to the safety department. The analysis of workers' compensation data for the two groups showed that the firms with the management accountability programs had reduced their claims costs by more than 36 percent, while costs for the other firms increased by more than 96 percent. These results are summarized in a report produced by the Insurance Information Institute (III) [5].

In this report, the III also provides several other examples of companies where the implementation of comprehensive safety and health programs, written work place policies, involvement of employees and top management, and/or safety committees with specific responsibilities resulted in decreases in claims losses of 50 percent and more.

Reports from the Oregon State Occupational Safety and Health Division [9], which implemented many of the requirements of COSHRA several years ago, document the benefits resulting from

provisions similar to those in COSHRA. An Oregon program that was approved for the Automotive Trades Association, which is a group of primarily small employers with automotive parts stores, repair shops, and service stations, provides for a group approach to assist small employers. They have since experienced a significant decrease in injuries which resulted in a 17 percent discount on their workers' compensation premiums. They attribute this to their safety incentive plan, a part of which is participating in the group safety committee program.

Furthermore, a large electronics firm has reported that the entire safety committee program has proven much more valuable than originally envisioned, particularly the work place self-inspections that now serve as an effective training tool [9].

Third, empirical studies have shown reductions in injuries and illnesses following OSHA enforcement activities which would be strengthened under COSHRA. Professors Wayne B. Gray and John T. Scholz concluded in 1991, after examining injury and illness data from 6,842 manufacturing plants, that when OSHA inspects and imposes penalties for violations, there is a measurable injury reduction in those work places following the inspection [41]. Gray suggests that the internal inspections by mandated committees along with other features of comprehensive programs will have an impact on injuries and illnesses similar to that following OSHA inspections, which can produce aggregate reductions in injuries of about 5 percent [42].

Fourth, several states have established requirements for comprehensive programs and/or committees. There have been no definitive comparisons of injury and illness records in states with and without such requirements. Such studies would be extremely difficult because of the need to control for potentially confounding factors such as industry mix, work place size, degree of unionization, intensity of enforcement, business competitiveness, workers' compensation changes, and other factors which might affect injury and illness rates independently of COSHRA-type programs. Crude comparisons of rates and trends among states without controlling for such factors would have little validity. However, in several states which have mandated COSHRA-type reforms, there is enough before and after experience to demonstrate substantial positive effects.

Provisions similar to those in COSHRA have been implemented in Oregon, which has seen injury and illness rates drop by over 18 percent in the last four years to record lows, according to the Oregon Department of Consumer and Business Services [2]. Workers' compensation premium rates in Oregon have decreased by over 20 percent in the last two years while rates have continued to climb in other states.

A study conducted by the U.S. General Accounting Office (GAO) evaluated the effectiveness of implementing safety and health program requirements across industries in the United States [3]. The GAO Report noted that programs have been required in Alaska since 1973, and that the incidence of work

place injuries and illnesses decreased 16 percent between 1973 and 1989. In Hawaii, in the five years preceding the implementation of program requirements in 1983, the average lost workday incidence rate was 6.1 per 100 employees; during the six years following implementation of the requirements, the average rate was 5.3 per 100 employees, a decrease of over 13 percent. In Oregon, safety and health programs have been required for logging companies since 1980; the statewide incidence of logging industry lost workday cases dropped by almost 15 percent between 1980 and 1989 [3].

In summary, the best available data demonstrates a strong positive impact of comprehensive safety and health programs on reducing injury and illness rates as well as workers' compensation and related costs. The level of expected benefits in an affected establishment ranges from roughly 5 percent, as predicted by empirical studies of OSHA inspections, to over 50 percent, as demonstrated by numerous individual employer experiences.

Estimated Benefits

The reductions in injury rates of 13, 16, and 18 percent achieved in Hawaii, Alaska, and Oregon, respectively, reflect actual experiences under conditions analogous to those which might follow COSHRA. This range of benefits represents aggregate results across all establishments and industries and includes the effect on employers starting with minimal preexisting safety and

health programs as well as those with substantial programs already in place at the time statutory requirements were enacted.

The reductions in injury and illness rates realized in these states represent the aggregate results across all establishments and industries, and as such incorporate current practices. These estimates also account for possible reduced effects in lower hazard industries. Clearly, as demonstrated in the examples above, much greater reductions can be attained in individual establishments. Furthermore, to the extent that actual experiences may not reflect the effects of full compliance, these estimates understate the total potential benefits associated with COSHRA. In addition, COSHRA includes many elements which in combination will achieve benefits, and no state has adopted all COSHRA provisions; thus, the benefits from COSHRA may be greater than the reductions in injuries and illnesses experienced in individual states.

These data and considerations lead to the conclusion that a 15 to 20 percent reduction in injuries and illnesses as a result of COSHRA provisions is a reasonable, conservative expectation. In order to derive the reduction that could be expected on a national scale, this reduction was adjusted downward to account for provisions already adopted in some states. Less than 20 percent of employees nationally work in establishments already subject to state requirements for programs, and about 5 percent of employees are covered by state requirements for committees.

None of these states has implemented all of the COSHRA provisions that produce benefits.

Assuming that the 80 percent of employees in states without COSHRA type requirements would experience a 15 to 20 percent reduction in injuries and illnesses, and that the 20 percent of employees in states with some COSHRA type provisions would experience only a 5 percent additional benefit, the total population benefit would be 13 to 17 percent. Allowing an additional margin of 2 to 3 percent to assure that estimates in this analysis are conservative and reasonable, COSHRA is expected to result in a reduction in injuries and illnesses of at least 10 to 15 percent nationwide.

Data from the Bureau of Labor Statistics [39, 40] indicate that in 1992, there were 6.8 million reported occupational injuries and illnesses and 4,200 reported occupational fatalities among private sector employees. In addition, among employees of state and local governments, there were approximately 1.3 million injuries and illnesses and 450 fatalities. Thus, among all employees in the private sector and in state and local governments, there were a total of 8.1 million injuries and illnesses and 4,650 fatalities.

These estimates reflect only reported occupational injuries, illnesses, and fatalities. Many additional illnesses may be attributable to occupational causes, and it has been estimated that over 50,000 additional fatalities may be occupationally related [41, 43, 44].

The estimated reductions in injuries and illnesses attributable to COSHRA (excluding Titles III and XII) would result in the prevention of 810,000 to 1.2 million reported injuries and illnesses and 465 to 700 reported fatalities annually; in addition, about 350 fatalities and 43,000 illnesses that are generally not included as occupationally related and reported cases would be prevented annually through Title IV (see discussion for Title IV). Thus, from 815 to 1,050 fatalities and from 853,000 to 1.2 million injuries and illnesses would be prevented annually through COSHRA, excluding benefits derived from Titles III and XII.

The prevention of fatalities, injuries, and illnesses would also produce significant savings to employers, employees, and society. These savings would include reductions in costs associated with illnesses and injuries, such as workers' compensation and other insurance premiums (representing medical and other direct costs), damaged equipment, work stoppages, administrative and legal expenses, hiring and training costs, lost wages, and reduced productivity.

The National Safety Council has estimated that the total annual costs associated with occupational injuries, including the costs identified above, are \$115.9 billion [1]; excluding injuries among owners, the self-employed, and federal employees, the estimated total annual cost would be \$107.5 billion. The savings associated with a 10 to 15 percent reduction in reported

occupational injuries and illnesses would be \$10.8 billion to \$16.1 billion.

These figures generally include acute injuries and fatalities, but exclude illnesses and fatalities with long latency periods that are often not recorded as occupationally related. The costs associated with an unrecorded occupationally-related illness are assumed to be at least as great as the cost per occupational injury. Since the numbers of additional unreported illnesses estimated to be prevented (at least 350 fatalities and 43,000 illnesses annually) are approximately 5 percent of the total number of reported injury and illness cases estimated to be prevented (a minimum of 465 fatalities and 810,000 illnesses), the estimated savings based on reported cases were increased by 5 percent to account for the additional savings attributable to the prevention of fatal and non-fatal illnesses. The resulting total estimated savings produced through COSHRA (excluding Titles III and XII) would be \$11.3 billion to \$16.9 billion annually.

Costs Associated with Title I - Safety and Health Programs

Introduction

Title I of COSHRA requires all employers to establish a safety and health program to reduce or eliminate hazards and to prevent injuries and illnesses to employees. As shown in Table 3, several states already have such requirements. According to the Department of Commerce, Bureau of the Census [13], there are 93.5 million employees in 6.2 million establishments in the private sector in the United States. These employers will be required to identify, evaluate and document hazards, correct or mitigate hazards found, provide for emergency response and first aid, provide for employee training and participation in the implementation of the safety and health program, provide for multi-employer responsibilities, and designate employer representatives to identify hazards and initiate corrective actions.

Subpart 1: Identifying, Evaluating, and Documenting Hazards

The first component of a safety and health program involves the identification and evaluation of potential hazards. In many establishments such analyses are already conducted, due to current requirements in some states (as indicated above), due to existing OSHA regulations, due to the self-interest of employers, or due to collective bargaining agreements.

TABLE 3
STATE REQUIREMENTS FOR
SAFETY AND HEALTH PROGRAMS

State (Effective Date)	Scope of Program Requirements
Alaska (1973)	All establishments.
California (1991)	All establishments.
Hawaii (1982)	All establishments.
Washington (1973)	All establishments.
Nebraska (1993)	All establishments.
New Mexico (1991)	"Extra-Hazardous" industries.
Texas (1989)	"Extra-Hazardous" industries.
Minnesota (1991)	Specified Industries.
Oregon (1991)	Specified Industries.
Nevada (1993)	Establishments with injury rates within top 25% of SIC code.
North Carolina (1992)	Based on experience rating.
Louisiana (1991)	Voluntary
Tennessee (1991)	Voluntary

Based on OSHA's Medical Surveillance Survey [14], which provided statistically valid estimates for almost all U.S. industries, approximately half of all employees work in establishments that currently have a program for identifying occupational safety or health risks², which is assumed to meet requirements to be promulgated under Subpart 1 of Title I of COSHRA. The estimated rates of current practice by industry and establishment employment size are shown in Table 4.

Elements of these analyses have been required in existing and proposed OSHA regulations, such as Process Safety Management (PSM), Personal Protective Equipment (PPE), Hazard Communication, and General Safety and Health Provisions for Construction, among others.

In most establishments, the average incremental costs of conducting an adequate analysis, as required under COSHRA, are assumed to involve an additional four hours of professional time in small establishments (1 to 19 employees), sixteen hours in the average establishment with 20 or more employees, and eighty hours in the largest manufacturing establishments (250 or more employees). These estimates are approximately twice those associated with the hazard analysis required in the proposed PPE regulation [37], but less than the costs estimated to be required

² OSHA's Medical Surveillance survey was based on a sample of 7,177 establishments, and covered nearly all industries in the private sector. In addition to examining aspects of medical surveillance in industry, it also provided information on how employers integrated medical surveillance with other aspects of providing occupational safety and health, including estimates of the percent of establishments with risk identification programs.

TABLE 4

**COSTS ASSOCIATED WITH TITLE I, SUBPART 1: IDENTIFYING, -
EVALUATING AND DOCUMENTING SAFETY AND HEALTH HAZARDS**

Industry Sector/ Establishment Size	Number of Affected Establishments (thousands)	Number of Affected Employees (thousands)	Current Practice	Annual Cost per Establishment	Total Annual Cost
MANUFACTURING					
1-19	249	1,515	35%	\$122	\$19,724,986
20-249	115	7,800	70%	\$488	\$16,844,857
250+	14	9,987	90%	\$2,438	\$3,425,708
NONMANUFACTURING					
1-19	3,171	14,507	30%	\$122	\$270,608,755
1-19 low risk	1,409	6,014	30%	\$30	\$30,062,424
20+	240	31,365	55%	\$488	\$52,559,712
20+ low risk	400	17,013	55%	\$122	\$21,934,682
CONSTRUCTION					
1-19	526	2,198	40%	\$122	\$38,451,617
20+	53	3,076	55%	\$488	\$11,573,012
Total	6,176	93,476	-	-	\$465,185,754

Note: Estimated costs reflect the incremental increase in requirements; i.e., the costs are in addition to those necessary to comply with existing requirements to identify, evaluate, and document hazards.

for analyses conducted under OSHA's Process Safety Management standard [38].

Bureau of Labor Statistics (BLS) injury rate data [11] show that on average, establishments in the finance, real estate, and insurance industries, and in approximately half of the service sector, have rates that are half of the national average or less; these sectors could reasonably be labelled "low risk". Due to the relatively limited prevalence of occupational hazards in these industries, the corresponding costs associated with Subpart 1 of Title I for low risk establishments are assumed to be one quarter of those estimated for other establishments.

The estimates reflect the incremental hours associated with the increase in requirements imposed by the bill; that is, the estimated hours are in addition to the hours necessary to comply with existing requirements for hazard identification, evaluation, and documentation. For establishments with eleven or more employees, these estimated numbers of hours would also be in addition to time spent on hazard investigation activities by safety and health committees.

The cost of professional time of \$29.33 an hour, representing the total hourly compensation rate as published by the Bureau of Labor Statistics (BLS) [15], was used to estimate compliance costs. The value of an overarching safety program lies in its ongoing efforts to evaluate the hazards of the work place as a whole, and therefore its costs would generally be incurred on an annual basis. The total estimated annual costs

associated with this provision would be \$465 million, as presented in Table 4 by industry sector and establishment employment size.

Subpart 3: Emergency Response and First Aid

Under this Subpart the employer would be required to implement "methods and procedures for providing emergency response, first aid, and other occupational health services". More detailed occupational health surveillance requirements would be required by regulations to be promulgated under Title IV; these are currently under development by OSHA, and the costs associated with them would not be attributable to provisions in Title I of COSHRA.

Existing OSHA regulations at 1910.151, 1926.23, and 1926.50 already require employers to provide for medical services and first aid. Thus, COSHRA does not impose any additional costs on employers through this provision.

This conclusion is substantiated by the Congressional committee responsible for the Bill in the House of Representatives. Based on a House Committee Report [16] on a prior Bill with the same language for this provision, the Congressional intent of this Subpart of the Bill was expressed as follows:

Other program elements include a requirement for providing emergency response and first-aid, as mandated by 29 C.F.R. §1910.151. This provision is not intended to impose upon employers a duty to provide occupational health services beyond the duty already imposed by the Act or OSHA regulations.

It is therefore clear this provision exists only to clarify the requirements of comprehensive safety and health programs and does not represent any additional burdens.

Subpart 4: Employee Participation

In Subpart 4 of Title I, COSHRA provides for employee participation in the implementation of the safety and health program. For establishments with safety and health committees with employee representation, this requirement would be duplicative. However, establishments with ten or fewer employees would probably not have committees and would have to provide for some employee participation in the implementation of the safety and health program.

In establishments with ten or fewer employees, the number of operations would be limited, and most employees would be familiar with the processes involved. Furthermore, the safety and health program would most likely be relatively limited in complexity. Two hours of employee time annually has been attributed for purposes of employee involvement in most establishments. The corresponding costs for low risk establishments are assumed to be one quarter of those estimated for other establishments, since generally fewer hazards would be involved in the implementation of a program.

These estimates reflect the incremental hours associated with the increase in requirements imposed by the bill; that is,

the estimated hours are in addition to the hours necessary to comply with existing requirements, such as for training.

Based on data from BLS [15], an average hourly compensation rate of \$20.22 was applied to the estimated number of hours required in manufacturing and construction, and an average compensation rate of \$15.51 was applied to the estimated number of hours in other sectors.

Estimates of the extent of current practices were based on the existence of current state requirements, on the fact that many unionized work places already provide for employee participation, and on estimates provided by a National Safety Council study of employee participation [17]. The extent of current practice averaged about 10 percent in each industry sector.

It is anticipated that additional employee participation will result from implementation of COSHRA beyond that associated with committee activities in larger work places. Increased knowledge of hazards and controls will be incorporated into work practices and routines. Such healthier and safer behaviors do not represent additional hours but yield benefits nonetheless.

The estimated costs associated with Subpart 4 of Title I are summarized in Table 5. The total annual cost to industry is estimated to be \$57.5 million.

TABLE 5

COSTS ASSOCIATED WITH TITLE I, SUBPART 4: EMPLOYEE PARTICIPATION IN
PROGRAM IMPLEMENTATION

Industry Sector/ Establishment Size	Number of Affected Establishments (thousands)	Number of Affected Employees (thousands)	Current Practice	Annual Cost per Establishment	Total Annual Cost
MANUFACTURING					
1-19	188	672	10%	\$40	\$4,076,567
20-249	0	0	—	\$0	\$0
250+	0	0	—	\$0	\$0
NONMANUFACTURING					
1-19	2,801	9,505	10%	\$31	\$40,326,869
1-19 low risk	1,210	3,530	10%	\$8	\$4,479,986
20+	0	0	—	\$0	\$0
20+ low risk	0	0	—	\$0	\$0
CONSTRUCTION					
1-19	461	1,324	10%	\$40	\$8,609,037
20+	0	0	—	\$0	\$0
Total	4,661	15,031	—	—	\$57,492,458

Note: In establishments with 11 or more employees, employee participation is achieved through compliance with requirements for safety and health committees.

Subparts 5 & (C)(2): Employee Training

In Subpart 5, the Bill would require employers to provide safety and health training for employees. While many if not most work places should provide a total amount of safety and health training greater than that estimated here, substantial training is already required by existing standards. For example, existing OSHA requirements for general industry require employee training for emergency and fire prevention plans (Subpart E), powered platforms and manlifts (Subpart F), various health and environmental controls (Subparts G, I, and J), hazardous materials (Subpart H), first aid (Subpart K), material handling and storage (Subpart N), machine guarding, welding, and cutting (Subparts O and Q), operations in specific industries (Subpart R), electrical work practices (Subpart S), and toxic substances (Subpart Z). In addition, under 1926.21(b), construction employers are required to "instruct each employee in the recognition and avoidance of unsafe conditions ... to control or eliminate any hazards or other exposure to illness or injury." Current practices also provide for a substantial amount of the safety and health training required by the bill.

Given the extent of existing requirements, OSHA estimates that the incremental training necessary to satisfy this requirement would involve an average of two hours of additional training per employee annually. One hour of supervisory time is also allocated for every five employees trained, to properly conduct the training. These estimates reflect the average

incremental increase in requirements anticipated under the bill, in addition to the training already required under existing requirements.

The bill also requires training for members of the occupational safety and health committee to be established under Title II. The House Committee report [16] stated: "Members of the joint health and safety committee must receive more detailed training than other workers so they have the skills and knowledge necessary to effectively participate in work site health and safety activities". Thus, an additional four hours of training was assumed to be necessary for these employees.

The hourly costs per employee used to calculate the compliance costs were hourly total compensation rates published by BLS [15]. These are \$20.22 per hour for employees in manufacturing and construction, and \$15.51 for employees in other industries. The supervisory compensation rate was also taken from published BLS data [15] at \$29.33 per hour.

Annual costs are estimated to be \$1.67 billion for general employee training, and an additional \$292 million for training of committee members. The estimated total annual cost would be about \$1.96 billion. These costs are presented in Table 6, by industry sector and establishment employment size.

Subpart 6: Designated Safety and Health Representative

Under Subpart 6 of Title I of COSHRA, employers would be required to designate representatives "who have the

TABLE 6

COSTS ASSOCIATED WITH TITLE I, SUBPARTS 5 & (C)(2): TRAINING

General Employee Training					
Industry Sector/ Establishment Size	Number of Affected Establishments (thousands)	Number of Affected Employees (thousands)	Current Practice	Annual Cost per Establishment	Annual Cost
MANUFACTURING					
1-19	249	1,515	35%	\$283	\$45,838,425
20-249	115	7,800	70%	\$3,153	\$108,894,240
250+	14	9,987	90%	\$33,080	\$46,474,107
NONMANUFACTURING					
1-19	3,171	14,507	30%	\$170	\$376,909,268
1-19 low risk	1,409	6,014	30%	\$158	\$156,250,937
20+	240	31,365	55%	\$4,861	\$523,871,184
20+ low risk	400	17,013	55%	\$1,579	\$284,161,209
CONSTRUCTION					
1-19	526	2,198	40%	\$195	\$61,377,261
20+	53	3,076	55%	\$2,714	\$64,415,131
Subtotal (General Employee Training)	6,176	93,476	—	—	\$1,668,191,763

Note: Estimated costs reflect the incremental increase in requirements; i.e., the costs are in addition to those necessary to comply with existing requirements for training.

(continued)

TABLE 6 (continued)

COSTS ASSOCIATED WITH TITLE I, SUBPARTS 5 & (C)(2): TRAINING

Industry Sector/ Establishment Size	Committee Member Training				
	Number of Affected Establishments (thousands)	Number of Affected Employees (thousands)	Current Practice	Annual Cost per Establishment	Total Annual Cost
MANUFACTURING					
1-19	60	833	10%	\$203	\$11,036,437
20-249	115	7,800	15%	\$355	\$34,732,501
250+	14	9,987	20%	\$507	\$5,698,274
NONMANUFACTURING					
1-19	370	5,002	10%	\$184	\$61,239,693
1-19 low risk	199	2,484	10%	\$92	\$16,442,631
20+	240	31,365	15%	\$506	\$102,986,557
20+ low risk	400	17,013	15%	\$101	\$34,383,406
CONSTRUCTION					
1-19	64	859	10%	\$203	\$11,729,465
20+	53	3,076	15%	\$304	\$13,635,689
Subtotal (Committee Member Training)	1,514	78,420	—	—	\$291,884,653
Grand Total (Training)	6,176	93,476	—	—	\$1,960,076,417

Note: Estimated costs reflect the incremental increase in requirements; i.e., the costs are in addition to those necessary to comply with existing requirements for training.

qualifications and responsibility to identify safety and health hazards and the authority to initiate corrective action where appropriate". The costs attributable to COSHRA would basically consist of selecting someone currently on staff who could serve as a designated safety and health manager. Larger establishments are more likely to have designated a qualified individual in that capacity.

For all establishments not categorized as "low hazard" establishments, an average of four hours per establishment would reflect the average cost of designating a competent safety manager. In "low hazard" establishments, an average of two hours of professional time was assumed to be sufficient. To account for employee turnover, the cost associated with designating a safety and health representative is considered to be incurred every five years, on average.

These cost estimates basically represent the administrative costs associated with the formal designation of a representative. The estimated costs are the incremental costs expected to be incurred under the bill, in addition to any costs necessary to comply with current safety and health regulations.

Incremental costs associated with carrying out the duties of the safety and health representative, beyond what would already be necessary under existing law, are captured in the cost of the work place safety and health analysis. Compliance with existing OSHA standards already necessitates that employers spend time

familiarizing themselves with OSHA requirements and addressing safety and health issues in their establishments.

The costs associated with this provision are represented by hourly compensation, based on the professional rate of total compensation of \$29.33 as published by BLS [15]. For example, the cost of four hours of compensation, annualized over five years, results in an estimated average annual cost per establishment of \$32. The extent of the current practices of designating a safety representative is based on the extent of current safety programs in private sector establishments as estimated by the OSHA Medical Surveillance Survey [14]. Table 7 presents the estimated total annual costs of \$111 million by industry sector and establishment size.

Subpart 7: Multi-employer Communication and Responsibility

Under Subpart 7, employers are required to take responsibility for the safety of the employees of subordinate employers. While this may place greater responsibility on the part of primary employers, it does not increase the overall costs of compliance for employers as a whole, particularly given the universal requirements of Title I. Existing OSHA regulations, such as Hazard Communication and Confined Spaces, and liability concerns already compel owners and employers to be aware of and communicate work place hazards.

TABLE 7

COSTS ASSOCIATED WITH TITLE I, SUBPART G: DESIGNATED SAFETY AND HEALTH REPRESENTATIVE

Industry Sector/ Establishment Size	Number of Affected Establishments (thousands)	Number of Affected Employees (thousands)	Current Practice	Annualized Cost per Establishment	Total Annualized Cost
MANUFACTURING					
1-19	249	1,515	35%	\$32	\$5,203,402
20-249	115	7,800	70%	\$32	\$1,110,908
250+	14	9,987	90%	\$32	\$45,185
NONMANUFACTURING					
1-19	3,171	14,507	30%	\$32	\$71,385,908
1-19 low risk	1,409	6,014	30%	\$16	\$15,860,783
20+	240	31,365	55%	\$32	\$3,466,280
20+ low risk	400	17,013	55%	\$16	\$2,893,157
CONSTRUCTION					
1-19	526	2,198	40%	\$32	\$10,143,440
20+	53	3,076	55%	\$32	\$763,233
Total	6,176	93,476	—	—	\$110,872,295

Note: Estimates reflect administrative costs associated with the selection of representatives; costs for compensation related to the duties of the representative are attributable to other Title I provisions and existing regulations.

Summary

The total gross investment in improved occupational safety and health efforts associated with new requirements in Title I of CSHRA would be an estimated \$2.6 billion annually for private sector employers. Table 8 summarizes the costs of individual Subparts of Title I by industry sector and establishment employment size. This total does not include costs associated with mitigating hazards, which are analyzed separately.

Title I - State and Local Governments

Costs of compliance with CSHRA requirements to establish safety and health programs in public sector establishments were estimated by assuming that the average cost per affected employee would be about the same as that in the private sector. The total annual gross cost for the private sector of \$2.6 billion implies an overall cost per employee of about \$27.74. Applied to a state and local work force of 15 million employees [20], the total estimated cost in the public sector associated with requirements in Title I (excluding mitigation costs) was calculated to be \$416 million annually.

TABLE 8

ANNUAL COSTS ASSOCIATED WITH TITLE I, BY SUBPART

Industry Sector/ Establishment Size	Subpart 1: Hazard Investigation	Subpart 4: Employee Participation	Subpart 5: Employee Training	Subpart 6: Designated Representative	Total Title I
MANUFACTURING					
1-19	\$19,724,986	\$4,076,567	\$56,874,862	\$5,203,402	\$85,879,816
20-249	\$16,844,857	\$0	\$143,626,741	\$1,110,908	\$161,582,507
250+	\$3,425,708	\$0	\$52,172,382	\$45,185	\$55,643,274
NONMANUFACTURING					
1-19	\$270,608,755	\$40,326,869	\$438,148,961	\$71,385,908	\$820,470,493
1-19 low risk	\$30,062,424	\$4,479,986	\$172,693,568	\$15,860,783	\$223,096,761
20+	\$52,559,712	\$0	\$626,857,741	\$3,466,280	\$682,883,733
20+ low risk	\$21,934,682	\$0	\$318,544,615	\$2,893,157	\$343,372,454
CONSTRUCTION					
1-19	\$38,451,617	\$8,609,037	\$73,106,726	\$10,143,440	\$130,310,820
20+	\$11,573,012	\$0	\$78,050,820	\$763,233	\$90,387,065
Total	\$465,185,754	\$57,492,458	\$1,960,076,417	\$110,872,295	\$2,593,626,924

Note: Estimated costs reflect the incremental increase in requirements; i.e., the costs are in addition to those necessary to comply with existing regulations.

Hazard Mitigation

Subpart 2 of Title I requires employers to correct safety and health hazards that are identified through the methods and procedures required to be implemented under Subpart 1 of Title I. Many of these hazards are likely to be addressed by existing OSHA regulations and requirements, while some hazards may not be explicitly covered by specific OSHA standards. However, employers are currently obligated to mitigate all recognized safety and health hazards through the general requirement in Section 5(a)(1) of the Occupational Safety and Health Act.

The COSHRA requirements in Subpart 2 of Title I for correcting safety and health hazards do not substantially add to existing requirements. The costs associated with increased compliance and control of hazards would be costs that employers are currently legally obligated to incur. Thus, the costs of mitigating recognized hazards in the work place are not directly imposed by or attributable to COSHRA requirements. Nevertheless, the effects of COSHRA will result in a greater awareness of safety and health problems and an increased level of hazard control activity. Since this study estimates the benefits associated with hazard reductions resulting from the implementation of COSHRA, in order to provide an accurate and complete portrayal, an estimate of the potential costs of mitigation necessary to achieve these benefits is also included in this analysis.

The estimated cost of mitigating hazards represents only the costs necessary to achieve the estimated reduction of 10 to 15

percent in injuries and illnesses attributed to COSHRA. This is less than the cost of elimination of all hazards and full compliance with all OSHA standards. Such full mitigation would result in substantially more than a 10 to 15 percent reduction in illnesses and injuries. The benefits of COSHRA would only be partly attributable to the mitigation of recognized hazards. Benefits are also derived from changes in work place culture and organization which result in more effective training activities, avoidance of dangers, and safe work practices. The mitigation costs necessary to achieve the estimated level of benefits would also involve the most cost-effective changes in the operations of establishments, since employers would first implement effective changes that are simplest and least expensive.

The cost associated with increasing the general level of compliance with OSHA regulations across a broad spectrum of industries is difficult to estimate accurately. A search of the academic literature produced estimates of current industry expenditures related to issues addressed by OSHA regulations. In 1990, reviewing the costs associated with government regulations generally, Hahn and Heard [18] cited previous research efforts by Denison and Crandall. Of the \$9 billion in regulatory costs (1988 dollars) associated with occupational safety and health estimated by Denison [46], \$4.9 billion was attributed to mine safety and health; approximately half of the remaining \$4.1 billion was related to automobile safety regulations. Crandall [47] estimated that annual expenditures related to

occupational safety and health were about \$8.5 billion (1988 dollars). Hahn and Heard indicate that most of the estimated expenditures related to occupational safety and health from both studies probably is not directly attributable to regulatory requirements. Thus, current expenditures involving occupational safety and health may range from \$5 billion to \$10 billion annually.

These figures represent a combination of annualized capital costs and recurring annual costs. However, these expenditures are not necessarily directly attributable to OSHA regulations, and may include business investments for purposes other than achieving compliance with OSHA requirements. Therefore, they should be considered overestimates of the incremental costs imposed by OSHA requirements.

OSHA's experience in inspecting establishments and providing consultations to employers suggests that achieving a substantial increase in compliance rates would require far less than a doubling of current expenditures on occupational safety and health efforts. Thus, a plausible estimate of the additional resources necessary to reduce existing occupational hazards by 10 to 15 percent would fall in the range of \$3 billion to \$6 billion annually. This investment would be incurred by establishments where current practices fall short of providing adequate protection of employee safety and health.

These costs would be in addition to estimated costs associated with implementing a safety and health program,

training employees, and other requirements separately identified. These costs are also in addition to the existing annual mitigation costs estimated above.

It should also be noted that these cost estimates represent annual expenditures. The compliance costs are likely to include a combination of both annual costs and one-time capital costs that can be annualized. The estimated range of \$3 billion to \$6 billion would represent a mixture of annualized capital costs and recurring annual costs. For example, an annualized cost of \$4.5 billion may represent a capital cost of \$9.2 billion, incurred once every ten years, plus an annual cost of \$3 billion.

For purposes of comparison, a detailed study estimating the costs of bringing facilities into compliance with OSHA standards in public sector establishments in New York State can be considered [19,45]³. Prior to 1979, these establishments were not subject to OSHA regulations; the estimated cost of complying with OSHA requirements was estimated as a one-time cost of \$3,900 per facility (in 1993 dollars) [19]. Applying this figure to half of all private sector establishments would result in an annualized cost of about \$2 billion.

³ This study was the outgrowth of a survey performed by the State of New York in 1978 in order to assess the cost of coming into compliance with federal OSHA regulations. Hundreds of worksites in dozens of political subdivisions were examined. A substantial portion of the costs relate to coming up to grade with OSHA fire codes which were subsequently phased out. The authors therefore conclude that were the study commissioned later the costs would have been less [19, Note, p. 2].

Although the applicability of this figure depends on the extent of similarity between public and private sector establishments and on differences in current practices, it provides a gauge of the order of magnitude of such costs. Unlike current private sector establishments, the New York establishments were not covered by existing requirements. Whereas additional OSHA regulations have been promulgated since 1980, efforts to protect the safety and health of employees have also generally increased.

In conclusion, OSHA believes that the range of \$3 billion to \$6 billion in additional annual expenditures devoted to hazard control activities and compliance with OSHA regulations represents a sufficient investment of resources to achieve the substantial benefits of 10 to 15 percent reductions in injuries and illnesses anticipated through COSHRA. The midpoint of this range is \$4.5 billion.

Due to the unavailability of accurate data on the number of establishments in the public sector, mitigation costs for public sector establishments were derived by applying the average estimated cost per employee in the private sector of approximately \$48 to 15 million employees in state and local government establishments. The estimated total annual cost for these establishments is thus \$720 million.

Title II - Safety and Health Committees

Under Title II of COSHRA, each employer of eleven or more employees would be required to establish a safety and health committee at each work site. As detailed in subsections (e) and (g) of the Bill, the committee requirements may be modified for some employers, depending on the circumstances at particular work sites; however, the obligations would generally be similar for all employers.

The committees established by Title II would be granted a set of rights regarding involvement in occupational safety and health issues. The effectiveness of committees in improving safety and health at work sites would depend on the extent to which each committee exercises its rights, and on the extent to which recommendations made by the committees are adopted by employers, which retain full authority to manage the work site. The direct costs to employers would similarly depend on the extent to which committees exercise their rights; the costs would primarily consist of the compensation paid to committee members for time spent on duties of the committee.

The Bill would require committee membership to consist of a specified number of employee representatives, depending on the establishment employment size. The Bill would also allow an equal number of employer representatives on each committee, and employers are likely to include such management participation in the committee activities.

Of the 6.2 million private sector establishments with employees in the United States, approximately 1.5 million have

eleven or more employees [13]. Table 9 shows the number of establishments by employment size category. Many of these establishments are currently required to have safety and health committees with employee involvement under state law (e.g., employers in Oregon and Washington). Table 10 shows the extent of current requirements for committees in different states.

Even in states without requirements for committees, establishments across the country have instituted such committees independently, realizing the benefits accompanying their formation. Furthermore, many union contracts provide for employee participation in safety and health committees.

One source describing the extent of the existence of such committees is a study from the National Safety Council [17]. The study included results from a national survey of firms stratified by type of industry and establishment size. Among the 249 responses from nonagricultural establishments in the United States, 31 percent of organizations with less than 50 employees and 75 percent of organizations with 50 or more employees indicated that they had a safety and health committee at the work site made up of management and nonmanagement employees. Due to the limited sample size, it is unclear to what extent these results would be applicable across all private sector establishments.

The structure, operation, and rights of committees differ by state, by industry, and by size of establishment, complicating any assessment of the degree of current practices with regard to

TABLE 9

NUMBER OF SAFETY AND HEALTH COMMITTEE MEMBERS
BY ESTABLISHMENT EMPLOYMENT SIZE

ESTABLISHMENT EMPLOYMENT SIZE	TOTAL NUMBER OF ESTABLISHMENTS	TOTAL NUMBER OF EMPLOYEES	ESTABLISHMENTS REQUIRING COMMITTEES (PERCENT)	EMPLOYEE REPRESENTATIVES PER ESTABLISHMENT	EMPLOYER REPRESENTATIVES PER ESTABLISHMENT	NUMBER OF COMMITTEE MEMBERS REQUIRED
11 - 49	1,201,867	24,701,222	90	1	1	2,163,361
50 - 99	175,375	12,029,187	90	2	2	631,350
100 - 199	65,161	9,743,756	80	3	3	312,773
200 - 299	37,447	6,533,869	80	4	4	239,661
300 - 399	9,734	3,323,981	80	5	5	77,872
400 +	24,908	22,087,898	80	6	6	239,117
TOTAL	1,514,492	78,419,913				3,664,133

TABLE 10
STATE REQUIREMENTS FOR
SAFETY AND HEALTH COMMITTEES

State (Effective Date)	Scope of Committee Requirements
Oregon (1991)	All establishments with 11 or more employees.
Washington (1960)	All establishments with 11 or more employees.
Nebraska (1993)	All employers.
North Carolina (1992)	Establishments with 11 or more employees, based on experience rating.
Connecticut (1993)	Establishments with 25 or more employees and above-average injury/illness rates.
Nevada (1993)	Establishments with high injury/illness rates.
Alaska (1973)	Establishments in specified industries.
Tennessee (1992)	Selected establishments based on experience ratings.
Maine (1990)	Voluntary.
Ohio (1993)	Voluntary.
California (1991)	Voluntary.

the requirements of COSHRA. OSHA estimates that on average, about 10 percent of the COSHRA requirements for committees have been implemented in smaller establishments (less than 100 employees), and about 20 percent of these requirements have been implemented in larger establishments (100 or more employees). As presented in Table 9, the total number of additional committee members anticipated in the private sector under COSHRA is about 3.7 million.

The cost to employers associated with committees would be based on the number of hours committee members spend fulfilling their duties for the committee. The extent of committee responsibilities would clearly vary for different types of establishments, depending on the nature and number of processes and potential hazards involved. In addition, the number of hours per committee member could vary among identical establishments since each committee would determine for itself the appropriate degree to which to exercise its rights (limited by the Bill to "within reasonable limits and in a reasonable manner").

In a typical medium-sized industrial establishment where several types of potential hazards may be present, a reasonable work load for a committee member may involve four 2-hour meetings and two 3-hour inspections annually. After allowing for additional hours for preparation and support staff, the total number of hours per committee member would be less than thirty hours per year.

Larger industrial establishments would require more time while smaller and nonindustrial establishments would require much less time. As described in the Bill, committee members would also have the right to be compensated for time spent exercising a series of other rights involving safety and health issues. Alternatively, in a retail establishment or a work site consisting only of office space, committee members may meet briefly semi-annually or less frequently.

The size of an establishment would be less of a factor than the type of establishment in determining the number of hours per committee member required. The number of committee members generally increases in proportion to the size of the establishment, and the work of the committee can be divided among its members. Nevertheless, it is expected that committee members at larger establishments would spend more hours engaged in committee work than committee members at smaller establishments.

About two-thirds of all establishments are classified in the retail trade, finance, insurance, real estate, and service sectors, according to data from the Department of Commerce [13]. For purposes of calculating a reasonable estimate of the gross costs associated with COSHRA committee provisions, the average annual number of hours per committee member ranged from twelve in the smallest establishments to sixty-four in the largest establishments.

An average hourly compensation rate of \$17.88, representing the average rate of total compensation for civilian workers in

the United States as reported by the Bureau of Labor Statistics [15], was applied to the total number of hours of committee work. Table 11 presents the total annual cost of committees by establishment employment size and for all establishments. The estimated total annual gross cost for all private sector establishments is approximately \$1.2 billion.

Costs of compliance with requirements to establish committees in public sector establishments were estimated by assuming that, on average, the cost per employee would be the same as that in the private sector. The total annual gross cost for the private sector of \$1.2 billion implies a cost per employee in establishments requiring committees of about \$18.76. An estimated rate of current practice of 15 percent of employees working in establishments that already have committees, comparable to that in the private sector, was applied to the total number of about 15 million state and local government employees to be covered. Thus, the estimated total annual cost to state and local governments would be about \$240 million.

Title III - Coverage

Title III of COSHRA would extend OSHA coverage to all public employees. An estimated 7.5 million employees in public sector establishments are currently not protected by OSHA regulations and inspections. The affected employees include those working for state governments as well as employees of city, county, and

TABLE 11

**COSTS OF SAFETY AND HEALTH COMMITTEES
BY ESTABLISHMENT EMPLOYMENT SIZE**

ESTABLISHMENT EMPLOYMENT SIZE	ESTABLISHMENTS REQUIRING COMMITTEES	NUMBER OF EMPLOYEES IN ESTABLISHMENTS REQUIRING COMMITTEES	NUMBER OF COMMITTEE MEMBERS REQUIRED	AVERAGE HOURLY EMPLOYEE COMPENSATION	AVERAGE HOURS PER COMMITTEE MEMBER ANNUALLY	TOTAL ANNUAL COST
11 - 49	1,081,680	22,231,100	2,163,361	\$17.88	12	\$464,170,650
50 - 99	157,838	10,826,268	631,350	\$17.88	16	\$180,616,608
100 - 199	52,129	7,795,005	312,773	\$17.88	24	\$134,217,064
200 - 299	29,958	5,227,095	239,661	\$17.88	32	\$137,124,323
300 - 399	7,787	2,659,185	77,872	\$17.88	40	\$55,694,054
400 +	19,926	17,670,318	239,117	\$17.88	64	\$273,626,137
TOTAL	1,349,318	66,408,971	3,664,133			\$1,245,448,837

other local government jurisdictions in states without OSHA-approved state plans.

Evidence from states that already cover public employees shows that there is a consistently positive effect on occupational safety and health due to OSHA coverage. In North Carolina, OSHA coverage for public employees has been in effect since 1975. In the eight years following the implementation of the state program, public sector employees experienced an overall decrease in the injury rate of almost 24 percent [19].

Reviews of the experiences of other states in extending OSHA coverage to public employees have found average reductions in injury and illness statistics of up to 18 percent [19]. An analysis done by the New York State Department of Labor [21] showed that states adopting state OSHA programs experienced an average reduction in illnesses and injuries of almost 18 percent.

Since part of the total improvement in occupational safety and health for public employees anticipated under COSHRA may be attributable to other parts of the Bill, the benefits associated exclusively with Title III (applying current OSHA regulations and other requirements to establishments that have not been subject to them) are estimated conservatively as a 5 to 10 percent reduction in fatalities, injuries and illnesses. In addition to the nonpecuniary benefits and merit of preventing these incidents, the reduction would correspond to a substantial financial savings through reduced medical costs, lost work time, and other losses associated with occupational injuries.

Rates of occupational injuries and illnesses in the public sector are generally comparable to those in the private sector, according to BLS data [22]. Of the \$115.9 billion in total costs due to work accidents estimated by the National Safety Council [1], a proportionate share would be attributable to accidents involving public sector employees. Thus, the annual costs associated with injuries and illnesses among 7.5 million employees not covered by OSHA would be \$7.43 billion, and the savings corresponding to a 5 to 10 percent reduction in occupational injury and illness rates among these employees would amount to \$370 million to \$740 million annually. In addition, the pain and suffering associated with 11 to 23 fatalities and 33,000 to 65,000 injuries and illnesses annually, would be prevented.

A study on OSHA coverage of public employees was also conducted by Ruth Ruttenberg & Associates [19]. The study estimated that the protection of public employees under the federal Occupational Safety and Health Act would produce savings of over \$600 million a year, and potentially as much as \$2.1 billion per year. Ruttenberg's estimates were based on empirical evidence and case studies of several government entities.

It should be noted that the estimated benefits of OSHA coverage correspond to an incremental reduction in incidents among affected employees. These estimates provide a realistic assessment of the initial effects that would result from OSHA

coverage, but do not represent the extent of benefits that would be achieved through full compliance with OSHA standards or mitigation of all hazards, which would be much greater.

The costs associated with OSHA coverage consist of the costs of compliance with OSHA regulations, to the extent that the affected government entities are not currently in compliance. Administrative and enforcement costs would be borne by federal OSHA and thus are not included in these estimates. The costs calculated as attributable to Title III of COSHRA are those needed to achieve a 5 to 10 percent reduction in injuries and illnesses.

For some government employees, safety and health initiatives in the public sector may already meet OSHA standards; other government employees are not always adequately protected from the hazards associated with their jobs. The cost of correcting individual safety and health problems is often minimal. For example, significant reductions in risk can be achieved by providing goggles for workers using grinding machines, by relocating hazardous materials to suitable storage areas, or by ensuring that appropriate work practices are always followed. Addressing some safety and health problems may also involve more substantial resources, such as the installation of high efficiency ventilation systems to reduce exposures to airborne contaminants.

The annual gross costs to state and local governments for implementing the necessary changes cannot be estimated with

precision due to a lack of adequate data. As a rough estimate, it was assumed that the reductions in hazards attributable to changes under Title III would require a proportional level of investment similar to that estimated for the reductions in hazards attributable to the mitigation of hazards under Title I. Thus, the cost of achieving a 5 to 10 percent reduction in illnesses and injuries would be approximately 0.6 times the estimated cost of achieving a 10 to 15 percent reduction (7.5 percent divided by 12.5 percent), and the total estimated annual cost associated with expanded OSHA coverage would be \$216 million.

The Ruttenberg study provided an estimate of one-time expenditures required to meet basic safety and health standards for public employees in states not covered by federal OSHA [19]. Although a total cost estimate is not given in the study, the average cost per facility is estimated to be \$3,900. Assuming an average of 20 employees per facility (implying an average of less than 16,000 facilities per state), the total costs would be about \$250 million on an annualized basis (using a discount rate of 10 percent over 10 years). Although this estimate may have limited applicability, it provides a rough confirmation of the order of magnitude of the costs associated with Title III, as estimated above.

Title IV - Occupational Safety and Health Standards

Requirements in Title IV of COSHRA are generally directed at OSHA. The Bill requires the Secretary of Labor to respond to petitions, publish notices in the Federal Register, and promulgate standards addressing significant occupational safety and health risks.

Title IV also directs the Secretary of Labor to promulgate final standards addressing several specific issues. The required regulations would involve ergonomics, exposure monitoring, health surveillance, and revisions to permissible exposure limits (PELs) for harmful substances. These regulations, in turn, would generate benefits for and impose costs on persons in the private sector.

Revisions to OSHA's PELs as outlined in COSHRA would restore PELs established by OSHA for general industry in 1989 [23], and proposed by OSHA for all other industries in 1992 [24]. Some provisions of the final rule establishing those PELs involved effective dates that were phased in over three or four years, and the rule was ultimately vacated in court.

It is likely that substantial compliance has already been achieved with the revised PELs. The final rule remained in effect and was enforced by OSHA for over three years before it was vacated. In addition, the PELs basically reflect consensus standards that have been adopted and complied with by establishments throughout industry even before OSHA initiated rulemaking. Only a few of the hundreds of new PELs were

contested by employers in court, and generally these petitions involved a few specific operations.

In 1989 and 1992 OSHA published regulatory impact analyses (RIAs) which detailed the potential effects of the revisions to the PELs [23, 24]. For each industry and each substance, current exposure levels and the number of affected employees and establishments were analyzed. Based on these data, the benefits and costs of compliance with the revised PELs were estimated.

Since the revised PELs to be promulgated under COSHRA were in effect or anticipated to be put into effect in all industries since 1989, and basically bring OSHA PELs up to date with commonly accepted consensus standards, the current level of compliance with these PELs is expected to be greater than that in 1989. As a result, the overall impact of the promulgation of these PELs under COSHRA is expected to be about half of that estimated in the RIAs accompanying the past regulations.

Thus, from a baseline of current practices and exposures, the estimated total annual cost associated with compliance with the revised PELs for all industries would be about \$500 million. The estimated benefits would include 350 fatalities and 43,000 illnesses prevented each year. The data and analyses underlying these estimates are detailed in the corresponding RIAs, published in the Federal Register on January 19, 1989 and June 12, 1992 [23, 24].

Regulations required to be promulgated under COSHRA regarding health surveillance and exposure monitoring would

generate further benefits and enable additional occupational fatalities and illnesses to be prevented.

Although the effects of exposures to chemicals can sometimes be quickly apparent, the effects of chronic exposures often do not become apparent until years later. The relationship of these effects to employment conditions often may not be recognized or documented. Thus, many fatalities and illnesses could be the result of occupational exposures even though they may not be explicitly considered occupationally related. A study conducted by Landrigan and Markowitz estimated that 1 to 3 percent of all deaths have occupational origins [25]. If even a small fraction of the fatalities and illnesses occurring each year were preventable through better occupational health programs, the benefits in terms of a healthier population and medical care savings would be enormous.

Regulations involving ergonomics, health surveillance, and exposure monitoring are already being developed by OSHA. As indicated in the current Regulatory Agenda published by the Office of Management and Budget (OMB) [26], OSHA plans to promulgate these regulations. The costs and benefits associated with these standards will depend on the specifics of the final regulations, which will be based on their respective records, reflecting comments and data provided by the public. Thus, the effects of the promulgation of these standards are not appropriately attributable to COSHRA. Neither costs nor benefits associated with these standards have been included in this study.

Title V - Enforcement

Provisions in Title V of COSHRA generally do not impose additional costs on employers. Some provisions impose obligations on the Secretary of Labor, and some involve procedural issues associated with complaints, inspections, and citations.

The effects of Title V would include increased incentives for employers to comply with existing OSHA standards. The increase in compliance would be expected to generate net benefits by preventing occupational fatalities, injuries, and illnesses. The costs and benefits associated with increased compliance with existing standards are included in the analysis of correcting hazards, as required under Title I.

Potential increases in individual penalties may be offset by reductions in the number of violations; the resulting change in the total amount of penalties collected could be positive or negative. In any case, penalties are imposed only on noncompliant employers, and thus are not attributed as costs imposed by the Bill on the public.

Changes in enforcement procedures as envisioned under Title V would induce greater compliance with OSHA regulations and thus litigation costs incurred by employers may decrease. Whereas previously funds may have been expended on legal fees for contesting citations, some employers may find that overall costs could decrease by allocating funds towards compliance, ensuring

that citations are avoided and employees are adequately protected.

Title VI - Discrimination Protection

Provisions under Title VI of COSHRA address discrimination protection. The provisions generally ensure fairness in the treatment of employees under specified circumstances. Procedures for filing and responding to complaints, for requesting hearings, for petitioning for judicial review, and for granting injunctive relief are addressed.

The limited scope of the applicability of Title VI provisions implies that the effects directly attributable to this Title in terms of costs or prevented injuries would be small relative to those of other Titles. Nevertheless, Title VI provides important protections which help assure that the benefits of COSHRA as a whole would be realized. Employee morale and empowerment would be increased, facilitating open discussions of safety and health issues and enabling concerns to be expressed without fear of reprisal. An overall increase in attentiveness to safety and health among employers and employees should provide a greater impetus for addressing potential safety and health problems that are identified.

Title VII - Technical Assistance and Training

Title VII primarily imposes obligations on the Secretary of Labor and as such does not involve significant cost impacts on employers. The Secretary of Labor is obligated under Title VII to develop and disseminate "information and materials designed to assist employers". The provisions of Title VII would provide benefits to employers and employees by facilitating compliance with safety and health standards and by increasing awareness of potential safety and health hazards. However, costs that are attributable to the bill and imposed on the federal government have not been included in the estimates of total costs in this study.

Title VIII - Recordkeeping and Reporting

Title VIII directs the Secretary of Labor to collect information and conduct analyses for the purpose of setting safety and health standards and for other purposes. Such activities already take place under the authority of the Secretary, and the importance of proper research and analysis has been increasingly emphasized through Executive Orders and in court decisions.

It is unclear whether these activities would increase under COSHRA; to the extent that more analysis accompanies decisions and actions taken, the ability to achieve the goals of COSHRA would be enhanced. OSHA currently collects information and

conducts analyses to improve the efficiency and effectiveness of enforcement and future rulemakings.

The requirements under Title VIII of COSHRA would not impose any significant new burdens on employers; the requirements are primarily directed at government agencies. OSHA currently requires employers to report fatalities and multiple hospitalizations. Existing Department of Labor regulations require employers to maintain a complete and accurate log of occupational injuries and illnesses, and these data are collected from employers. Current initiatives are underway to modify and improve the data collection and management systems. Reform of recordkeeping and reporting requirements may also involve efficiencies and streamlining that could reduce overall burdens to employers.

To the extent that recordkeeping or reporting may be necessary to comply with provisions in other COSHRA Titles, such those involving safety and health programs and committees, the costs are included in the corresponding estimates for those provisions.

Title IX - NIOSH

Under Title IX, the Secretary of Health and Human Services is required to undertake several tasks involving research, data, and information on occupational injuries and illnesses. These generally would not have direct cost effects on employers or employees, but would contribute to the effectiveness of

implementing other Titles under COSHRA. The Congressional Budget Office has estimated that an additional \$48 million would be necessary for the Secretary to be able to fulfill these duties.

Title X - State Plans

Title X modifies the existing legislative language regarding the implementation and operation of state plans. For example, COSHRA specifies procedures for complaints and the application of federal standards.

The changes under Title X enable the safety and health protection provided under COSHRA to be assured more effectively for all employees covered by the Act; no significant direct costs or benefits have been identified.

Title XI - Victim's Rights

Under Title XI, employees who have sustained work-related injuries or illnesses which are the subject of inspections or investigations are granted certain rights. These rights basically require the Secretary of Labor to allow victims to be involved in actions that the Department of Labor may take with regard to investigating, citing, negotiating, settling, or prosecuting cases with employers.

The benefits of the provisions under Title XI would be the fairness of including victims' points of view in the handling of cases involving victims' concerns. The statements of victims would be considered by the Secretary of Labor before any

settlement negotiations are conducted. No significant costs to private sector establishments are expected to be associated with these provisions.

Title XII - Construction Safety

Title XII of COSHRA addresses construction safety. Several provisions impose duties on the Secretary of Labor, such as establishing training courses, a toll-free line, model compliance programs, and a new Office of Construction Safety, Health, and Education within OSHA. These actions are expected to bring benefits to employers and employees by helping to ensure safe and healthful working conditions in the performance of construction work. No direct costs would be associated with these provisions, since the costs would be funded with general revenues from the U.S. Treasury.

Title XII also contains provisions which direct the Secretary of Labor to promulgate regulations which would affect all construction work except that done by utilities under certain circumstances. The primary responsibilities imposed on construction employers involve the designation of a project safety coordinator to develop and implement a written construction safety and health plan, the development of a written safety and health program, the designation of one or more competent persons responsible for the administration of the safety and health program, and reporting information to the Secretary regarding hazardous construction work.

The regulations promulgated under COSHRA would require a written safety and health plan to be developed and implemented for each construction project. The annual number of new construction projects affected would be approximately 1.2 million, based on data from the Department of Commerce, Bureau of the Census [27], the International Trade Administration [28], and F.W. Dodge [29]. This figure was doubled to account for projects involving repairs, alterations, reconstruction, and renovations; thus, a total of 2.4 million construction projects would be considered affected by these regulations.

Many construction projects are relatively small or routine. For these projects, a somewhat standardized plan could be adopted by employers and used repeatedly on similar projects. Although each project would require a minimum involvement by a certified project safety coordinator, construction employers should be able to purchase the services of such a person as needed without necessarily hiring a full-time coordinator. The use of a project safety coordinator and the development of a safety and health plan is already common on larger construction projects.

Considering the extent of a plan necessary for most construction projects and the extent of current compliance with requirements for coordinators and plans, the additional costs imposed by COSHRA would involve an estimated 3 hours of work by a safety and health professional on average across 2.4 million construction projects. An average hourly compensation rate of \$29.33, representing the average rate of total compensation for

professional specialty and technical workers in the United States as reported by the Bureau of Labor Statistics [15], was applied to the total number of hours to calculate the total estimated cost. The total annual estimated cost associated with these provisions would be approximately \$211 million.

Construction employers would also be required to develop a safety and health program and designate a competent person who is capable of identifying safety and health hazards. Requirements for a safety and health program would already be imposed under Title I of COSHRA, and the costs and benefits associated with these programs are discussed in the corresponding section. For each construction project, there should already be a person who would qualify as a competent person through experience or training; no additional costs would need to be incurred by most construction employers to designate this person as competent. In addition, existing OSHA regulations at 29 CFR, Part 1926, Subpart C, already require the presence of a competent person. Through provisions at 1926.20, construction employers are currently required to initiate and maintain safety and health programs which "shall provide for frequent and regular inspections of job sites, materials, and equipment to be made by competent persons designated by the employers."

Other regulations to be promulgated under COSHRA would require construction employers to report to the Secretary of Labor information regarding certain construction projects prior to the commencement of construction work. This provision would

primarily apply to specific, highly hazardous construction projects. For purposes of estimating the potential costs associated with this provision, it is assumed that 10 percent of all construction projects would be affected. The information required to be reported would not involve substantial time to gather (location of the work site, name of the construction owner, type of work to be performed, dates of construction, etc.); ten minutes of professional time should be sufficient to compile and transmit these facts. Thus, the total estimated annual costs associated with this provision would be $(\$29.33 * 10/60) * (1/10) * 2.4 \text{ million}$, or about \$1.2 million.

To the extent that state and local governments, as construction employers, would be subject to Title XII requirements, they would also experience the net benefits that the Bill would provide through these provisions. The initial investment that would be incurred is assumed to be comparable to that for employers in the private sector. Based on figures provided by the Department of Commerce in its Statistical Abstract [30], the number of construction workers employed by state and local governments is approximately one tenth of that for the private sector. Thus, the estimated costs would be about one tenth of those estimated for the private sector, or \$21 million annually.

As a result of the increased awareness and attention paid to safety and health at construction work sites, a 5 to 10 percent reduction in injuries, illnesses, and fatalities can be expected

in addition to the reductions achieved through other Titles in the Bill. Many construction employers have already found that injury rates can be reduced by a total of 20 to 30 percent and even more by implementing requirements and taking actions similar to those required under Title XII of COSHRA.

Data published by BLS indicate that a total of 903 fatalities and 520,000 injuries and illness occur in the construction industry annually [39, 40]. A 5 to 10 percent reduction would correspond to the prevention of 45 to 90 fatalities and 26,000 to 52,000 injuries and illnesses annually.

The dollar savings resulting from the prevention of these incidents would amount to \$350 million to \$700 million annually, based on the proportion of construction injuries and illnesses represented in the National Safety Council's total estimated cost of occupational injuries [1].

Numerous experiences in the construction industry demonstrate the potential beneficial effects associated with the approach to safety and health provided in COSHRA. For example, safety and health programs were established by a cooperative agreement between Bechtel, a construction company, and the AFL-CIO to assist in reducing work-related fatalities, injuries, and illnesses. Following the implementation of the safety and health programs, the injury rate was reduced by over 16 percent in one year [31].

As a result of citations and subsequent negotiations with OSHA, a medium-sized excavating contractor instituted a formal

safety and health program directed by a safety professional who was vested with full authority to implement the program. Within two years, the company's workers' compensation MOD factor (a multiplier used to calculate insurance premiums) was reduced from 1.6 to 0.38, saving the company \$700,000 in insurance premiums [32].

A construction company in the Corpus Christi, Texas area reduced their OSHA recordable injury rate from 25.7 to 5.1 following the development of a written safety program, safety directives, an accident prevention manual, supervisor accountability, and weekly safety meetings [33].

A study conducted by Meridian Research, Inc. [10] found general agreement among authors in both the academic community and the construction industry that well-designed safety and health management programs can cut accident rates dramatically. Data generated by companies implementing such programs confirm that net benefits are produced as a result.

For example, a large specialty contractor estimated that its worker protection program prevented 267 lost-workday injuries and saved \$5.3 million in costs in a three year period [10]. A smaller general contractor reported savings of \$725,000 over three years and an 80 percent decline in its OSHA recordable incident rate since implementation of its program [10]. Another construction company reportedly spends about \$100,000 annually on its program but saves six times as much in workers' compensation costs alone [10]. Safety and health programs in the construction

industry are estimated to save contractors a minimum of 0.5 to 1.0 percent of total project costs [10]. For the construction industry as a whole, Meridian estimates that the net cost savings associated with worker protection programs could be as high as \$16 billion per year [10].

For purposes of this analysis, OSHA derives a more conservative estimate. Including the construction industry's share of costs and benefits estimated for other COSHRA Titles, the total estimated implementation costs of all COSHRA provisions for the construction industry are \$703 million annually; total estimated benefits include the prevention of 67,000 to 110,000 injuries and illnesses and 84 to 140 fatalities annually, which result in savings of \$890 million to over \$1.5 billion annually. The overall net benefits of COSHRA for the construction industry include unquantifiable reductions in pain and suffering plus a net savings of \$187 million to \$808 million annually.

Title XIII - Workers' Compensation Study

In Title XIII, COSHRA commissions a study to be conducted on the adequacy and effectiveness of workers' compensation laws and administrative systems. Any resources considered necessary to complete the study are authorized by COSHRA, including hiring additional staff personnel, procuring services, and entering into contracts with agencies, private firms, institutions, and individuals for the conduct of research or surveys, the preparation of reports, and other activities. Furthermore,

COSHHRA requires that the study be conducted under the authority of a newly appointed commission consisting of 15 members who would be paid \$120,000 per year plus reimbursement for travel, subsistence, and other expenses.

The benefits of conducting the study would consist of new information, awareness, and insights that may be gained from the study, and any subsequent improvements in the efficiency and effectiveness of workers' compensation systems that may be made. The cost of conducting the study may range from \$1 million to \$2 million, depending on the amount of resources dedicated to the task; in addition, over \$3.5 million would be paid to the appointed commission members.

IV. Assessment of Overall Impact

Tables 12 and 13 summarize the estimated costs and benefits of COSHRA, respectively. A comparison of these tables reveals that COSHRA would generate substantial net benefits even with conservative estimates of 10 to 15 percent reductions in injuries and illnesses.

The overall net benefits COSHRA would achieve in the private sector and in state and local governments include the reduction in pain and suffering associated with the prevention of 871 to 1,163 fatalities and 912,000 to 1.3 million injuries and illnesses annually, plus net savings of \$1.3 billion to \$7.6 billion annually. The net savings are based on a total gross implementation cost of \$10.66 billion, and total savings of \$12.0 billion to \$18.3 billion annually.

In the state and local government sector alone, the total net benefits of COSHRA include the reduction in pain and suffering associated with the prevention of 123 to 168 fatalities and 151,000 to 231,000 injuries and illnesses annually, plus net savings of \$320 million to \$1.46 billion. The net savings are based on a total gross implementation cost of \$1.61 billion, and a total savings of \$1.93 billion to \$3.07 billion annually.

The effects of COSHRA would stretch beyond the direct effects estimated by this analysis. Through changes in OSHA's mandate, structure, and approach, and by generally fostering awareness and drawing national attention to the seriousness of

TABLE 12

**SUMMARY OF BENEFITS ASSOCIATED WITH THE
COMPREHENSIVE OCCUPATIONAL SAFETY AND HEALTH REFORM ACT**

TITLE / REQUIREMENT	ANNUAL BENEFIT	BASIS OF ESTIMATE
I. Safety and Health Programs II. Safety and Health Committees IV. Promulgation of Standards – Revised PELs V. Enforcement VI. Discrimination Protection VII. Technical Assistance and Training VIII. Recordkeeping and Reporting IX. NIOSH X. State Plans XI. Victim's Rights XIII. Workers' Compensation Study	Combined effects from: Titles I, II, IV, V, VI, VII, VIII, IX, X, XI, and XIII: 815 to 1,050 fatalities prevented 853,000 to 1.2 million injuries / illnesses prevented. \$11.3 billion to \$16.9 billion savings. Increased employee morale and empowerment. Facilitate compliance and awareness of hazards. Improved efficiency and effectiveness of enforcement and future rulemakings Increased research and awareness of accident prevention. Equal protection ensured in all states. Increased fairness and involvement of victims.	Estimates are based on a 10 to 15 percent reduction in reported occupational fatalities, injuries, and illnesses, (based on BLS data), plus the prevention of additional fatalities and illnesses through Title IV. Reductions in injuries result in a proportionate reduction in costs attributable to occupational accidents (estimated by the National Safety Council at \$115.9 billion), plus savings from prevented illnesses.
III. Extension of Coverage	11 to 23 fatalities prevented 33,000 to 65,000 injuries / illnesses prevented \$370 million to \$740 million savings	Based on a 5 to 10 percent reduction in injury / illness rates among 7.5 million employees in non-state plan states, in addition to reductions achieved through other titles.
XII. Construction Safety	45 to 90 fatalities prevented 26,000 to 52,000 injuries / illnesses prevented \$350 million to \$700 million savings	Based on a 5 to 10 percent reduction in injury / illness rates in the construction industry, in addition to reductions achieved through other titles.
SUMMARY	• 871 to 1,163 fatalities prevented annually. • 912,000 to 1.3 million injuries / illnesses prevented annually. • \$12.0 billion to \$18.3 billion annual cost savings associated with injuries, including reduced medical costs, hiring / training costs, investigation / litigation costs, administrative costs, work place disruption, and property damage. • Higher employee morale. • Increased productivity. • Creation of "high performance" work places and improved competitiveness and innovation through incorporation of employee safety and health into work place culture and organization.	

NET BENEFITS : \$1.3 billion to \$7.6 billion annually, plus unquantifiable benefits.
(Includes public sector net benefits of \$300 million to \$1.5 billion annually.)

TABLE 13

**SUMMARY OF THE COSTS ASSOCIATED WITH THE
COMPREHENSIVE OCCUPATIONAL SAFETY AND HEALTH REFORM ACT**

TITLE / REQUIREMENT	ANNUAL COST (\$ MILLIONS)		BASIS OF ESTIMATE
	Private Sector	State & Local Government	
I. Safety and Health Programs – Hazard Investigation – Emergency Response – Employee Participation – Training – Employer Representative	\$2,594	\$416	Requirements would affect 93 million employees in 6.2 million private sector establishments, and 15 million employees in state and local governments. Costs reflect current practice and the incremental cost of individual provisions, by type of industry and establishment employment size.
Mitigation Costs	4,500	720	Estimated incremental costs associated with coming into compliance with existing OSHA standards.
II. Safety and Health Committees	1,245	240	Requirements would affect 78 million employees in 1.3 million establishments; costs reflect compensation for 3.7 million committee members to conduct committee business.
III. Extension of Coverage	0	216	OSHA coverage required for 7.5 million additional employees in non-state plan states.
IV. Promulgation of Standards – Revised PELs	500	0	Costs are based on estimates published with the 1989 final rule and the 1992 proposed rule, reduced by 50 percent to reflect current compliance.
V. Enforcement	0	0	Costs of increased compliance are included under Title I.
VI. Discrimination Protection	0	0	
VII. Technical Assistance and Training	0	0	
VIII. Recordkeeping and Reporting	0	0	
IX. NIOSH	0	0	
X. State Plans	0	0	
XI. Victim's Rights	0	0	
XII. Construction Safety	212	21	Costs are based on 3 hours for a safety professional to generate a project-specific safety plan for each of 2.4 million construction projects; supervisory time is added for high hazard jobs to satisfy notification requirements. Other potential employer costs are attributed to duplicate requirements in either Title I or 29 CFR Part 1926, Subpart C.
XIII. Workers' Compensation Study	0	0	
XIV. Administrative	0	0	
XV. Effective Date	0	0	
TOTAL	\$9,051	\$1,613	

**NET BENEFITS : \$1.3 billion to \$7.6 billion annually, plus unquantifiable benefits.
(Includes public sector net benefits of \$300 million to \$1.5 billion annually.)**

occupational safety and health issues, COSHRA would promote a series of initiatives that would enable the country as a whole to address safety hazards and health risks on the job. By increasing OSHA's effectiveness and promoting an atmosphere of active work place commitment to reducing occupational hazards resulting in fatalities, injuries, or illnesses, the ultimate benefits could be much greater.

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Appendix A.

Sensitivity Analysis

In this section, assumptions and estimates underlying the analysis of the costs and benefits of COSHRA are examined in order to determine the effects that changes in these estimates may have on the assessment of aggregate benefits and costs and on the conclusions of this study.

Although it may be argued for any particular estimate that the number should be higher or lower, the set of estimates taken together comprise a reasonable characterization of the expected impacts of COSHRA. Thus, it would be inappropriate to calculate any potential effects by using only estimates at one extreme of possible ranges.

1. Percent reduction in injuries and illnesses.

If the estimated range of reductions in occupational injuries and illnesses as a result of COSHRA were expanded to 5 to 30 percent, the total estimated dollar savings would range from \$6 billion to \$37 billion. The expanded range of potential reductions would also imply a net benefit of COSHRA consisting of the sum of two components. First, the estimated net effect of the Bill may include a cost of up to \$4.7 billion or a savings of up to \$25.9 billion; second, from 435 to 2,326 fatalities and from 455,000 to 2.6 million injuries and illnesses would be prevented annually.

2. Numbers of Current Cases of Occupational Injury and Illness.

This study relied on estimates of injuries, illnesses, and fatalities published by the Bureau of Labor Statistics which reflect reported cases and are not likely to significantly overestimate the numbers of these cases. However, there could be millions of illnesses annually that are occupationally related without being reported as such, and 50,000 fatalities annually may be attributable to such illnesses.

Assuming that there could be anywhere from 50 percent less to 50 percent more unreported cases as reported cases of occupational injury or illness, the total number of all cases annually would include from 12 million to 20 million injuries and illnesses. In addition, assuming that the estimated number of occupationally related fatalities may be up to 50 percent higher or lower, the total number of cases annually would include from 25,000 to 75,000 fatalities.

On average, the costs associated with each illness may be at least as great as the costs associated with reported injuries and illnesses. Thus, using the National Safety Council estimate of \$115.9 billion for total costs associated with reported occupational injuries and illnesses as a base, the total annual costs associated with occupational injuries and illnesses may range from \$160 billion to over \$250 billion.

Assuming that COSHRA would be equally effective in the prevention of both types of cases (using an estimated reduction of 10 to 15 percent), the annual net benefits of COSHRA would include the prevention of 1.2 million to 3 million injuries and illnesses and the prevention of 2,500 to over 11,000 fatalities annually; in addition, the net benefits would include savings that range from \$16 billion to \$37 billion.

With the same set of assumptions, but using a reduction range of 5 to 30 percent, the annual net benefits of COSHRA would include the prevention of 600,000 to 6 million injuries and illnesses and the prevention of 1,250 to over 22,000 fatalities annually; in addition, the net benefits would include savings that range from \$8 billion to \$75 billion annually.

3. Estimates of Current Compliance with Subpart 1, Title 1.

If the estimated numbers of establishments currently not in compliance with these provisions were increased or decreased by 50 percent, then the estimated cost associated with this Subpart would also increase or decrease by 50 percent. The resulting range of costs for Subpart 1 of Title 1 would be approximately \$230 million to \$700 million.

4. Estimated Cost per Establishment for Subpart 1 of Title 1.

If the estimated costs of compliance with these provisions per establishment were increased or decreased by 50 percent, then the estimated cost associated with this Subpart would also increase or decrease by 50 percent. The resulting range of costs for Subpart 1 of Title 1 would be approximately \$230 million to \$700 million.

5. Estimated Costs Associated with COSHRA Training Requirements.

If the estimated number of additional hours of training required by COSHRA were 50 percent more or less than estimated, then the total annual costs associated with COSHRA training requirements would be increased or reduced by 50 percent, respectively. The range of these costs based on this range of estimates would be approximately \$1 billion to \$3 billion.

6. Public Sector Costs.

Costs imposed on the public sector by COSHRA were generally estimated to be comparable to the corresponding estimated costs for the private sector. If, for some reason, the public sector costs could be disproportionately higher or lower by 30 percent, then the estimated total costs for the public sector could range from \$1.1 billion to \$2.1 billion.

7. Costs Associated with Safety and Health Committees.

Assuming that the average number of hours per committee member estimated to be necessary to comply with COSHRA was 50 percent higher or lower than that estimated, the estimated total annual cost would change by the same proportion. Similarly, if the estimated number of establishments requiring committees were changed by plus or minus ten percent, the total annual cost would also change in the same direction by the same proportion. These ranges of estimates would imply a range for the total costs of \$560 million to \$2.1 billion.

8. Costs Associated with Provisions for Construction Safety.

Assuming that the average number of additional hours of time for a safety and health professional estimated to be necessary on each construction project to satisfy COSHRA requirements were increased or decreased by a factor of two, then the range for the total estimated cost associated with these provisions would be approximately \$100 million to \$400 million.

A COMPARISON OF EPF AND OSHA COSHRA STUDIES (Page 1 of 2)

Element of Study	EPF	OSHA	Comment
Benefits	Fails to assess benefits	1000 lives saved 1 million injuries prevented \$12 - 18 billion saved	EPF failure to assess benefits, by definition, results in a net cost to society. OSHA's balanced approach indicates likelihood of substantial net benefits to the economy, despite significant initial investment
Costs			
General Elements	Assumes no current COSHRA compliance. Assigns costs to all establishments	Estimates current practice which would appear to meet COSHRA requirements	Failure to factor in current practice dramatically overstates cost to the economy.
	Does not acknowledge existing OSHA requirements.	Attempts to estimate incremental burden on employers	Failure to consider existing OSHA requirements leads to incorrectly attributing costs to COSHRA.
	Applies estimates from large enterprises across all establishments	Attempts to estimate costs by size and type of establishment.	EPF definition of a "small" firm is 100 employees or fewer, although 75% of establishments have fewer than 10 employees. EPF information from even these establishments is never presented in a systematic or meaningful manner. Result: exaggerated per establishment estimates.
Title I	Total: \$21.3 billion	Total: \$2.6 billion	
Programs	Managerial Compensation: \$13.3 billion; based on 2 weeks managerial time per establishment per year. Indicates costs could be considerably less if special treatment for low risk establishments is granted, as provided for in the bill. (EPF numbers may not add precisely, apparently due to changes in labor rates between 1992 and 1993 studies)	Hazard Investigation (Subpart 1): \$465 million; assumes 1 to 80 hours per year, depending on size and type of establishment Employee Participation (Subpart 4): \$57 million; assumes 2 hours per year in most affected establishments (1 - 10 employees) Designating Employer Safety Representative (Subpart 6): \$110 million. Assumes 2 to 4 hours per establishment.	EPFs cost estimates of programs were based more on a broad reading of efforts required for a health and safety program, whereas OSHA attempted to outline the burdens created by specifics in the bill. Therefore, it is difficult to understand exactly how EPF derived their estimate of 2 weeks per year. However, in exploring the specifics of the bill, OSHA refrained from assigning general administrative time to a safety manager, as these costs are implicitly required by existing OSHA standards and are reflected under "Mitigation Costs". Costs for specific managerial activity as addressed in Title I are outlined to the left.
	First Aid: \$6.6 billion Assigns cost for health facilities: \$1000 per facility	Cost not assigned	As indicated in House Committee report, this provision simply incorporates existing OSHA requirements into a health and safety program, creating no new requirements.
	Training: \$6.2 billion Assumes four extra hours for all employees in first year; two hours annually thereafter. Average covers range from low-risk employees who will require "only minimal training" to those who "will require specific training with respect to specific hazards." Assumes 16 hours for committee member training	\$2 billion Assumes an average of 2 hours in all establishments annually. Factors in current practice in providing general safety training. Factors in current OSHA requirements. Assumes four hours for committee member training annually	The OSHA estimate factors in current OSHA requirements, such as Hazard Communication, and various hazard-specific requirements. Most employees are not in manufacturing or construction. Committee member training cost estimates are made on top of general employee training requirements, existing OSHA requirements, and the experience of qualified safety managers. Committee members will also likely serve for more than one year.
Title II	\$1.1 billion total; \$7.9 billion attributable to 5% of member time, or 1.1 days per month (106 hours a year), spent on committee activity. \$2.5 billion from miscellaneous support activities. (Unclear where \$0.7 billion extra came from in 1993 report)	\$1.2 billion total, includes committee and support activity. OSHA estimates range from 12 to 64 hours per member year required, depending on size of establishment	EPF time estimate arbitrarily picked out of a theoretical range. OSHA estimates reflect Oregon committee experience, while attempting to capture both the open-ended mandate of Title II and the varying levels of hazard complexities in larger and smaller establishments (particularly since manufacturing establishments tend to be relatively larger). OSHA estimate reflects some current compliance. Title II does not mandate an elaborate support system for committees
Committees			

A COMPARISON OF EPF AND OSHA COSHRA STUDIES (Page 2 of 2)

Element of Study	EPF	OSHA	Comment
Title IV Standards	Not assessed	\$500 million for PEL revisions; reflects estimates in regulatory analyses, factoring in additional compliance	Other standards required by COSHRA already under development by OSHA, and are therefore not unique to COSHRA.
Title VIII Recordkeeping & Reporting	\$3.6 billion Assumes one week additional clerical time per establishment per year	Cost not assigned	EPF provides no logical basis for their estimate. DOL believes Title VII imposes virtually no additional requirements on employers – the requirements are directed primarily at government agencies. Moreover, OSHA already has a recordkeeping standard under development – changes in requirements are forthcoming with or without COSHRA. Improved information for targeting inspections will benefit safety conscious employers by minimizing their odds of being inspected. Conscientious recordkeeping would help ensure an employer's compliance with Title I and thereby aid in reducing workers compensation costs.
Title XII Construction	\$6.4 billion Costs assumed to be double the burden of the rest of COSHRA on private industry as a whole (including construction)	\$212 million 3 hours extra estimated for project safety coordinator per project. 10 minutes notification time required on 10% of projects	No logical basis for EPF estimate. EPF makes no accounting for existing construction requirements (e.g., 1926.20–21), nor does it attempt to cost out specific provisions in Title XII. OSHA costs acknowledge other COSHRA provisions and reflect redundant existing construction requirements
Litigation Costs	\$8.6 billion	Does not assign litigation costs	Not costs of compliance with COSHRA. Compared to OSHA cost estimates, it would be cheaper to comply with COSHRA than to litigate. EPF litigation estimate pure speculation – magnitude of estimate makes little sense given EPF estimate of \$90 million in OSHA penalties arising from COSHRA. Moreover, cost estimates assume full compliance with COSHRA, so what is there to contest? Logically inconsistent – double counting costs. To the extent lawsuits are generated by lawsuits from employees, as opposed to litigating OSHA penalties, these represent transfers to employees, not a true cost to the economy. In any case, compliance with COSHRA will minimize any such costs.
Monetary Penalties	\$50 million	Not assigned	
Mitigation Costs (costs of correcting hazards in response to COSHRA, typically necessary to comply with existing OSHA standards)	Not formally estimated – imbedded in cost estimates of various provisions	\$3 to \$6 billion	Estimating this element separately necessary to gain perspective on the magnitude of costs reasonably attributable to COSHRA. Academic literature indicates that firms are now, in the wake of the original OSH Act, spending \$5 to \$10 billion on occupational safety and health. Given that half of employees are now covered under health and safety plans, a total cost estimate for COSHRA significantly beyond this seems implausible.
Costs to State and Local Governments	\$3.7 billion Same methodology as private sector applied to government employees and government reporting units (for Titles I and II)	\$1.6 billion \$0.2 from extension of coverage to non – state plan state public employees; \$1.4 billion from various COSHRA provisions based on per employee costs in the private sector	Methodology discussed above.

DOL CRITIQUE OF THE EMPLOYMENT POLICY FOUNDATION
ESTIMATES OF THE COST OF COSHRA

The Employment Policy Foundation (EPF) estimates that the Comprehensive Occupational Safety and Health Reform Act (COSHRA) will cost the private and public sectors about \$62 billion each year. DOL believes that EPF's costs are far too high. DOL finds that the main weaknesses in the EPF report are:

- EPF makes little allowance for companies which are already in compliance with part or all of the requirements of COSHRA. For instance EPF assumes that "virtually all employers" would spend significant new time and expense to develop a program or modify an existing one. EPF's estimates do not reflect the fact that several of OSHA's standards and 12 state laws already require employers to meet some of COSHRA's program requirements.
- EPF's estimates for training are too high. The estimate does not consider that employees in small firms and employees of safe firms of any size would need only minimal additional training. EPF also ignores the fact that many committee members are likely to serve for more than one year and would thus need less training after the initial year. EPF does not consider the experience gained by many employers who have already complied for years with training requirements in existing OSHA standards such as Hazard Communication.
- EPF fails to make any allowance for safety and health committees which are already in existence, either voluntarily or as required by nine states. EPF also assumes that committee members would have to spend 5% of their working time (100 hours) each year on committee activities. The length of time and frequency of meetings will vary according to the size and nature of the establishment. DOL believes much less time is required since there are many small, safe establishments, and almost 60 percent of committee members would be in establishments with less than 50 employees.
- EPF estimates that one additional week of clerical time per establishment would be needed each year to meet the requirement for recordkeeping and reporting. DOL believes that COSHRA imposes virtually no

additional requirements on employers, and thus EPF's estimate for Title VIII is much too high.

- EPF estimates that the construction provisions of the bill would be twice the costs of similar provisions in COSHRA for general industry. This estimate is not based on any analysis. It is a guess. EPF simply listed the construction requirements and assumed the costs would be double those for general industry.

- EPF claims the bill would cost \$62 billion yet fails to calculate any benefits from the legislation. The National Safety Council estimates the costs of occupational accidents to be almost \$116 billion each year. If COSHRA prevented fatalities, injuries and illnesses, it would surely reduce these costs. EPF entirely ignores this impact.

REVIEW OF EMPLOYMENT POLICY FOUNDATION ESTIMATES OF THE COST OF THE COMPREHENSIVE OCCUPATIONAL SAFETY AND HEALTH REFORM ACT

I. Summary

The Employment Policy Foundation (EPF) estimates that the Comprehensive Occupational Safety and Health Reform Act (COSHRA) will impose annual costs on the private and public sectors of about \$62 billion. The authors of the study consider this a conservative estimate, and also a rough estimate due to ambiguity in the legislation. EPF does not attempt to estimate the benefits of COSHRA.

This paper reviews the analysis underlying the EPF estimates of the costs of the individual provisions of COSHRA and concludes that EPF's estimates are much too high for several reasons:

1. EPF makes little allowance for firms already in compliance with part or all of the requirements of COSHRA.
2. EPF ignores the intent of the legislation for several provisions as described in the House Committee on Education and Labor report on the COSHRA of 1992 (H.R. 3160), identical in many respects to the current proposal.
3. Some of their "estimates" are in fact simply guesses based on earlier inflated cost impact estimates (see comments under Section III, item 10 below).
4. EPF relies on a "panel of experts" for estimates of the resources required to perform the functions required by COSHRA. These experts represent big business and in our view their estimates of the resource requirements imposed by particular provisions for the average firm do not reflect adequately the fact that over 75% of establishments have fewer than 10 employees.

A detailed critique of the EPF estimates is provided below.

II. Methodology and data sources

1. Basic methodology

EPF states that their basic approach is to identify the provisions in COSHRA that would require employer action or impose direct costs on employers, estimate the average cost per covered firm or employee of compliance with these provisions, and extrapolate these figures to the universe of firms and employees.

Comments - EPF presents a reasonable methodology, but they do not follow it in several instances (e.g., they simply make assumptions or guesses about the impact of certain

provisions - see comments below on their estimates of litigation costs and construction costs), and it should be modified in other instances to account for the large differences in impact by firm size (see comments below on EPF estimates for almost every COSHRA provision).

2. Basic data sources

A. Coverage and employee earnings - EPF utilized the Department of Commerce County Business Patterns and the Bureau of Labor Statistics Unemployment Insurance Reports as the source of the number of establishments, number of employees, and number of employees by establishment size. The 1987 Census of Agriculture provided data for that industry. Their methodological discussion of these data sets is good. EPF used the average hourly earnings data from the BLS for a non-managerial hourly wage for their cost estimates, and increased this by 25% to account for non-wage compensation. They doubled this to estimate a managerial wage.

Comment - EPF used appropriate data sources for coverage and earnings estimates.

B. Cost per firm/establishment - EPF conducted structured interviews with experts from 27 firms/associations to get an impression of the time and cost impacts of specific COSHRA provisions. They then "developed estimates based on what appeared to us to be the convergence of expert opinion represented by the respondents." (p. 58).

Comments - EPF does not identify the experts, but it appears from the description in their appendix that these individuals were generally selected from large firms. Thus, as noted below, most of the resource estimates seem more related to the needs of large firms than to small firms, which represent the vast majority of firms covered by OSHA and addressed by COSHRA.

III. Cost estimates for specific COSHRA provisions

1. Safety and health programs, excluding training

EPF estimate - \$21.31 billion

A. Number of programs required

According to their panel of experts, "virtually all employers" would experience "significant additional time and expense" to either develop a new program or modify an existing program. Thus 6.9 million programs would be needed (6.1 million nonfarm plus 0.8 million farms). This is

acknowledged to be an overestimate because the requirement applies to employers and the figure represents establishments. However, the establishment data are from 1990, and EPF suggests the growth in the number of establishments since 1990 would offset this overestimate.

Comments - Even if all employers with existing programs have to modify them, EPF's estimates do not allow for the amount of time and expense these employers currently apply to these programs. They, therefore, overestimate the additional time required by COSHRA.

B. Administrative costs

Based on discussions with experts, EPF estimates administration of the program would "require an average of two weeks per year of a middle manager's time." The basis for this figure is a statement (p. 12) that a number of large employers provided estimates ranging from 1/4 to a full person-year per facility, but that this was lowered in consideration of the large number of small employers in the universe.

Comments - The estimate of two weeks per year for the average firm is extremely high considering over 5 million firms (establishments) have fewer than 10 employees. Administrative resource requirements (identifying safety and health hazards; investigating illnesses, injuries and deaths; correcting hazards; assuring employee participation in the program; and designating a representative to do the above) should be very low for the vast majority of firms.

C. Emergency first-aid and other occupational health services

EPF's experts provided estimates ranging from 0 to \$25,000 per facility. EPF assumes an added cost of \$1,000 per establishment.

Comments - The House Committee on Education and Labor report on the COSHRA of 1992 (H.R. 3160) citing the emergency response and first aid requirement under OSHA's current rule (29 C.F.R. 1910.151) states that "This provision is not intended to impose upon employers a duty to provide occupational health services beyond the duty already imposed by the Act or OSHA regulations." (p. 54) The current COSHRA provision is the same, so it is reasonable to assume the legislative intent is the same. As a result cost estimates for this provision should only apply to employers newly covered by COSHRA, the public sector, though even here, it is very likely that most of these facilities would meet the requirement of the rule by having access to an infirmary, clinic or hospital.

In light of the Committee intent for this provision, the EPF cost estimates are far too high.

D. Exemption of low risk employers

EPF provides a separate estimate assuming the Secretary were to exempt all employers with fewer than 10 employees in low-risk industries (finance, insurance and real estate, and service industries) from the program requirements. The number of covered employers would drop from 6.6 million to 4.7 million, and costs from \$21.3 million to about \$15 million.

Comments - The Committee intent is to permit the Secretary to modify the program requirements, but not to permit exemptions. Costs of this provision would drop if the Secretary modified requirements for classes of employers, but the EPF estimates remain far too high for the reasons noted in A, B, and C above.

2. Training

EPF estimate - \$6.34 billion

Based on their discussions with experts, EPF concluded that all employees would need training above what is currently provided - an additional 4 hours of initial training and 2 hours of annual refresher training. Utilizing BLS new hire data, EPF estimated that 25% of employees would need initial training each year. Safety and Health committee members were estimated to need an additional 16 hours each year, and contract employees would get half the training (2 hours) of new hires. EPF added 5 percent for new hazards and standards, and 20 percent for instructional costs (citing OSHA RIAs).

Assuming the Secretary were to exempt small employers in low-risk industries reduces the estimate by only \$0.34 billion.

Comments - EPF relies on its experts for estimates of the additional training time required under COSHRA. As a result, these are high end estimates based more on the needs of large firms than small firms. Employees in small firms and safe firms of any size are likely to need only minimal additional training time, perhaps an hour. Safety and Health committee members must receive more detailed training, but, again, in small firms and safe firms they are likely to require only a few additional hours of training (EPF does not adjust its estimates for the fact that many committee members are likely to serve for more than one year, and would need much less training after their initial year on the committee).

Many OSHA standards covering large numbers of employers already

require substantial training (e.g., hazard communication, lockout/tagout). The general training required in COSHRA could be coordinated with the training already provided to these workers. The House Committee Report (p. 54) comments that it expects the Secretary and private firms to develop and market training materials that would be suitable for compliance with this provision. This should also minimize the costs associated with this provision.

3. Safety and Health Committees

EPF estimate - \$11.01 billion

A. Number of committee members required

EPF develops a count of the number of worksites with 10 or more employees from County Business Patterns (CBP) data, and estimates the aggregate number of committee members required by applying COSHRA requirements (assuming both parties select the maximum number of representatives authorized) to an establishment size distribution data from the CBP.

Comments - As noted for other provisions, EPF fails to make any allowance for current committees. Even if COSHRA forces revisions or expands the authority of currently operating committees, the time and resources currently expended on committees should be offset against the new requirements.

B. Committee time

Based on discussions with their industry representatives, EPF concludes that COSHRA committee requirements "would in most instances require major changes to the way existing Committees are organized and operated. This is true even for firms participating in OSHA model programs. In addition, where state laws now require safety and health committees, the requirements are generally much more flexible than those in COSHRA, and the Committees' rights are less comprehensive." Citing industry estimates that committee members would spend from 2-3 hours per month to full time on committee work, EPF "conservatively" assumes committee members would spend 5% of their working time on committee activities.

Comments - The assumption that each committee member would spend 5% of their time (100 hours per year) on committee work is excessive. The length and frequency of meetings and inspections will vary considerably according to the size and nature of each establishment. Again, the bulk of committees and committee members are located in smaller establishments. About 80 percent of establishments with 10 or more employees are in the 10-49 employee size group, accounting for about

60 percent of committee members. In small, safe establishments committee meetings and inspections are likely to be very short, perhaps an hour. Moreover, the House Committee Report notes that this provision enumerates committee rights, but does not require specific duties (e.g., they have the right to meet and inspect quarterly; they are not required to do so), and "The Committee intends that the rights of the joint committee may be exercised by individual members of the committee ..." (p. 55). In any case, an average of 4 meetings at 1-2 hours and 4 inspections at 2-4 hours, plus occasional observations of toxic substance measurements would require far less time than 100 hours per committee member.

C. Other committee related resource requirements

EPF assumes one week of a middle manager's time (administering nonunion selection of representatives, selecting employer representatives, responding to committee recommendations) and one week of clerical time (maintaining minutes and records) would be required to handle committee related requirements.

Comments - EPF provides no support for these estimates. Again, the size distribution of firms is such that a weeks time for a middle manager and a clerical employee is simply a gross overestimate. The Committee Report makes it clear that management's role in the selection of representatives is to be minimal - "Nor can management dominate or interfere with the selection process." (p. 56) Maintaining minutes and records is also likely to be a small burden. In fact the committee members themselves may choose to maintain the records; certainly no more than a few hours a year would be needed for the great majority of firms.

4. Recordkeeping and reporting

EPF estimate - \$3.6 billion

EPF's experts provided estimates ranging from virtually no additional time to two additional staff years. EPF estimated one additional week of clerical time per establishment.

Comments - OSHA's Office of Statistics has reviewed the recordkeeping requirements of COSHRA and has concluded that, with the exception of certain reports required of the construction industry, COSHRA will not require employers to record any additional information. OSHA expects to revise their method of collecting the data from employers (e.g., send copy of log, electronic transfer), which might involve a very minimal cost.

OSHA plans to obtain the required toxic substance information by

piggybacking on several EPA programs, and the required workers' compensation information from the state workers' compensation systems.

In short, the EPF estimate grossly overstates the impact of the recordkeeping provisions on employers.

5. Monetary penalties

EPF estimate - \$0.09 billion

EPF cites the likelihood of increased inspections, and provisions of COSHRA dealing with employee and victim involvement in the enforcement process, expanding the general duty clause, and setting daily penalties for failure to abate tagged operations as factors leading to increased penalties. They estimate penalties will double.

Comments - EPF's "estimate" is simply an assumption. In any case, employers can avoid monetary penalties by complying with the law.

6. Litigation

EPF estimate - \$8.55 billion

EPF cites several provisions of COSHRA likely to lead to increased litigation: general duty clause expansion, employee and victim involvement in the enforcement process, discrimination protections, increased penalties and criminal provisions. The 1992 version of the bill had a high risk notification provision. EPF cited a study of earlier high risk notification legislation that estimated litigation costs of \$5.7 billion (this figure is derived from litigation and compensation paid for asbestos claims - \$95,000 per claim). EPF simply assumed that the additional litigation costs of the other provisions would collectively equal this one provision and doubled that estimate for a total of \$11.4 billion.

COSHRA does not include high risk notification, so EPF cut its estimate by \$5.7 billion. However, they assume the new provision setting a minimum penalty of \$1,000 for serious violations will increase litigation, and they contend that assigning a "project constructor" responsibility for safety and health on each construction worksite may permit injured workers to get around workers' compensation as an exclusive remedy for work-related injuries. EPF assumes these factors will increase litigation by half of the \$5.7 billion, for a total of \$8.55 billion.

Comments - DOL attorneys do not see any reason for the project constructor provision to have an effect on lawsuits. While there may be some increased litigation, as is obvious from the

description above, the EPF estimates are simply guesses. Moreover, as with penalties, employers can largely avoid litigation costs by complying with the legislation.

7. State and local government costs

EPF estimate - \$4.10 billion

EPF assumes the 205,000 reporting units would incur the same program and committee costs as the private sector.

Comments - The same comments apply here as apply to EPF's private sector estimates for programs and committees noted above, and, again, EPF makes no allowance for units already having programs and committees.

8. OSHA Administration costs

EPF estimate - \$0.48 billion

EPF cites OSHA estimates of funding requirements for the previous year's reform bill (\$337 million) and for the earlier construction legislation (\$137 million) to generate an estimate of \$475 million.

Comments - These estimates were based on the previous administration's interpretation of the legislation. In any case, OSHA's budget will be determined by the Congress, not by COSHRA.

9. Definition of significant risk

The House bill sets 1 in 1 million as nonsignificant for health standards. EPF notes this could increase the number of substances needing regulation and increase a variety of costs. No estimate provided.

10. Construction

EPF estimate - \$6.4 billion

EPF states that the provisions uniquely applicable to construction should generate at least twice the cost of general COSHRA requirements applicable to all industries. Their aggregate estimate for general COSHRA requirements is 2.6% of payroll; so the construction provisions would be at least 5.2% of payroll, or \$6.4 billion. In supporting their estimate as reasonable, EPF cites an analysis by the National Association of Home Builders that estimated that the on-site labor bill for residential construction would increase by 25%.

Comments - This is essentially a guess. EPF did not attempt to cost the requirements of the construction section of COSHRA.

They simply listed the requirements and assumed costs would be twice that estimated for general COSHRA requirements. Even if one were to grant their assumption, EPF's estimates of the costs of the general requirements of COSHRA are far too high (see above comments on various provisions), so the 5.2% estimate for construction is also far too high.