

FINAL REGULATORY ECONOMIC ANALYSIS

for

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Hazard Communication (HazCom)

Office of Standards, Regulations, and Variances

Mine Safety and Health Administration

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## I. EXECUTIVE SUMMARY

### INTRODUCTION

This Regulatory Economic Analysis (REA) addresses the benefits and compliance costs associated with our (MSHA's) interim final hazard communication (HazCom) rule. The HazCom rule is being promulgated in order to increase knowledge and awareness of chemical hazards in the coal and metal and nonmetal (M/NM) mining industries.

The major provisions of the interim final rule are that operators (mine operators and independent contractors covered by the rule) must: identify chemicals at the mine and determine if they present a physical or health hazard to miners; develop, implement, and maintain a written HazCom program; mark containers of hazardous chemicals to identify them as hazardous chemicals and provide appropriate hazard warnings; have a Material Safety Data Sheet (MSDS) for each hazardous chemical at the mine; establish a training program which ensures that miners understand the hazardousness of each chemical in their work area; and provide miners, miners' representatives, and customers access to written materials that are part of the HazCom program.

Sections 101 and 115 of the Federal Mine Safety and Health Act of 1977 provide the authority for this rulemaking. Executive Order 12866 requires that regulatory agencies complete a Regulatory Economic Analysis (REA) for any rule having major

economic consequences for the national economy, an individual industry, a geographic region, or a level of government. The Regulatory Flexibility Act (RFA) similarly requires regulatory agencies to consider the impact of the rule on small entities. This interim final REA and regulatory flexibility certification have been prepared to fulfill the requirements of Executive Order 12866 and the RFA. We have determined that the HazCom rule will not result in major cost increases nor have an effect of \$100 million or more on the economy. We further certify that the HazCom rule will not impose a significant economic impact on a substantial number of small entities.

#### MINING SECTORS AFFECTED

The interim final HazCom rule will be applicable to all underground and surface coal and M/NM mines. Therefore, the rule is applicable to 2,459 surface and underground coal mines; 3,801 coal contracting firms; 11,337 surface and underground M/NM mines; and 3,569 M/NM contracting firms.

#### BENEFITS

We conclude that miners face a significant risk from exposure to hazardous chemicals. We further conclude that compliance with this rule will prevent a substantial number of acute illnesses, injuries, and fatalities, as well as long-term cancer cases.



Based on our review and analysis of the available data, we have determined that, in terms of acute health effects, compliance with this rule will prevent one fatality every four years beginning when the rule takes effect. Also, an annual average of 67 chemically-related miner acute injuries and illnesses will be prevented by compliance with this rule. About 17 of these 67 will be prevented in coal mines while another 50 will be prevented in M/NM mines. Of the 67 prevented chemically-related acute injuries and illnesses, 38 will be lost workday injuries and illnesses involving 462 lost workdays, and 29 will be non-lost workday injuries and illnesses.

In addition, to the one fatality saved every four years noted above, MSHA expects its rule will prevent a total of 76 cancer deaths, 51 in coal operations and 25 in M/NM operations, from year 11 through year 20 after promulgation and an additional 13.8 cancer deaths every year thereafter.

These benefits are discussed in greater detail in Chapter III of this REA.

#### COMPLIANCE COSTS

We estimate that compliance with the interim final rule will cost about \$5.7 million yearly, \$4.0 million for the M/NM mining industry and \$1.7 million for the coal mining industry.

For the purpose of the cost analysis, we used our traditional definition of a small mine as one employing fewer than 20 miners.

Based on 1998 data, the interim final rule will cover about 21,200 operators, including independent contractors. Of this total, about 17,900 (or 84 percent) employ fewer than 20 miners. The estimated total yearly cost of complying with the interim final rule will be \$3 million for small M/NM operators and \$1 million for small coal operators. Table IV-1, in Chapter IV of this REA, summarizes the estimated yearly compliance costs of the interim final rule by mine size and by provision. These estimates reflect first-year compliance costs of \$15.0 million and compliance costs of \$4.7 million for the second year and each succeeding year.

We have determined that compliance by the mining industry with the requirements of the interim final rule is both technologically and economically feasible.

#### EXECUTIVE ORDER 12866 AND REGULATORY FLEXIBILITY ACT

Executive Order (E.O.) 12866 requires that regulatory agencies assess both the costs and benefits of intended regulations. We have fulfilled this requirement for the interim final rule and determined that it is not an economically significant regulatory action pursuant to § 3(f)(1) of E.O. 12866. However, we determined that this interim final rule is significant under § 3(f)(4) of E.O. 12866, which defines a significant regulatory action as one that may "...raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order."

The Regulatory Flexibility Act (RFA) requires regulatory agencies to consider a rule's economic impact on small entities. Under the RFA, we must use the Small Business Administration's (SBA's) criterion for a small entity in determining a rule's economic impact unless, after consultation with the SBA Office of Advocacy, we establish an alternative definition for a small mine and publish that definition in the Federal Register for notice and comment. For the mining industry, SBA defines "small" as a mine with 500 or fewer workers. We traditionally have considered small mine operators to be those with fewer than 20 workers. To ensure that the interim final HazCom rule conforms with the RFA, we have analyzed its economic impact on mine operators with 500 or fewer workers, as well as on those with fewer than 20 workers.

We have determined that the interim final HazCom rule will not have a significant economic impact on small coal or M/NM mine operators, whether a small mine operator is defined as one with 500 or fewer workers or one with fewer than 20 workers.

Using the Agency's traditional definition of a small mine operator, which is one employing fewer than 20 workers, the estimated yearly cost of the interim final HazCom rule on small coal mine operators will be about \$0.95 million. Using SBA's definition of a small mine operator, which is one employing 500 or fewer workers, the estimated yearly cost of the interim final HazCom rule on small coal mine operators will be about \$1.7 million. These cost figures compare to estimated annual

revenues of approximately \$7.2 billion for coal mine operators employing fewer than 20 workers, and about \$18.3 billion for coal mine operators employing 500 or fewer workers.

Using the Agency's traditional definition of a small mine operator, which is one employing fewer than 20 workers, the estimated yearly cost of the interim final HazCom rule on small M/NM mine operators will be about \$3.0 million. Using SBA's definition of a small mine operator, which is one employing 500 or fewer workers, the estimated yearly cost of the interim final HazCom rule on small M/NM mine operators will be about \$4.0 million. These cost figures compare to estimated annual revenues of approximately \$11.9 billion for M/NM mine operators that employ fewer than 20 workers, and about \$35.1 billion for M/NM mine operators employing 500 or fewer workers.

Based on our analysis, we have determined that the interim final HazCom rule will not have a significant economic impact on a substantial number of small entities. We have so certified these findings to the Small Business Administration. The factual basis for this certification is discussed in Chapter V of this REA.

## II. INDUSTRY PROFILE

### INTRODUCTION

This industry profile provides background information about the structure and economic characteristics of the mining industry. It provides data on the number of mines, their size, and the number of employees.

### THE STRUCTURE OF THE MINING INDUSTRY

We divide the mining industry into two major segments based on commodity: (1) coal mines and (2) metal and nonmetal (M/NM) mines. These segments are further divided based on type of operation (e.g., underground mines or surface mines). We maintain our own data on mine type, size, and employment, and we also collect data on the number of independent contractors and contractor employees by major industry segment.

We categorize mines by size based on employment. For the past 20 years, for rulemaking purposes, we have consistently defined a small mine to be one that employs fewer than 20 workers and a large mine to be one that employs 20 or more workers. However, to comply with the requirements of the Small Business Regulatory Enforcement Fairness Act (SBREFA) amendments to the Regulatory Flexibility Act (RFA), we must use the Small Business Administration's (SBA's) criteria for a small entity when determining a rule's economic impact. For the mining industry,

SBA defines a small entity as one which employs 500 or fewer employees.

Table II-1 presents the total number of small and large mines and the corresponding number of miners, excluding contractors, for the coal mining segment. This table uses three mine size categories based on the number of employees: (1) fewer than 20 employees (our traditional definition of small), (2) 20 to 500 employees (small according to SBA's definition, but not MSHA's), and (3) more than 500 employees.

**Table II-1: Distribution of Operations and Employment (Excluding Contractors) by Mine Type and Size; Coal, 1998**

Mine Type	Size of Coal Mine						All Coal Mines	
	< 20 Employees		20 to 500* Employees		> 500* Employees			
	Mines	Employees	Mines	Employees	Mines	Employees	Mines	Employees
Underground	382	3,751	522	39,566	6	3,459	910	46,776
Surface	1,056	6,491	492	31,737	1	510	1,549	38,738
Office Workers	-	487	-	3,389	-	189	-	4,065
<b>Total Coal</b>	<b>1,438</b>	<b>10,729</b>	<b>1,014</b>	<b>74,692</b>	<b>7</b>	<b>4,158</b>	<b>2,459</b>	<b>89,579</b>

(\*) Based on MSHA's traditional definition, large mines include all mines with 20 or more employees.

Source: U.S. Department of Labor, Mine Safety and Health Administration, Office of Standards, Regulations, and Variances based on 1998 MIS data, CM441/CM935LA cycle 1998/198. Data for total office workers from Mine Injury and Worktime Quarterly (1998 Closeout Edition) table 1, p.5.

Table II-2 presents corresponding data on the number of independent contractors and their employees working in the coal mining segment.

**Table II-2: Distribution of Contractors and Contractor Employment  
by Size of Operation; Coal, 1998**

Contractors	Size of Contractor, Coal						All Contractors	
	< 20 Employees		20 to 500* Employees		> 500* Employees			
	Firms	Employees	Firms	Employees	Firms	Employees	Firms	Employees
Underground	1,077	4,078	79	4,131	0	0	1,156	8,209
Surface	2,403	9,969	242	11,618	0	0	2,645	21,587
Office Workers	-	1,064	-	1,192	-	0	-	2,256
<b>Total Contractors</b>	<b>3,480</b>	<b>15,111</b>	<b>321</b>	<b>16,941</b>	<b>0</b>	<b>0</b>	<b>3,801</b>	<b>32,052</b>

(\*) Based on MSHA's traditional definition, large contractors include contractors with 20 or more employees.

Source: U.S. Department of Labor, Mine Safety and Health Administration, Office of Standards, Regulations, and Variances based on 1998 Final MIS data, CT441/CT935LA cycle 1998/198. Data for total office workers from Mine Injury and Worktime Quarterly (1998 Closeout Edition) Table 5, p.20.

Table II-3 presents the total number of small and large mines and the corresponding number of miners, excluding contractors, for the M/NM mining segment. The M/NM mining segment consists of metal mines (copper, iron ore, gold, silver, etc.) and nonmetal mines (stone including granite, limestone, dolomite, sandstone, slate, and marble; sand and gravel; and others such as clays, potash, soda ash, salt, talc, and pyrophyllite.) As Table II-3 indicates, about 98 percent of all M/NM mines are surface mines and employ some 90 percent of all M/NM miners, excluding office workers. Almost all M/NM mines are small according to SBA's definition (500 or fewer employees).

**Table II-3: Distribution of Operations and Employment (Excluding Contractors)  
by Mine Type and Size; M/NM, 1998**

Mine Type	Size of M/NM Mine						All M/NM Mines	
	< 20 Employees		20 to 500* Employees		> 500* Employees			
	Mines	Employees	Mines	Employees	Mines	Employees	Mines	Employees
Underground	134	1,054	124	11,299	6	4,594	264	16,947
Surface	9,635	54,356	1,419	79,675	19	16,836	11,073	150,867
Office Workers	-	9,160	-	15,040	-	3,543	-	27,743
<b>Total M/NM</b>	<b>9,769</b>	<b>64,570</b>	<b>1,543</b>	<b>106,014</b>	<b>25</b>	<b>24,973</b>	<b>11,337</b>	<b>195,557</b>

(\*) Based on MSHA's traditional definition, large mines include all mines with 20 or more employees.

Source: U.S. Department of Labor, Mine Safety and Health Administration, Office of Standards, Regulations, and Variances, based on 1998 Final MIS data, CM441/CM935LA cycle 1998/198. Data for total office workers from Mine Injury and Worktime Quarterly (1998 Closeout Edition) Table 2, p. 6.

Table II-4 presents corresponding data on the number of independent contractors and their employees working in the M/NM mining segment.

**Table II-4: Distribution of Contractors and Contractor Employment by Size of Operation; M/NM, 1998**

Contractors	Size of Contractor, M/NM						All Contractors	
	< 20 Employees		20 to 500* Employees		> 500* Employees			
	Firms	Employees	Firms	Employees	Firms	Employees	Firms	Employees
Underground	399	1,717	35	1,639	0	0	434	3,356
Surface	2,783	14,155	349	17,979	3	2,560	3,135	34,694
Office Workers	-	649	-	802	-	105	-	1,556
<b>Total Contractors</b>	<b>3,182</b>	<b>16,521</b>	<b>384</b>	<b>20,420</b>	<b>3</b>	<b>2,665</b>	<b>3,569</b>	<b>39,606</b>

(\*) Based on MSHA's traditional definition, large contractors include all contractors with 20 or more employees.

Source: U.S. Department of Labor, Mine Safety and Health Administration, Office of Standards, Regulations, and Variances, based on 1998 Final MIS data, CT441/CT935LA cycle 1998/198. Data for total office workers from Mine Injury and Worktime Quarterly (1998 Closeout Edition) Table 6, p.21.



## ECONOMIC CHARACTERISTICS

The U.S. mining industry's 1998 coal and M/NM production was estimated at about \$59.7 billion, or 0.7 percent of Gross Domestic Product (GDP). Coal mining contributed about \$19.7 billion to the GDP, and M/NM mining, about \$40.0 billion.<sup>1</sup> Some \$17.8 billion were contributed by the metal mining subsector while the remaining \$22.2 billion were provided by the nonmetal or industrial mineral mining subsector. Recycled metal and mineral materials (scrap iron, aluminum, glass, etc.) accounted for an additional \$15 billion.<sup>2</sup>

## STRUCTURE OF THE COAL MINING SEGMENT

Agency data indicate that there were about 2,459 coal mines in 1998. When applying our own definition of a small mine (fewer than 20 workers), 1,438 (about 58 percent) were small mines and 1,021 (about 42 percent) were large.<sup>3</sup> Using SBA's definition, only 7 coal mines (0.3 percent) were large.

These data show that employment at coal mines in 1998 was about 89,600, of which about 10,700 (12 percent) worked at small mines and 78,900 (88 percent) worked at large mines, based on our

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<sup>1</sup> U.S. Department of the Interior, U.S. Geological Survey, January 1999, pp. 3 and 6.

<sup>2</sup> U.S. Department of the Interior, U.S. Geological Survey, January 1999, p. 3.

<sup>3</sup> U.S. Department of Labor, MSHA, 1998 Final MIS data CM441 cycle 1998/198.

own definition of small and large mines.<sup>4</sup> Using SBA's definition, about 95 percent of coal miners worked at small mines and about 5 percent worked at large mines. We estimate that, on average, each small coal mine employs 7 workers and each large coal mine employs 74 workers, based on our own definition. Using SBA's definition, there are, on average, 33 workers in each small coal mine and 567 workers in each large coal mine.

#### ECONOMIC CHARACTERISTICS OF THE COAL MINING SECTOR

We classify the U.S. coal mining segment into two major commodity groups: bituminous and anthracite. About 92 percent of total coal production is bituminous. The remaining 8 percent is the product of lignite and anthracite mines.<sup>5</sup>

Mines east of the Mississippi accounted for about 49 percent of coal production in 1998. For the period 1949 through 1998, coal production east of the Mississippi River fluctuated relatively little, from a low of 395 million tons in 1954 to a high of 630 million tons in 1990; 1998 production was estimated at 571 million tons. During this same period, however, coal production west of the Mississippi increased each year from a low of 20 million tons in 1959 to a record high of 548 million tons in

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<sup>4</sup> U.S. Department of Labor, MSHA, 1998 Final MIS data CM441 cycle 1998/198.

<sup>5</sup> U.S. Department of Energy, Energy Information Administration, Annual Energy Review 1998, July 1999, p.191.

1998.<sup>6</sup> The growth in western coal has been due, in part, to environmental concerns that led to increased demand for low-sulfur coal, which is in abundance in the West.

In addition, surface mining, with its higher average productivity, is much more prevalent in the West. Surface mining methods for coal, which include drilling and blasting, are also practiced in surface mines for other commodity types. Most surface mines use front-end loaders, bulldozers, shovels, or trucks for haulage.

The U.S. coal sector produced a record 1.12 billion short tons of coal in 1998, at an average price of \$17.58 per ton. The total value of U.S. coal production in 1998 was estimated at \$19.7 billion. Based on our own definition of small and large mines, small mines produced about 4 percent (40 million tons) of domestic coal production valued at \$0.7 billion, and large mines produced about 96 percent (1.08 billion tons) valued at \$19.0 billion.<sup>7</sup>

The U.S. coal industry enjoys a fairly constant domestic demand. Over 90 percent of U.S. coal demand was accounted for by electric utilities in 1998.<sup>8</sup> Due to the high conversion costs of

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<sup>6</sup> U.S. Department of Energy, Energy Information Administration, Annual Energy Review 1998, July 1999, p.191.

<sup>7</sup> U.S. Department of Energy, Energy Information Administration, Annual Energy Review 1998, July 1999, p.203, U.S. Department of Energy, Energy Information Administration, Coal Industry Annual 1997, December 1998, pp. ix and 154, and U.S. Department of Labor, Mine Safety and Health Administration, Division of Mining Information Systems, 1998 Final MIS data (quarter 1 - quarter 4) CM441 cycle 1998/198.

<sup>8</sup> U.S. Department of Energy, Energy Information Administration, Annual Energy Review 1998, July 1999, p. 187.

changing a fuel source, MSHA does not expect a substantial change in coal demand by utility power plants in the near future.<sup>9</sup>

#### STRUCTURE OF THE METAL/NONMETAL MINING SECTOR

The M/NM mining sector consists of about 80 different commodities including industrial minerals. There were about 11,337 M/NM mines in the U.S. in 1998, of which 9,769 (86 percent) were small mines and 1,568 (14 percent) were large mines, using our traditional definition of small and large mines. However, based on SBA's definition, only 25 (0.2 percent) were large mines.<sup>10</sup>

These data indicate employment at M/NM mines in 1998 was about 195,557, of which about 64,570 miners (33 percent) worked at small mines and 130,987 miners (67 percent) worked at large mines, using our definition. Based on SBA's definition, however, about 170,584 miners (87 percent) worked at small mines and 24,973 miners (13 percent) worked at large mines. Using our own definition, the average employment is 6 miners at a small M/NM mine and 72 miners at a large M/NM mine.<sup>11</sup> Using SBA's definition, there are, on average, 13 workers in each small M/NM mine and 857 workers in each large M/NM mine.

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<sup>9</sup> U.S. Department of Energy, Energy Information Administration, Annual Energy Outlook 2000, p. 68.

<sup>10</sup> U.S. Department of Labor, MSHA, 1998 Final MIS data CM441 cycle 1998/198.

<sup>11</sup> U.S. Department of Labor, MSHA, 1998 Final MIS data CM441 cycle 1998/198.

## Metal Mining

There are about 24 metal commodities mined in the U.S. Underground metal mines use a few basic mining methods, such as room and pillar and block caving. The larger mines rely more on hydraulic drills and track-mounted haulage, and the smaller underground metal mines rely more on hand-held pneumatic drills. Surface metal mines normally engage in drilling, blasting, and hauling; such processes are typical in all surface mines, irrespective of commodity types. Surface metal mines in the U.S. rank among some of the largest mines in the world.

Metal mines constitute about 3 percent of all M/NM mines and employ about 23 percent of all M/NM miners. Under our traditional definition of a small mine, about 45 percent of metal mines are small and employ about 2 percent of all miners working in metal mines. Using SBA's definition, about 94 percent of metal mines are small and employ about 53 percent of all miners working in metal mines.<sup>12</sup>

## Nonmetal Mining

For enforcement and statistical purposes, MSHA separates stone and sand and gravel mining from other nonmetal mining. There are about 35 other nonmetal commodities, not including stone, and sand and gravel. Nonmetal mining uses a wide variety

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<sup>12</sup> U.S. Department of Labor, Mine Safety and Health Administration, Office of Program Policy Evaluation, Mine Employment Size-Average Employment 1998.

of underground mining methods such as continuous mining (similar to coal mining), in-situ retorting, block caving, and room and pillar. The mining method is dependent on the geologic characteristics of the ore and host rock. Some nonmetal operations use kilns and dryers in ore processing. Ore crushing and milling are processes common to both nonmetal and metal mining.

As with underground mining, there is a wide range of mining methods utilized in extracting minerals by surface mining. In addition to drilling and blasting, other mining methods, such as evaporation and dredging, are also used, depending on the ore formation.

Nonmetal mines comprise about 7 percent of all M/NM mines and employ about 14 percent of all M/NM miners. Using our own definition of a small mine, about 66 percent of nonmetal mines are small and employ about 12 percent of all miners working in nonmetal mines. Using SBA's definition, about 99 percent of nonmetal mines are small and employ about 92 percent of all miners working in nonmetal mines.<sup>13</sup>

### Stone Mining

In the stone mining subsector, there are eight different stone commodities, of which seven are further classified as either

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<sup>13</sup> U.S. Department of Labor, Mine Safety and Health Administration, Office of Program Policy Evaluation, Mine Employment Size-Average Employment 1998.

dimension stone or crushed and broken stone. Stone mining in the U.S. is predominantly by quarrying, with only a few slight variations. Crushed stone mines typically drill and blast, while dimension stone mines generally use channel burners, drills, or wire saws. Diesel powered-haulage is used to transfer the broken rock from the quarry to the mill where crushing and sizing are done.

Stone mines constitute about 33 percent of all M/NM mines, and employ about 41 percent of all M/NM miners. Using our own definition of a small mine, about 71 percent of stone mines are small and employ about 29 percent of all miners working in stone mines. Using SBA's definition, about 99.9 percent of stone mines are small and employ about 99 percent of all miners working in stone mines.<sup>14</sup>

### Sand & Gravel Mining

Sand and gravel, for construction, is generally extracted from surface deposits using dredges or draglines. Further preparation involves washing and screening. As in other surface mining operations, sand and gravel uses diesel-driven machines, such as front-end loaders, trucks, and bulldozers, for haulage. The preparation of industrial sand and silica flour involves the use of crushers, ball mills, vibrating screens, and classifiers.

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<sup>14</sup> U.S. Department of Labor, Mine Safety and Health Administration, Office of Program Policy Evaluation, Mine Employment Size-Average Employment 1998.

The sand and gravel subsector represents the single largest commodity group in the U.S. mining industry when the number of mining operations is being considered. Sand and gravel mines comprise about 57 percent of all M/NM mines, and employ about 22 percent of all M/NM miners. Using our own definition of a small mine, about 95 percent of sand and gravel mines are small and employ about 76 percent of all miners working in sand and gravel mines. Using SBA's definition, almost 100 percent of sand and gravel mines are small and employ approximately 42,800 miners.<sup>15</sup>

#### ECONOMIC CHARACTERISTICS OF THE METAL/NONMETAL MINING INDUSTRY

The value of all M/NM mining output in 1998 was estimated at \$40 billion.<sup>16</sup> Metal mines, which include copper, gold, iron, lead, silver, tin, and zinc mines, contributed \$17.8 billion in 1998. Nonmetal production was valued at \$22.2 billion: \$9.0 billion from stone mining, \$5.2 billion from sand and gravel, and \$8 billion from other nonmetals such as potash, clay, and salt.

The end uses of M/NM mining output are diverse. For example, iron and aluminum are used to produce vehicles and other heavy duty equipment, as well as consumer goods such as household

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<sup>15</sup> U.S. Department of Labor, Mine Safety and Health Administration, Office of Program Policy Evaluation, Mine Employment Size-Average Employment 1998.

<sup>16</sup> U.S. Department of Energy, Energy Information Administration, Annual Energy Review 1998, July 1999, pp. 3, 6, 142, 144, 158, and 160.



equipment and soft drink cans. Other metals, such as uranium and titanium, have more limited uses. Nonmetals, like cement, are used in construction while salt is used as a food additive and for road de-icing in the winter. Soda ash, phosphate rock, and potash also have a wide variety of commercial uses. Stone and sand and gravel are used in numerous industries and extensively in the construction industry.

A detailed economic picture of the M/NM mining industry is difficult to develop because most mines are either privately held corporations or sole proprietorships, or subsidiaries of publicly owned companies. Privately held corporations and sole proprietorships are not required to make their financial data available to the public. Further, parent companies are not required to separate financial data for subsidiaries in their reports to the Securities and Exchange Commission. As a result, financial data are available for only a few M/NM companies, and these data are not representative of the entire industry.

### III. BENEFITS

#### INTRODUCTION

We consider the promulgation of this rule necessary to ensure that those working in the mining industry are informed about the chemical hazards present in their work environments. Mine operators and independent contractors also need to be aware of the acute safety and health hazards, as well as the chronic health hazards, from chemicals to which their employees may be exposed. A proper understanding of these hazards will motivate employers to reduce potential employee exposures and motivate employees to use proper work practices to minimize their potential exposures. These protective measures should result in fewer employee fatalities, injuries, and illnesses from exposures to hazardous chemicals.

This chapter contains our analysis of the potential benefits associated with this rule. We first present the available data concerning employee fatalities, injuries, and illnesses that are associated with exposures to hazardous chemicals in the mining environment. We then discuss and estimate the possible long-term cancer risk to mine employees. Finally, we estimate the potential benefits from compliance with this rule.

## METHODOLOGY

In order to estimate the potential benefits from full compliance with this rule, we first establish the baseline from which the benefits are calculated. We next describe the potential types of adverse health effects associated with exposures to hazardous chemicals. We then discuss the databases used to estimate the numbers of employee fatalities, injuries, and illnesses associated with occupational exposures to hazardous chemicals. Finally, we estimate the numbers of fatalities, injuries, illnesses, and cancer cases that would be prevented by full compliance with this rule.

## BASELINE

We use current industry practices as our baseline for estimating the numbers of chemically-related occupational fatalities, injuries, and illnesses potentially preventable by compliance with this rule. The mines whose current industry practices form the baseline include mine operators and independent contractors that have not established hazard communication programs, and mines that have established hazard communication programs either (a) voluntarily (e.g., company policy) or (b) in response to state employee right-to-know laws or (c) in response to the Occupational Safety and Health Administration (OSHA) hazard communication rule. Because these existing hazard communication programs were developed in the absence of this rule, the

fatalities, injuries, and illnesses being prevented because of these existing programs are not included as part of the estimated benefits attributable to this rule.

#### ADVERSE HEALTH EFFECTS ASSOCIATED WITH HAZARDOUS CHEMICALS

The two types of potential adverse health effects associated with exposure to hazardous chemicals are (1) acute health effects and (2) chronic health effects.

An acute health effect is a fatality, injury, or illness that occurs immediately or shortly after an exposure to a hazardous chemical. Acute health effects can be mild or severe. They can also be temporary or permanent. An example of an acute health effect due to exposure to a hazardous chemical is poisoning from exposure to cyanide, which is used to separate gold (and other metals) from ore. Another example is a common chemical burn from physical contact with a chemical used in mining, such as wet cement or lime.

A chronic health effect is slow to develop, shows little change or progresses slowly, and continues for a long, drawn out period of time. In the mining industry, most chronic diseases involve a latency period of years after exposure to a hazardous chemical before the illness is evident. Most chronic health effects are consequences of long-term exposures to one or more hazardous chemicals. Chronic health effects are typically severe and permanent, although some are reversible. Some examples of

chronic health effects due to exposure to hazardous substances in mining are cancer, black lung disease, and silicosis.

#### DATA SOURCES

We used seven data sources to estimate the number of employee fatalities, injuries, and illnesses that could be prevented by full compliance with this rule. These data sources are:

(1) MSHA's Directorate of Program Evaluation and Information Resources, Office of Program Policy Evaluation [PEIR or 1];

(2) the Bureau of Labor Statistics (BLS) 1998 annual report entitled Occupational Injuries and Illnesses in the United States by Industry [2];

(3) the American Cancer Society's Cancer Facts and Figures - 1999 [3];

(4) OSHA's Final Regulatory Impact Analysis (RIA) of its 1983 Hazard Communication Standard [4];

(5) OSHA's Final RIA of its 1988 Hazard Communication Standard [5];

(6) Civilian Labor Force and Employment (U.S. Department of Commerce, 1998) [6]; and

(7) Deaths from 282 Selected Causes by 5-Year Age Groups, Race, and Sex, Each State and the District of Columbia, 1995, 1996, and 1997 (National Center for Health Statistics) [7].

The characteristics of the BLS data [2] and the American Cancer Society data [3] are well-known and require no additional description.

Two sets of information from the OSHA RIAs [4 and 5] were particularly useful for deriving estimates of the benefits of this interim final HazCom rule: (1) OSHA's adjustments for the under-

reporting of occupationally-related illnesses and (2) OSHA's estimates of the potential preventability of chemically-related accidents. OSHA selected these estimates after reviewing estimates from several different sources. Unfortunately, we are not aware of any follow-up studies evaluating the validity of these estimates. Therefore, in the absence of dissenting analyses, we adopted, where appropriate, these OSHA estimates.

By way of introduction to PEIR databases, coal mine operators were required by law in 1970 and metal and nonmetal (M/NM) mine operators were required by law in 1972 to investigate and to report to the Department of the Interior's Mining Enforcement and Safety Administration (MESA) each accident, fatality, injury, and illness occurring at a mine site. With the creation of MSHA in 1977, these reports were transferred to the Directorate of Technical Support's Denver Safety and Health Technology Center. We developed improved reporting methods that incorporate a narrative description of the incident. Each accident file also contains such background information as the mine identification number, accident location, and commodity mined, as well as information concerning the type of accident, nature of injury, part of body, degree of injury, source of injury, and miner activity at the time of the accident.

PEIR's fatality reports include nearly every traumatic miner fatality because such a fatality is a clearly defined event, and mine operators have reported nearly all of these fatalities to

MSHA. Because each reported fatality generates an on-site investigation by MSHA personnel, the fatality data files provide an accurate report of both the number and the causes of traumatic miner fatalities. The significance of these fatality data files for this analysis is that they include all miner fatalities caused by an acute exposure to a hazardous chemical.

Similarly, PEIR's injury reports include most traumatic miner injuries. We believe that these data provide a reasonably accurate estimate of the number of miner injuries because the typical traumatic injury is generally a well-defined event. That is, there is generally little question as to whether an injury occurred, although there are situations (e.g., back injuries) in which one incident may lead to a series of repeated injuries and there may be some question as to whether each repeated injury needs to be reported to us. Thus, to the extent that there may be significant under-reporting of acute injuries, it would generally occur because the mine operator did not report the injury, rather than because the mine operator was uncertain whether an injury occurred. Because we believe that mine operators have been reporting most of these acute injuries, we expect that PEIR's data reports do not reflect substantial under-reporting of injuries.

Unlike the number of reported fatalities and injuries due to traumatic accidents, however, PEIR's acute illness reports significantly underestimate the actual number of acute illnesses because (1) the mine operator determines the job-relatedness of

the illness and (2) the association between the workplace hazard and the acute illness may be unknown to either the employee or the employer. A similar argument was advanced in OSHA's Hazard Communication RIA [4, p. II-27]:

Unfortunately, available data do not allow a precise appraisal of the number of occupational injuries and illnesses that might be described with exposure to chemicals. This imprecision can be attributed to two separate but related problems. First, . . . , published data may understate all work-related illnesses by as much as a factor of 50. Second, because of a lack of hazard information in some workplaces . . . , it seems likely that a disproportionate fraction of these unreported occupational illnesses may be from a chemical source.

Consistent with that argument, we believe that the actual number of acute illnesses exceeds the number reported in the PEIR database. Nevertheless, we do not have an acceptable basis on which to adjust PEIR's data to account for this probable under-reporting of acute illnesses. Consequently, we conclude that the number of reported acute illnesses associated with exposures to hazardous chemicals is the lower-bound estimate of the actual number of these acute illnesses.

Finally, PEIR's data files for chronic illnesses similarly underestimate the actual number of chemically-related occupational chronic illnesses. In order to reduce under-reporting, we require mines to report illness cases for which a miner has received workers' compensation. (However, if a miner retires and then collects workers' compensation, he is no longer considered a miner, and the mine operator does not have a responsibility to report the illness to us.) Notwithstanding this adjustment, we



believe that PEIR's data still greatly underestimate the number of chronic illnesses from occupational exposures to hazardous chemicals. Even so, these lower-bound numbers are sufficiently disturbing as to warrant this HazCom rule.

As an alternative approach to estimate the number of chronic illnesses, we considered the use of exposure levels and quantitative risk assessments to estimate the number of miners who develop chronic illnesses from occupational exposures to hazardous chemicals. The ability of this alternative methodology to provide these estimates is limited by two factors. The first factor is that no data source exists that can identify all of the specific hazardous chemicals or can quantify the levels of each hazardous chemical to which each employee is or may be exposed. The second factor is that even when a hazardous chemical exposure level is known, quantitative risk assessments do not exist for most hazardous chemicals. The implication of these limitations is that the alternative methodology cannot provide direct estimates of either the numbers of long-term chronic occupational illnesses or the numbers of premature occupational fatalities that are the ultimate consequences of occupational exposures to certain hazardous chemicals.

As a result, we relied upon the OSHA methodology and have adopted many of OSHA's assumptions in order to estimate the number of chronic employee illnesses due to occupational exposures to hazardous chemicals.

## POPULATION-AT-RISK

Based on final 1998 employment data, there are about 321,000 miners, including independent contractor workers, of whom about 115,000 work at coal mines and 206,000 work at M/NM mines. In performing their duties and moving about the mine, these miners could be exposed to hazardous chemicals. As a result, these miners are potentially at risk of incurring a chemically-related occupational injury or illness. For the purpose of this analysis, however, we used current industry practices as our baseline for estimating the number of miners at risk rather than using the entire mining workforce.

As described in detail below, many of these miners are currently covered by one or more regulations that partially overlap provisions of a hazard communication program. Consequently, it is difficult to establish the number of miners in the population-at-risk who are affected only by this interim final MSHA rule. Because most chemically-related accidents could have been prevented by compliance with one of several different provisions in this rule, it is impossible to establish a unique number of accidents and, thereby, a unique number of miners at risk associated with each provision.

Considering these factors, we estimate that almost all of the mining workforce is affected by at least one aspect of a hazard communication program because almost all hazardous chemicals come to the mine labeled. In addition, we require operators to train

miners about the hazards of their tasks. We estimate, however, that about 193,000 miners or 60 percent of the mining workforce, including 64,000 miners or 67 percent of the employment at small operations, are not currently covered by a comprehensive hazard communication program.

#### SUMMARY OF ACCIDENTS AND POTENTIAL BENEFITS

In Table III-1, we summarize our estimates of the annual numbers of chemically-related miner fatalities and acute injuries and illnesses. In Table III-2, we summarize our estimates of the likely numbers of these accidents preventable by compliance with this rule. In Table III-3, III-4, III-5, and III-6, we summarize our best estimates of the effects of this rule on cancer rates.

#### ACUTE HEALTH EFFECTS

##### Fatalities

During the 17-year period from 1983-1999, there were nine reported fatalities from acute exposure to hazardous chemicals. As can be seen in Table III-1, this figure amounts to an average of approximately one fatality every two years. One third of these fatalities occurred at coal mines with the remaining two thirds occurring at M/NM mines. Most of these fatalities involved fatal burns to the miner from mishandling of chemicals.

### Potential Benefits: Reduced Fatalities

We reviewed each of the nine fatalities that had occurred during the 17-year period analyzed to determine whether the fatality might reasonably have been prevented by prior knowledge of the chemical hazard. Based on this review, we conclude that had the appropriate information concerning the potential hazards been disseminated and had adequate training on safe work practices been provided under a hazard communication program, then four of the nine fatalities probably would not have occurred. Thus, this rule is expected to prevent approximately one fatality every four years. As discussed below, this estimate is in addition to the number of cancer fatalities prevented by this rule.

### Description of Acute Injuries and Illnesses

The acute injuries and illnesses that miners incur as a consequence of an exposure to a hazardous chemical are classified as chemically-related acute injuries or chemically-related acute illnesses. Some examples of chemically-related acute injuries are chemical burns and injuries from chemical explosions. Some examples of chemically-related acute illnesses are decreased respiratory function, nausea, and poisoning.

### Estimated Number of Acute Injuries and Illnesses

With respect to the number of chemically-related acute miner injuries and illnesses, we used PEIR data to calculate an annual average of chemically-related acute miner injuries and illnesses (as seen in Table III-1). These data, however, do not allow us to differentiate the total number into separate estimates for injuries and illnesses because the PEIR data system does not code them separately.

As an alternative method to provide individual estimates for injuries and for illnesses, we also reviewed BLS's general breakdown of acute occupational injuries or illnesses into separate estimates for injuries and for illnesses. We determined, however, that the BLS breakdown on the basis of all occupational injuries and illnesses is inappropriate for chemically-related occupational injuries and illnesses, primarily because the percentage of illnesses in all chemically-related accidents is likely to be substantially greater than is the percentage of illnesses in all accidents. As a result, we did not separate the total number of acute injuries and illnesses into its two individual components: (1) acute injuries and (2) acute illnesses.

We determined that, during the 17-year period from 1983 to 1999, there was an average of 421 acute, chemically-related injuries and illnesses per year, 110 injuries and illnesses (26 percent) occurring in coal mines and 311 (74 percent)

occurring in M/NM mines. Of these, 257 (61 percent) were chemical burns and 48 (11 percent) were poisonings.

With respect to the number of lost workdays and days of restricted work activity due to chemically-related acute injuries and illnesses, PEIR's data report both the number of these acute injuries and illnesses that involved lost workdays and the number that did not involve lost workdays. An average of 239 chemically-related injuries and illnesses occur each year that are serious enough to involve lost workdays; 182 are not serious enough to require lost time. On average, 2,885 workdays are lost annually as a result of chemically-related occupational mining injuries and illnesses. Each lost workday injury or illness costs the affected miner, and the mine operator, approximately 12 workdays.

**Table III-1: Annual Number of Chemically-Related Injuries and Illnesses by Type Of Employer.**

Type of Employer	Acute Injuries & Illnesses					
	Fatalities	Total Injuries & Illnesses	Lost Workday Injuries & Illnesses	Non-Lost Workday Injuries & Illnesses	Number of Lost Workdays	Ave # of Lost Workdays Per Injury or Illness
Coal Mine	0.165	110	74	36	986	13.3
M/NM Mine	0.335	311	165	146	1899	11.5
Total	0.5	421	239	182	2885	12

Source: Mine Safety and Health Administration, Office of Standards, Regulations, and Variances, 2000.

### Potential Benefits: Reduced Injuries and Illnesses

There are two primary reasons why we did not review each chemically-related miner acute injury and illness individually to determine whether compliance with this rule would have prevented such injury or illness.

The first reason is that significantly less information is available for a non-fatal injury or illness than for a fatality. Whereas MSHA's investigation of every fatality for a fatality report includes a mine visit by MSHA personnel, the description of an injury or illness is generally based only on the mine operator's report. Because the mine operator's injury and illness report is typically less complete than is a fatality report done by MSHA personnel, determining the potential preventability of each injury or illness is more subjective and speculative than is the case for a fatality. The second reason is that the information garnered by OSHA during the public rulemaking on its rule is available for us to use.

OSHA estimated that its rulemaking would reduce chemically-related acute injuries and illnesses by 20 percent (5, p. II-2 and 7, p. 53328). We agree with OSHA's methodology and assumptions and have therefore assumed that the OSHA estimate can be used, with modifications as described below, as a basis for the MSHA estimate.

Some mining operations have implemented one or more components of a hazard communication program into their standard

operating procedures. Because about 40 percent of miners are already informed about chemical hazards by these efforts, we assumed that our interim final rule would only have one half of the 20 percent reduction effect for these miners. This 10 percent reduction in injuries and illnesses among miners under a partial hazard communication program is equivalent to a 4 percent reduction ( $0.5 \times 0.2 \times 0.4 = 0.04$ ) in the total mining population. This figure, added to the full 20 percent effect on the remaining 60 percent of the mining population not covered by any program ( $.2 \times .6 = 0.12$ ) results in an overall 16 percent reduction in injuries and illnesses.

As summarized in Table III-2, we estimated that an annual average of 67 chemically-related miner acute injuries and illnesses will be prevented by compliance with this rule. An average of 17 of these 67 will be prevented in coal mines while another 50 will be prevented in M/NM mines. Of the 67 prevented chemically-related acute injuries and illnesses, 38 will be lost workday injuries and illnesses involving 462 lost workdays and 29 will be non-lost workday injuries and illnesses.



**Table III-2: Annual Number of Acute Chemically-Related Injuries and Illnesses Potentially Preventable by Compliance With This Rule.**

Type of Employer	Acute Injuries & Illnesses				
	Fatalities	Total Injuries & Illnesses	Lost Workday Injuries & Illnesses	Non-Lost Workday Injuries & Illnesses	Number of Lost Workdays
Coal Mine	0.08	17.6	11.8	5.8	157.8
M/NM Mine	0.17	49.8	26.4	23.4	303.8
<b>Total</b>	<b>0.25</b>	<b>67.4</b>	<b>38.2</b>	<b>29.1</b>	<b>461.6</b>

Source: Mine Safety and Health Administration, Office of Standards, Regulations, and Variances, 2000.

CANCER

Description of Illnesses

The spectrum of diseases that develop due to exposure to a cancer-causing agent can include non-cancer health effects. For example, lung cancer and pneumoconiosis can be caused by exposures to silica or beryllium; mesothelioma or asbestosis can be caused by exposure to asbestos; and leukemia or aplastic anemia can be caused by exposure to benzene. These chronic adverse effects can be caused by occupational exposures to hazardous chemicals. We are restricting our analysis below to the rule's expected impact on the incidence of cancer.

### Estimated Number of Cancers

Whereas data on cancer incidence (i.e., the number of new cancer cases per year) and cancer mortality (i.e., the number of cancer-related deaths per year) are quite reliable, the estimates of the percentage of these cancers that are caused by occupational exposure to hazardous substances are less precise. Thus, the baseline cancer mortality rates in mine workers are based on our best estimates of these cancers that are related to occupational exposure.

In general, cancer incidence and mortality rates are based on data compiled by the National Cancer Institute's (NCI's) Surveillance, Epidemiology, and End Results (SEER) Program. On this basis, the American Cancer Society estimated that there were 1,221,800 cancer cases and 563,100 cancer deaths in 1997 (Cancer Facts and Figures, 1999).

In order to estimate the number of cancer deaths of mine workers in 1997, we utilized the best available data. These data include data on the average number of mine workers (mining and contract employees) (MSHA, Program Evaluation and Information Resources, 1998 closeout data), data from the Civilian Labor Force and Employment (U.S. Department of Commerce, 1998) and data on the number of deaths from Deaths from 282 Selected Causes by 5-Year Age Groups, Race, and Sex, Each State and the District of Columbia, 1995, 1996, and 1997 (National Center for Health Statistics).

We first tabulated total mining employment and national employment figures. (See Table III-3.) We assumed that only mining production workers and contractor workers would be significantly exposed to carcinogens on the job. This category includes underground, surface, and mills and preparation plant employees and contractor workers for both coal and M/NM mining. We estimated that there were 321,200 mining and contractor employees. Of these, 205,900 were employed in M/NM mining and 115,300 were employed in coal mining.

**Table III-3: Estimated Employment**

All Mining Employment <sup>a</sup>	Metal/Nonmetal Employment <sup>a</sup>	Coal Employment <sup>a</sup>	National Employment <sup>b</sup>
321,200	205,900	115,300	126,708,000

<sup>a</sup> Source: U.S. Department of Labor, Mine Safety and Health Administration, Program Evaluation and Information Resources. Estimates include mine and contract employees.

<sup>b</sup> Source: State and Metropolitan Area Data Book - 1997-1998, Civilian Labor Force and Employment. U.S. Department of Commerce, Economics and Statistics Administration, 5th edition. 1996 estimates.

We then used these numbers to estimate the proportion of mine workers in the employed U.S. population for the year 1996. (See Table III-4.) The estimated proportion of these workers in the employed population is 0.003 (0.002 in M/NM mining and 0.001 in coal mining). We combined these employment estimates with cancer

mortality figures in order to estimate the number of cancer deaths that would be experienced by miners working in 1997.

**Table III-4: Estimated Proportion of Miners in the Employed Population**

Category	Proportion
Metal/Nonmetal	0.002
Coal	0.001
All Miners	0.003

We estimated in Table III-5 that the total number of cancer deaths of these workers, assuming a 20-year latency period (corresponding to miner cancer deaths between the ages of 40 and 85), would be 1,383. (If we assumed a 10-year latency period, corresponding to miner cancer deaths between the ages of 30 and 75, the total number of cancer deaths would be 935, as shown in Table III-5.)

**Table III-5: Estimated Mortality from Cancer in Mine Workers<sup>1</sup> - 1997**

Proportion of miners in employed population	Cancer deaths in population age 30-74 <sup>a</sup>	>10 year Latency Period - Estimated Cancer Mortality in Mine Workers	Cancer deaths in population age 40-84 <sup>b</sup>	>20 year Latency Period - Estimated Cancer Mortality in Mine Workers
Metal/Nonmetal				
0.002	311,761	623	461,091	922
Coal				
0.001	311,761	312	461,091	461
Total				
0.003	311,761	935	461,091	1,383

<sup>a</sup> Source: GMWKIII - Deaths from 282 Selected Causes by 5-Year Age Groups, Race, and Sex: Each state and the District of Columbia, 1995, 1996, and 1997. Deaths from 282 Selected causes, by 5-year age groups, race, and sex: U.S. & each state, 1997. Center for Disease Control and Prevention, National Center for Health Statistics.

<sup>b</sup> Id.

We recognize that cancer incidence and mortality are increasing annually in the United States. We assume that a constant level of mining employment will continue over the next 20 years. We also recognize that workers in mines are occupationally exposed to certain levels of carcinogens, even though the agency is working to reduce harmful exposures. The number of cancer cases in these workers is expected to vary little in the short run due to the latency period of 10 to 40 years for cancer to develop following exposure. This implies that the number of occupationally-related cancer deaths in mine workers will probably not decline appreciably over the next 10 years, if not longer, as a result of this interim final HazCom rule.

We used information reported by the Office of Technology Assessment (OTA) to estimate the number of these cancer deaths that were due to occupational exposure to carcinogens.<sup>17</sup> OTA concluded that 5 percent of all cancers are occupationally-related (OSHA 5, p. II-20). Thus, we calculate that in 1997, 69 of the 1,383 cancer deaths in mine workers were due to occupationally-related causes (see Table III-6); 46 in M/NM miners, 23 in coal miners.

This estimate of mine worker cancer mortality may actually underestimate the total number of occupationally-related cancers. One reason is that this 5 percent is the proportion of cancers in the general population, both workers and non-workers. Occupationally-related cancers in the population of mine workers, many of whom can be exposed to carcinogens in their work, is likely to be much higher than 5 percent. Another reason is that mortality data can underestimate the prevalence of a disease, especially if the survival time is greater than one year or if the victim recovers. This is typically the case with survivorship rates increasing due to improved detection and treatment. We believe that, overall, this estimate broadly illustrates the significant cancer risk for current mine workers but, as explained above, somewhat underestimates the actual risk.

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<sup>17</sup> U. S. Congress, Office of Technology Assessment, Preventing Illness and Injury in the Workplace, April 1985, page 5.

**Table III-6: Proportion of Cancer Deaths Attributed to Occupational Exposure<sup>1</sup>**

Mine	Estimated Cancer Mortality in Mine Workers	Cancer Deaths due to Occupational Exposure <sup>2</sup>
Metal/Nonmetal	922	46
Coal	461	23
Total	1,383	69

<sup>1</sup> Assumes 20> year Latency period.

<sup>2</sup> Assumes 5% of all cancers are caused by occupational exposures.

### Potential Cancer-Related Benefits

In order to determine the potential number of cancer deaths that will be prevented by compliance with hazard communication rules, we adopted the methodology used by OSHA in its Hazard Communication RIA [5, pp. II-21 and II-22]. OSHA estimated that compliance with its rule will not affect the cancer incidence rates during the first 10 years after its promulgation. Starting in Year 11, however, a 2-percent annual reduction will occur and this percentage reduction will increase annually by an additional 2 percentage points in each succeeding year through Year 20, at which time the expected annual cancer reduction rate will be 20 percent. This 20 percent annual reduction rate will thereafter remain constant.

On that basis, we estimate that a total of 76 mine worker deaths from cancer will be prevented during the first 20 years of its rule (see Table III-7). This includes 51 prevented cancer deaths in M/NM mine workers as well as 25 prevented cancer deaths

in coal mine workers. In addition, we estimate that this rule will prevent an average of approximately 14 (13.8 = 20 percent of 69) deaths each year after Year 20.

**Table III-7: Reduction in Mine Worker Deaths  
Due to Compliance with Hazard Communication in the First 20 Years<sup>1</sup>**

Mine	Estimated Annual Cancer Deaths	Reduction in Miner Deaths over a 20 Year Period
Metal-Nonmetal	46	51
Coal	23	25
Total	69	76

<sup>1</sup> Assumes a 2%/year decrease in deaths after Year 10, leveling out at a constant yearly rate of 20% at Year 20.

#### CONCLUSION

We conclude that miners face a significant risk from exposure to hazardous chemicals. We further conclude that compliance with this rule will prevent a substantial number of illnesses, fatalities, and cancer cases.

Based on our review and analysis of the available data, we determined that, in terms of acute health effects, compliance with this rule will prevent one fatality every four years. In addition, compliance with this rule will reduce chemically-related miner acute injuries and illnesses by an average of 67 cases per year, 17 in coal mines and 50 in M/NM mines. Of the 67 prevented chemically-related acute injuries and illnesses, 38 will be lost



workday injuries and illnesses involving 462 lost workdays and 29 will be non-lost workday injuries and illnesses.

Finally, in terms of long term health effects, we expect our interim final rule to prevent a total of 76 cancer deaths, 51 in coal and 25 in M/NM, from Year 11 through Year 20 after promulgation and an additional 13.8 cancer deaths every year thereafter.

## IV. COST OF COMPLIANCE

### INTRODUCTION

In this chapter, we estimate the costs that operators will incur to comply with the provisions of the interim final HazCom standard. We conclude that the interim final rule will cost about \$5.7 million yearly, \$4.0 million for the M/NM mining industry and \$1.7 million for the coal mining industry.

For the purpose of the cost analysis, we used our traditional definition of a small mine as one employing fewer than 20 miners. Based on 1998 data, the interim final rule will cover about 21,200 operators, including independent contractors. Of this total, about 17,900 (or 84 percent) employ fewer than 20 miners. The estimated total yearly cost of complying with the interim final rule will be \$3 million for small M/NM operators and \$1 million for small coal operators. Table IV-1 summarizes the estimated annual compliance costs of the interim final rule by mine size and by provision. For the mining industry as a whole, these estimates reflect first-year compliance costs of \$15 million and compliance costs of \$4.7 million the second year and each succeeding year.

**TABLE IV-1: Summary of Yearly Compliance Costs of the Final Rule**

Provision	Coal		Metal and Nonmetal		Total Cost
	< 20 miners	≥ 20 miners	< 20 miners	≥ 20 miners	
HazCom Program	\$375,308	\$258,517	\$1,062,899	\$244,251	\$1,940,976
Labels	\$15,731	\$6,231	\$31,794	\$9,226	\$62,981
MSDSs	\$134,391	\$84,881	\$450,677	\$94,651	\$764,599
HazCom Training	\$284,292	\$260,995	\$962,963	\$352,876	\$1,861,126
Access	\$137,539	\$132,203	\$486,067	\$309,109	\$1,064,919
Total	\$947,261	\$742,828	\$2,994,400	\$1,010,113	\$5,694,601

Source: Tables IV-10, IV-11, IV-15, IV-22, and IV-25.

All cost estimates in this chapter are presented in 1998 dollars. The total costs reported in Table IV-1, and in all other tables in this chapter, are, to the best of our knowledge, the result of accurate calculations. In some cases, however, the totals may appear to deviate from the sum or product of their component factors, but that is only because the component factors have been rounded in the tables for purposes of readability.

#### METHODOLOGY

For this interim final rule, we estimated the following, as appropriate: (1) one-time costs; (2) annualized costs (one-time costs amortized over a specific number of years); and (3) annual costs. One-time costs are those that are incurred once and do not recur. For example, the cost to develop a written procedural program occurs only once. For the purpose of this REA, one-time costs have been amortized using an (real) annual discount rate of

7 percent, as required by the U.S. Office of Management and Budget (OMB), over an infinite (or, at least, indefinite) period using the formula:

$$a = (i*(1+i)^n)/((1+i)^n-1),$$

where "a" is the annualization factor, "i" is the annual discount rate, and "n" is the economic life of the investment. As "n" become large, the value of "a" approaches the discount rate. Therefore, for one-time investments with an infinite life, we have applied an annualization factor equal to the discount rate of 7 percent. This means that the annualized cost is equal to 7 percent of the one-time cost.

Converting one-time costs to annualized costs allows us to add them to annual costs in order to compute a combined yearly cost for the rule. Annual costs are those that normally recur annually. Three examples of annual costs are maintenance costs, operating expenses, and recordkeeping costs.

Our method of handling some types of "annual" costs requires explanation. In a few instances, the interim final rule imposes costs which will be the same each year starting with the second year the rule is in effect, but whose first year costs are different (and larger). We separated these first year costs into two parts: (1) an amount equal to annual costs starting with Year 2 after the rule takes effect, and (2) the residual, which we term

"adjusted" first year costs.<sup>18</sup> The adjusted first year costs could then be annualized and added to annual costs (all beginning in the first year the rule takes effect) in order to arrive at yearly costs. As a result, yearly costs begin in the first year that the rule takes effect and are the same every year thereafter.

Wages. Table IV-2 displays the compensation rates for various mine occupations. These compensation rates include benefits such as social security, unemployment insurance, and worker's compensation, but they do not reflect shift differentials or overtime pay. For convenience, we will refer to "compensation" in this REA as "wages," where that term is understood to include benefits. We assume that contractor workers receive the same wage as their fellow coal miners or M/NM miners.

**TABLE IV-2: Average Hourly Compensation Rates in the Mining Industry, 1998**

Occupation	Coal	M/NM
Supervisor, Manager, Foreman, Professional	\$49.79	\$44.79
Miners, Equipment Operators, Skilled Trades	\$26.83	\$19.42
Clerical, Support Personnel	\$18.56	\$17.57

Comments on Costs. Commenters to the recent request for information on the economic impact of the proposed HazCom rule on

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<sup>18</sup> A hypothetical example might help to explain this procedure. Suppose that compliance costs are \$2,000 the first year and \$400 each year thereafter. The adjustment procedure simply splits first year compliance costs into two parts: (1) \$400, for the first year of annual costs; and (2) the residual \$1,600. Consequently, adjusted first year costs would be \$1,600 and annual costs (starting in Year 1) would be \$400.

small mines expressed their belief that we had underestimated compliance costs. Commenters stated that costs for gathering MSDSs and keeping them updated could cost thousands of dollars per year; that we had not included a cost for lost production; that operators could not train miners or label containers for the \$10 per miner than we estimated as the cost of the rule; and that the wage rates were two to three times too low because consultants, not mine employees, would be conducting the hazard evaluation.

We believe that the cost estimates in the REA represent a reasonable approximation of the burden on operators for the following reasons.

First, we have existing standards for training. We did not calculate a cost for miners to attend training or for lost production because the HazCom training can be accomplished during annual refresher training or task training, both of which require operators to cover health and safety hazards. Our recent final training rules, both the new part 46 and the modified part 48, allow operators more flexibility in developing training courses to meet the changing needs of the miners and the changing hazards of the mine environment. We allow the operator to credit relevant training already provided to comply with HazCom training requirements. In addition, we delayed the effective date of the rule for 1 year to give operators the time needed to incorporate the HazCom training into their mines' training cycles. HazCom training costs include the time to develop a HazCom training

course, time for the instructor to prepare the lesson, the cost for training materials, and the time for making a record of the training.

Second, we have existing standards for labeling for metal/nonmetal mines and surface coal mines. We calculated only a small cost for labels because most hazardous chemicals are already labeled by the manufacturer or supplier before they are brought to the mine, and the HazCom rule exempts the raw materials being mined or milled from labeling. The small cost is for labeling storage tanks of bulk hazardous materials and portable transport containers, as necessary; for labeling containers of hazardous chemical mixtures produced and used at the mine; for labeling containers in underground coal mines; and for replacing damaged or missing labels.

Third, 39 states have employee right-to-know laws. OSHA's HCS has had widespread impact on State right-to-know regulations and, indirectly, on the mining industry. All operators comply with some of the provisions of this interim final rule. Some independent contractors work in industries under OSHA jurisdiction, as well as in the mining industry, and some large companies have other businesses in industries under OSHA jurisdiction. These operators comply with some or most of the provisions of this interim final rule because of existing Federal, State, or local regulations. A few operators comply because the

State regulations also cover mining. Others comply voluntarily because of corporate policy.

Finally, we are developing compliance aids to reduce the burden on operators, especially small operators. These include generic HazCom programs. Because of our commitment to help the mining industry, especially small operators, implement a HazCom program with minimum burden, we do not anticipate a need for them to hire consultants.

#### SCOPE

This interim final rule will apply to all coal and M/NM mines, including independent contractors. Table IV-3 presents the number of coal and M/NM mines and miners, excluding independent contractors and office workers, for both large and small mines. Table IV-4 presents the number of independent contractors and contractor workers by mine type and size.

**TABLE IV-3: Distribution of Mining Operations and Employment by Mine Type and Size**

Mine Size (# miners)	Coal			Metal and Nonmetal		
	# Mines	# Miners	Miners per Mine	# Mines	# Miners	Miners per Mine
Small (< 20)	1,438	10,242	7.1	9,769	55,410	5.7
Large (≥ 20)	1,021	75,272	73.7	1,568	112,404	71.7
Total	2,459	85,514	34.8	11,337	167,814	14.8

Source: U.S Department of Labor, Mine Safety and Health Administration, Office of Standards, Regulations, and Variances, based on MIS final 1998 data. Office workers and contractors are not included in these employment figures.



**TABLE IV-4: Distribution of Independent Contractors and Employment by Mine Type and Size**

Mine Size (# miners)	Coal			Metal and Nonmetal		
	# Mines	# Miners	Miners per Mine	# Mines	# Miners	Miners per Mine
Small (< 20)	3,480	14,047	4.0	3,182	15,872	5.0
Large (≥ 20)	321	15,749	49.1	387	22,178	57.3
Total	3,801	29,796	7.8	3,569	38,050	10.7

Source: U.S Department of Labor, Mine Safety and Health Administration, Office of Standards, Regulations, and Variances, based on MIS final 1998 data. Office workers are not included in these employment figures.

Table IV-5 indicates the number of coal and M/NM mines and miners by State, excluding independent contractors and contractor workers, in the six states that have employee right-to-know laws that cover mines. Table IV-6 indicates those 44 states and two territories with employee right-to-know laws that do not cover mines. These tables show the impact of State right-to-know regulations.

**TABLE IV-5: Mines and Miners in States WITH Right-To-Know Laws Affecting Mines**

STATES	COAL				METAL AND NONMETAL			
	Mines		Miners		Mines		Miners	
	#	%	#	%	#	%	#	%
Alaska	1	0.04%	109	0.12%	69	0.60%	1,091	0.65%
California	2	0.08%	39	0.04%	555	4.87%	9,296	5.52%
Delaware					8	0.07%	102	0.06%
Florida					225	1.97%	6,499	3.86%
Maine					126	1.10%	535	0.32%
Rhode Island					23	0.20%	118	0.07%
Total WITH laws	3	0.12%	148	0.17%	1,006	8.82%	17,641	10.47%
Total mines&miners	2,491		89,054		11,407		168,530	

\*Source: Mine Injuries and Worktime Quarterly, Closeout 1998.

**TABLE IV-6: Mines and Miners in States WITHOUT Right-To-Know Laws Affecting Mines**

STATES	COAL				METAL AND NONMETAL			
	# Mines	% Mines	# Miners	% Miners	# Mines	% Mines	# Miners	% Miners
Alabama	70	2.81%	5,083	5.71%	176	1.54%	3,010	1.79%
Arizona	3	0.12%	720	0.81%	353	3.09%	11,580	6.87%
Arkansas*	7	0.28%	10	0.01%	167	1.46%	2,679	1.59%
Colorado	21	0.84%	1,689	1.90%	343	3.01%	3,159	1.87%
Connecticut*					93	0.82%	742	0.44%
Georgia*					238	2.09%	6,804	4.04%
Hawaii					34	0.30%	349	0.21%
Idaho					183	1.60%	2,663	1.58%
Illinois**	47	1.89%	4,620	5.19%	315	2.76%	3,766	2.23%
Indiana*	55	2.21%	2,942	3.30%	273	2.39%	3,021	1.79%
Iowa					254	2.23%	2,315	1.37%
Kansas*	2	0.08%	72	0.08%	178	1.56%	1,990	1.18%
Kentucky*	670	26.90%	19,867	22.31%	136	1.19%	2,901	1.72%
Louisiana	2		148	0.17%	152	1.33%	2,228	1.32%
Maryland	19	0.76%	495	0.56%	72	0.63%	1,553	0.92%
Massachusetts					146	1.28%	1,057	0.63%
Michigan					444	3.89%	4,861	2.88%
Minnesota					394	3.45%	7,193	4.27%
Mississippi					123	1.08%	1,231	0.73%
Missouri	5	0.20%	137	0.15%	357	3.13%	5,946	3.53%
Montana	7	0.28%	858	0.96%	219	1.92%	2,473	1.47%
Nebraska					181	1.59%	933	0.55%
Nevada					238	2.09%	11,638	6.91%
New Hampshire					95	0.83%	367	0.22%
New Jersey					87	0.76%	1,367	0.81%
New Mexico	7	0.28%	1,493	1.68%	203	1.78%	4,650	2.76%
New York					602	5.28%	4,172	2.48%
North Carolina**					270	2.37%	4,015	2.38%
North Dakota	6	0.24%	910	1.02%	106	0.93%	336	0.20%
Ohio*	122	4.90%	3,517	3.95%	360	3.16%	4,493	2.67%
Oklahoma	9	0.36%	246	0.28%	174	1.53%	2,037	1.21%
Oregon					248	2.17%	1,871	1.11%
Pennsylvania	546	21.92%	10,031	11.26%	384	3.37%	5,996	3.56%
Puerto Rico					117	1.03%	1,820	1.08%
South Carolina					126	1.10%	1,878	1.11%
South Dakota					130	1.14%	1,851	1.10%
Tennessee***	39	1.57%	737	0.83%	234	2.05%	3,798	2.25%
Texas*	15	0.60%	2,447	2.75%	609	5.34%	9,691	5.75%
Utah*	24	0.96%	1,955	2.20%	236	2.07%	3,693	2.19%
Vermont					166	1.46%	965	0.57%
Virgin Islands					4	0.04%	169	0.10%
Virginia	252	10.12%	7,058	7.93%	173	1.52%	3,519	2.09%
Washington	2	0.08%	547	0.61%	314	2.75%	2,440	1.45%
West Virginia*	532	21.36%	19,259	21.63%	57	0.50%	989	0.59%
Wisconsin					520	4.56%	2,582	1.53%
Wyoming	26	1.04%	4,065	4.56%	117	1.03%	4,098	2.43%
Total WITHOUT laws	2,488	99.80%	88,906	99.83%	10,401	91.18%	150,889	89.53%
Total mines & miners	2491		89,054		11,407		168,530	

Source: Mine Injuries and Worktime Quarterly, Closeout 1998.

\* Covers city, county, state owned & operated -- only public sector employees.

\*\* Only requires MSDSs, list of substances, and notify fire department

\*\*\* Has Mining Division that urges compliance. MSHA HazCom will have negligible impact.

Some operators comply with most or all of the provisions of this interim final rule and many comply with some of the provisions. Few operators, if any, comply with none of HazCom's provisions because existing regulations require them to train miners about the health and safety hazards of their tasks. Consequently, for the purpose of this analysis, we used separate estimates for compliance with each provision of this interim final rule. Overall, however, we estimate<sup>19</sup> that—

! About 1 percent of small and 3 percent of large coal mines and 8 percent of small and 15 percent of large M/NM mines currently have a comprehensive hazard communication program that complies with most of the provisions of the interim final rule;

! About 14 percent of small and large coal mines and 10 percent of the small and 18 percent of the large M/NM mines currently comply voluntarily with some provisions of the interim final rule because of company policy;<sup>20</sup> and

! Because many contractors are likely to work in industries under OSHA jurisdiction, as well as in the mining industry, we estimate that about 65 percent of the small and 75 percent of the large independent contractors at coal mines and about 70 percent

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<sup>19</sup> These estimates are a composite of separate estimates for coal mines, coal contractors, M/NM mines, and M/NM contractors in each of 10 size categories. Our estimates are based on our knowledge of and experience with the mining industry and on information about the impact of existing Federal and State hazard communication standards on this industry.

<sup>20</sup> To simplify the analysis in the section-by-section cost estimation that follows, we assume that approximately half of the mines that have voluntarily developed a HazCom program are currently in compliance with the interim final rule (and that the other half are not).

of the small and 74 percent of the large independent contractors at M/NM mines currently have hazard communication programs.

! For the purpose of this analysis, we assumed that all 35 mines and contractors with more than 500 employees (large according to SBA's definition) are in compliance with this interim final rule. It is our experience that these large operations have at least one and typically several persons on staff whose sole job is health and safety or training.

#### SECTION-BY-SECTION DISCUSSION

Below we estimate the costs of the interim final rule section by section. If a single cost element is related to a set of provisions, we assign that cost to a single provision and so note when the other provisions in the set are discussed.

##### § 47.01 Purpose of a HazCom standard.

This section is informational in nature, and we do not associate any costs with it.

##### § 47.02 Operators and chemicals covered.

This section is informational in nature. We include the compliance costs associated with this section in the cost estimates for the substantive provisions of the interim final rule.

§ 47.11 Identifying hazardous chemicals.

This section requires operators to determine if chemicals found on their mine property are hazardous. This section also requires operators to identify a hazardous chemical's potential to harm a miner's health or safety. We have included the cost for conducting the chemical inventory on the mine property and for identifying the chemical hazards as part of the compliance costs of the written HazCom program (§ 47.21).

§ 47.21 HazCom program.

This section requires operators to develop, implement, update, and maintain a comprehensive written HazCom program. The written program must describe how the operator will meet the requirements of the HazCom rule; list the hazardous chemicals known to be present on mine property; describe the procedures used to determine the chemicals' hazards; and describe how the operator will advise other operators at a mine site about the presence of chemical hazards. We have estimated separate costs for this section of the interim final rule for—

- (1) mines currently without a comprehensive, written HazCom program;
- (2) mines that have already implemented one or more components of a HazCom program in response to existing Federal or State regulations or company policy; and
- (3) new mining operations.

Mines with a voluntary HazCom program. As stated previously, to simplify calculations, we included half of the mines that have voluntarily adopted a HazCom program in calculating the cost for mines not currently in compliance with the interim final HazCom rule. We included the other half of these mines in the calculations for operations that are currently in compliance with the interim final HazCom rule. We determined that there is a wide range of compliance among those mines which have voluntarily implemented one or more components of a hazard communication program. In general, we found that most of these mines' efforts addressed the majority of the requirements, but incompletely or inadequately. For example—

(1) A mine may have MSDSs available, but the file or book of MSDSs may contain both the outdated and current copies of the MSDSs for a single substance, as well as MSDSs for chemicals no longer used;

(2) They may maintain labels on containers of chemicals brought to the mine, but leave hazardous chemicals in unlabeled, temporary portable containers, such as beverage containers; or

(3) They may tell the miners that a specific substance is hazardous, but fail to inform the miner about the nature of the hazard, precautionary measures, or symptoms of exposure.

Mines without a HazCom program. We estimate that, for mines currently without a HazCom program, it will take an average of 8 hours of a supervisor's time and 4 hours of a clerical worker's time to develop such a program for small operations and an average of 16 hours of a supervisor's time and 8 hours of a clerical worker's time for large operations. In addition, the material

cost of developing a HazCom program will be about \$2.40 per small operation and \$4 per large operation.

We estimate that it will take an average of 1 hour of a supervisor's time and 0.5 hours (30 minutes) of a clerical worker's time to update the written program each year for a small operation and 2 hours of a supervisor's time and 1 hour of a clerical worker's time for a large operation. We also estimate that material costs for updating the written program will be about half that for developing the program: \$1.20 per small operation and \$2 per large operation.

Table IV-7 provides our estimate of the cost to develop a written HazCom program. First-year costs were adjusted using the procedure described in the methodology section earlier in this chapter and converted to annual costs using an annualization factor of 7 percent.

**TABLE IV-7: Cost of § 47.21 for Operations Without a Written HazCom Program**

Mine Size (# miners)	# of Operators Without a Written HazCom Program <sup>a</sup>	First Year Cost/Mine <sup>b</sup>	Total First Year Cost	Annually Recurring Cost per Operator <sup>c</sup>	Annual Recurring Cost	Adjusted First Year Cost <sup>d</sup>	Adjusted First Year Cost Annualized <sup>e</sup>	Total Yearly Cost <sup>f</sup>
<b>Coal</b>								
Small (< 20)	2,553	\$475	\$1,212,573	\$60	\$153,869	\$1,058,704	\$74,109	\$227,979
Large (20-500)	996	\$949	\$945,324	\$120	\$119,659	\$825,664	\$57,796	\$177,456
<b>Total</b>	<b>3,549</b>		<b>\$2,157,896</b>		<b>\$273,529</b>	<b>\$1,884,368</b>	<b>\$131,906</b>	<b>\$405,434</b>
<b>Metal and Nonmetal</b>								
Small (< 20)	9,414	\$431	\$4,057,434	\$55	\$515,652	\$3,541,782	\$247,925	\$763,577
Large (20-500)	1,276	\$861	\$1,098,891	\$109	\$139,275	\$959,616	\$67,173	\$206,449
<b>Total</b>	<b>10,690</b>		<b>\$5,156,325</b>		<b>\$654,927</b>	<b>\$4,501,398</b>	<b>\$315,098</b>	<b>\$970,025</b>

<sup>a</sup> # of operators without a written HazCom program =  $[(M \times P_m) + (i \times P_c)]$ , where M is the total number of mines employing 500 or fewer miners (We assumed that the 35 mines and contractors employing more than 500 miners were 100% in compliance.);  $P_m$  is the percentage of mines without a written HazCom program (85% of small and 83% of large coal mines, plus 50% of mines with voluntary HazCom program--14% of small and 14% of large coal mines; 81% of small and 67% of large M/NM mines, plus 50% of mines with voluntary HazCom program--10% of small and 18% of large M/NM mines); i is the number of independent contractors; and  $P_c$  is the percentage of independent contractors a without written HazCom program (35% of small coal, 30% of small M/NM, 25% of large coal, 26% of large M/NM).

<sup>b</sup> First-year cost to develop program =  $[(W_s \times H_s) + (W_c \times H_c) + C]$ , where  $W_s$  is the hourly wage rate for supervisor (\$49.79 at coal operations, \$44.79 at M/NM operations);  $H_s$  is the # of hours for supervisor to develop HazCom program (8 hr/small operation, 16 hr/large operation);  $W_c$  is the hourly wage rate for clerical (\$18.56 at coal operations, \$17.57 at M/NM operations);  $H_c$  is the # of hours for clerical to prepare written program (4 hr/small operation, 8 hr/large operation); and C is the cost of materials (\$2.40/small operation, \$4/large operation).

<sup>c</sup> Annually recurring cost per operator =  $[(W_s \times H_s) + (W_c \times H_c) + C]$ , where  $W_s$  is the hourly wage rate for supervisor (\$49.79 at coal operations, \$44.79 at M/NM operations);  $H_s$  is the # of hours for supervisor to update HazCom program (1 hr/small operation, 2 hr/large operation);  $W_c$  is the hourly wage rate for clerical (\$18.56 at coal operations, \$17.57 at M/NM operations);  $H_c$  is the # of hours for clerical to update written program (0.5 hr/small operation, 1 hr/large operation); C is the cost of materials to update program (\$1.20/small operation, \$2/large operation).

<sup>d</sup> Adjusted first year cost = total first year costs - annual recurring cost.

<sup>e</sup> Adjusted first year cost annualized = adjusted first year cost X 0.07, where 0.07 is the annualization factor.

<sup>f</sup> Total yearly cost = annual recurring cost + adjusted first year cost annualized.



Mines with a HazCom program. Although some mining operations currently have a HazCom program to comply with existing Federal or State regulations, these programs vary in their degree of compliance with this interim final rule. We have included a first-year cost for operators to review and modify their existing HazCom programs, as necessary, to bring them into compliance. However, for operations currently with a HazCom program, we did not include an annual cost for updating the written program after the first year because these operations were presumably already updating their written program each year. As previously noted, we assume that mines currently in substantial compliance with the interim final HazCom rule include half of the mines that have already voluntarily developed a HazCom program.

We estimate that it will take an average of 4 hours of a supervisor's time and 2 hours of a clerical worker's time to evaluate and modify, as necessary, an existing written HazCom program for small operations; an average of 8 hours of a supervisor's time and 4 hours of a clerical worker's time for large operations with between 20 and 500 workers; and an average of 16 hours of a supervisor's time and 8 hours of a clerical worker's time for large operations with more than 500 workers. In addition, the material cost will be about \$1.20 per small operation, \$2 per large operation with between 20 and 500 workers, and \$4 per large operation with more than 500 workers.

Table IV-8 provides our estimate of the cost of evaluating and updating an existing written HazCom program. This one-time, first-year cost has been converted to annualized costs using an annualization factor of 7 percent.

**TABLE IV-8: Cost to Review Existing Program for Operations With a HazCom Program**

Mine Size (# miners)	# of Operators With a HazCom Program <sup>a</sup>	First Year Cost per Operator <sup>b</sup>	Total First Year Cost	Total Annualized Cost <sup>c</sup>
<b>Coal</b>				
Small (< 20)	2,365	\$239	\$564,478	\$39,513
Large (20-500)	339	\$477	\$161,554	\$11,309
Large (>500)	7	\$953	\$6,672	\$467
<b>Total</b>	<b>2,711</b>		<b>\$732,704</b>	<b>\$51,289</b>
<b>Metal and Nonmetal</b>				
Small (< 20)	3,537	\$217	\$766,468	\$53,653
Large (20-500)	652	\$433	\$282,055	\$19,744
Large (>500)	28	\$865	\$24,226	\$1,696
<b>Total</b>	<b>4,217</b>		<b>\$1,072,749</b>	<b>\$75,092</b>

<sup>a</sup> # of operators with a HazCom program =  $(M \times P_m) + (i \times P_i)$ , where M is the total number of mines;  $P_m$  is the percentage with HazCom program [1% of small and 3% of large (20-500) coal mines, plus 50% of mines with voluntary HazCom program--14% of small and 14% of large; 8% of small and 15% of large (20-500) M/NM, plus 50% of mines with voluntary HazCom program--10% of small and 18% of large (20-500); 100% of large (>500)]; i is the number of independent contractors; and  $P_i$  is the percentage of independent contractors with HazCom program [65% of small coal, 75% of large coal (20-500), 70% of small M/NM, 74% of large M/NM (20-500), 100% of large (>500)].

<sup>b</sup> First-year cost to review and modify program =  $[(W_s \times H_s) + (W_c \times H_c) + C]$ , where  $W_s$  = hourly wage rate for supervisor (\$49.79 at coal, \$44.79 at M/NM);  $H_s$  is the # of hours for supervisor to modify program (4 hr/small, 8 hr/large (20-500), 16 hr/large (>500));  $W_c$  is the hourly wage rate for clerical (\$18.56 at coal, \$17.57 at M/NM);  $H_c$  is the # of hours for clerical to modify program [2 hr/small, 4 hr/large (20-500), 8 hr/large (>500)]; and C is the cost of materials [\$2.40/small, \$4/large (20-500), \$8/large (>500)].

<sup>c</sup> Annualized first-year cost = 0.07 X first-year cost (one-time).

New operations. We estimate that 227 small and 73 large (with 20-500 workers) coal operations and 570 small and 19 large

(with 20-500 workers) M/NM operations open each year.<sup>21</sup> We estimate that it will take an average of 8 hours of a supervisor's time for small operations and 16 hours for large operations to develop a HazCom program. We estimate that developing a HazCom program will also take an average of 4 hours of a clerical worker's time for small operations and 8 hours for large operations. In addition, the material cost of developing a HazCom program will be about \$2.40 per small operation and \$4 per large operation.

Table IV-9 provides our estimate of the total cost of developing written HazCom programs for new operations each year.<sup>22</sup>

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<sup>21</sup> Annual average based on a data run performed by MSHA's Office of Program Evaluation and Information Resources (PEIR) for the five year period from 1994-1998.

<sup>22</sup> We did not include annual costs for new mines to update their HazCom program because these costs would be offset, more or less, by the avoided annual costs of updating HazCom programs (estimated in Table IV-7) for those existing mines that close each year.

**TABLE IV-9: Cost of Developing HazCom Program for New Operations**

Mine Size (# miners)	# of New Operations Opening Annually <sup>a</sup>	Annual Cost per Operator <sup>b</sup>	Total Annual Cost
<b>Coal</b>			
Small (<20)	227	\$475	\$107,816
Large (20-500)	73	\$949	\$69,286
Total	300		\$177,102
<b>Metal and Nonmetal</b>			
Small (<20)	570	\$431	\$245,670
Large (20-500)	19	\$861	\$16,363
Total	589		\$262,033

<sup>a</sup> # of new operations opening annually (from MSHA's PEIR special data run).

<sup>b</sup> Annually recurring first-year cost to develop program =  $[(W_s \times H_s) + (W_c \times H_c) + C]$ , where  $W_s$  is the hourly wage rate for supervisor (\$49.79 at coal mines, \$44.79 at M/NM mines);  $H_s$  is the # of hours for supervisor to develop HazCom program (8 hr/small mine, 16 hr/large mine);  $W_c$  is the hourly wage rate for clerical (\$18.56 at coal mines, \$17.57 at M/NM mines);  $H_c$  is the # of hours for clerical to prepare written HazCom program (4 hr/small mine, 8 hr/large mine); and C is the cost of materials (\$2.40/small mine, \$4/large mine).

Summary of annual costs. Table IV-10 summarizes our estimates of the yearly costs for the mining industry to comply with the written HazCom program requirements under § 47.21 of the interim final rule.

**TABLE IV-10: Summary of Yearly Costs of §47.21 of HazCom Rule**

Provision	Coal		Metal and Nonmetal		Total Cost
	Small (< 20)	Large (≥ 20)	Small (< 20)	Large (≥ 20)	
Without a HazCom Program	\$227,979	\$177,456	\$763,577	\$206,449	\$1,375,460
With a HazCom Program	\$39,513	\$11,776	\$53,653	\$21,440	\$126,382
New Operations	\$107,816	\$69,286	\$245,670	\$16,363	\$439,134
Total	\$375,308	\$258,517	\$1,062,899	\$244,251	\$1,940,976

Source: Tables IV-7, IV-8, and IV-9

§ 47.22 HazCom program contents.

The compliance costs associated with this section are included in the cost estimates for § 47.21 and other substantive provisions of the interim final rule.

§ 47.31 Container labels and other forms of warning.

Under this section, operators will be required to label all in-plant containers of hazardous chemicals with two important exceptions:

- (1) raw material mined or milled, and
- (2) temporary, portable containers into which a hazardous chemical is transferred from a labeled container provided that the operator ensures that the miner using the portable container knows the identity of the chemical, its hazards, and any protective measures needed; and the portable container is left empty at the end of the shift.

The interim final rule also permits written alternatives to labeling in-plant containers (e.g., placarding areas of

stationary-process containers having similar contents or different chemicals involving similar hazards, or using batch tickets or process sheets to communicate the label information). The operator is not allowed to remove or deface existing labels and must ensure that the wording on labels is legible and in English.

In general, these interim final labeling requirements will impose little burden on most operators because they receive most hazardous chemicals in labeled containers and typically use them directly from those containers. Consequently, we expect that there will be no initial first-year compliance costs that do not recur annually. The annual compliance cost will involve labeling unlabeled containers, replacing worn labels, and replacing labels on containers when the contents and hazards change.

The number of containers that will require labels is directly related to the number of hazardous chemicals on the mine property. Nevertheless, there is no direct relationship between the number of hazardous chemicals and the number of containers to be labeled by the operator because most hazardous chemicals will be stored only in the purchased containers that are already labeled. A few types of hazardous chemicals, such as solvents, lubricants, or paint, may be transferred from a labeled bulk container into one or more different containers for storage or use at the work area.

We estimate that each year about 10 percent of small and 4 percent of large (20-500) coal mines, 10 percent of small and

5 percent of large (20-500) M/NM mines, 7 percent of small and 5 percent of large coal contractors (20-500), 6 percent of small and 5 percent of large M/NM contractors (20-500) have to label containers. We estimate that, on average, eight containers per small coal mine, six containers per small M/NM mine, and 30 containers per large coal or M/NM mine that are used to hold hazardous chemicals and do not have a manufacturer's label. We estimate that the operator will need to affix new labels on about 50 percent of these containers in small operations and 35 percent of these containers in large operations because the labels become worn or lost, because the containers are replaced, or because the labeling information needs to be changed.

We estimate that it will take about 0.2 hours (12 minutes) for a health and safety professional or supervisor to verify or fill out the labeling information and apply the label to the container. We assume that the material cost will be \$0.10 per label.

Table IV-11 provides our estimate of the total annual cost for operators to comply with the labeling provisions of the interim final rule.

**TABLE IV-11: Cost to Label Containers under § 47.31**

Mine Size (# miners)	# of Operators Requiring Labels <sup>a</sup>	Annual Cost per Operator <sup>b</sup>	Total Annual Cost
<b>Coal</b>			
Small (<20)	391	\$40	\$15,731
Large (20-500)	59	\$106	\$6,231
Total	450		\$21,962
<b>Metal and Nonmetal</b>			
Small (<20)	1,170	\$27	\$31,794
Large (20-500)	97	\$95	\$9,226
Total	1,267		\$41,019

<sup>a</sup> Number of operators requiring labels =  $(M \times P_m) + (i \times P_i)$ , where M is the total number of mines;  $P_m$  is the percentage of mines that have to label containers each year [10% of small and 4% of large (20-500) coal mines, 10% of small and 5% of large (20-500) M/NM; i is the number of independent contractors; and  $P_i$  is the percentage of independent contractors that have to label containers each year [7% of small coal, 5% of large coal (20-500), 6% of small M/NM, 5% of large M/NM (20-500)].

<sup>b</sup> Annual cost per operator =  $[(W_s \times H_s) + C] \times (D \times P_c)$ , where  $W_s$  is the hourly wage rate for supervisor (\$49.79 at coal mines, \$44.79 at M/NM mines);  $H_s$  is the # of hours for health and safety personnel to verify or fill-out the label information and apply it to container = 0.2 hour (12 minutes); C is the cost of material to label a container (C = \$0.10/label); D is the average # of containers per mine (8 for a small coal mine, 6 for a small M/NM mine, 30 for a large mine); and  $P_c$  is the percentage of containers that need new labels in any year (50% of containers in small mines, 35% of containers in

§ 47.32 Label contents.

The compliance costs associated with this section are included in the cost estimates for § 47.31 of the interim final rule.



§ 47.33 Label alternatives.

The compliance costs associated with this section are included in the cost estimates for § 47.31 of the interim final rule.

§ 47.34 Temporary, portable containers.

The compliance costs associated with this section are included in the cost estimates for § 47.31 of the interim final rule.

§ 47.41 Material Safety Data Sheet (MSDS).

This section requires operators to obtain and maintain an MSDS for each hazardous chemical brought onto mine property. It also requires operators to develop an MSDS for each hazardous chemical produced at the mine site.

The operator must keep the MSDSs for hazardous chemicals in a work area accessible to miners during each work shift. MSDSs may be kept at a central location if it is impractical to maintain the MSDSs at the work area, provided that miners can readily obtain any needed information. As long as the miners are potentially exposed to a hazardous chemical, the operator must maintain the MSDS for that chemical.

MSDS development. Every hazardous chemical received by an mine operation from a chemical manufacturer, distributor, or other supplier will have an MSDS supplied upon request. As a result, the only hazardous chemicals for which the operator will need to develop an MSDS will be those that are produced by the mining operation. We estimate that about 21 percent of small and 4 percent of large (20-500) coal mines, 27 percent of small and 5 percent of large (20-500) M/NM mines, 7 percent of small and 5 percent of large coal contractors (20-500), and 6 percent of small and 5 percent of large M/NM contractors (20-500) have to develop one or more MSDSs for hazardous chemicals they produce.

There are two principal factors that affect the cost to a mining operator for developing an MSDS. The first factor is the number of potentially hazardous chemicals that are mined or produced during the mining operation. The average number of potentially hazardous chemicals produced during mining operations varies considerably among various types of mining commodities. For any given type of mining commodity and method of mining, however, the number of these hazardous products is expected to vary little by size of mine. We estimate that the operator will need to develop an average of one MSDS at a small mine, two MSDSs at a large coal mine, and four MSDSs at a large M/NM mine.

The second factor is the time necessary to investigate the available scientific evidence for any potentially hazardous safety

or health consequences from exposure to the chemical or from its potential by-products. We estimate that it will require from 0.5 hours (30 minutes) to obtain an existing MSDS for a common chemical from MSHA's (or some other) website to a full day of research to develop an MSDS for a rarer, more complex chemical. On average, we estimate that it will take a supervisor 2 hours to investigate a potentially hazardous mining chemical and to create the MSDS. In addition, it will require an average of 1 hour of a clerical worker's time to type and file the MSDS. We estimate the material cost for developing each MSDS to be about \$2 including printing references (an average of 20 pages at \$0.10 per page).

We further estimate that 25 percent of the MSDSs will need to be updated each year (an MSDS will require an update on the average of once every 4 years), requiring, on average, 1 hour of a supervisor's time and 0.5 hours of a clerical worker's time with a cost for materials of about \$1 per MSDS.

Table IV-12 provides our estimate of total cost of developing MSDSs. First-year costs were adjusted using the procedure described in the methodology section earlier in this chapter and converted to annualized costs using an annualization factor of 7 percent.

**TABLE IV-12: Cost for Development of Material Safety Data Sheets**

Mine Size (# miners)	# of Operators without MSDSs <sup>a</sup>	First Year Cost per Operator <sup>b</sup>	Total First Year Cost	Annually Recurring Cost per Operator <sup>c</sup>	Annual Recurring Cost	Adjusted First Year Cost <sup>d</sup>	Total Annualized Cost <sup>e</sup>	Total Annual Cost <sup>f</sup>
<b>Coal</b>								
Small (<20)	552	\$120	\$66,317	\$15	\$8,290	\$58,028	\$4,062	\$12,352
Large (>20)	59	\$240	\$14,177	\$30	\$1,772	\$12,404	\$868	\$2,640
Total	611		\$80,494		\$10,062	\$70,432	\$4,930	\$14,992
<b>Metal and Nonmetal</b>								
Small (<20)	2,836	\$109	\$309,549	\$14	\$38,694	\$270,856	\$18,960	\$57,654
Large (>20)	97	\$437	\$42,350	\$55	\$5,294	\$37,056	\$2,594	\$7,888
Total	2,933		\$351,900		\$43,987	\$307,912	\$21,554	\$65,541

<sup>a</sup> Number of operators without MSDSs =  $(M \times P_m) + (i \times P_i)$ , where M is the total number of mines;  $P_m$  is the percentage without MSDSs [21% of small and 4% of large (20-500) coal mines, 27% of small and 5% of large (20-500) MNM]; i is the number of independent contractors; and  $P_i$  is the percentage of independent contractors without MSDSs [7% of small coal, 5% of large coal (20-500), 6% of small MNM, 5% of large MNM (20-500)].

<sup>b</sup> First-year cost to develop MSDS =  $[(W_s \times H_s) + (W_c \times H_c) + C] \times N$ , where  $W_s$  is the hourly wage rate for supervisor (\$49.79 at coal mines, \$44.79 at MNM mines);  $H_s$  is the # of hours for supervisor to develop MSDS (2 hours/MSDS);  $W_c$  is the hourly wage rate for clerical (\$18.56 at coal mines, \$17.57 at MNM mines);  $H_c$  is the # of hours for clerical worker to prepare MSDS (1 hour/MSDS); C is the cost of materials (\$2/MSDS); and N is the # of MSDS developed (1/small mine, 2/large coal mine, 4/large MNM mine).

<sup>c</sup> Annually recurring cost per operator =  $[(W_s \times H_s) + (W_c \times H_c) + C] \times N \times 25\%$ , where  $W_s$  is the hourly wage rate for supervisor (\$49.79 at coal mines, \$44.79 at MNM mines);  $H_s$  is the # of hours for supervisor to update MSDS (1 hr/MSDS);  $W_c$  is the hourly wage rate for clerical (\$18.56 at coal mines, \$17.57 at MNM mines);  $H_c$  is the # of hours for clerical to update MSDS (0.5 hr/MSDS); C is the cost of materials to update program (\$1/MSDS); N is the # of MSDS developed (1/small mine, 2/large coal mine, 4/large MNM mine); and 25% is the percentage of MSDS<sub>s</sub> updated each year.

<sup>d</sup> Adjusted first year cost = total first year costs - annual recurring cost.

<sup>e</sup> Adjusted first year cost annualized = adjusted first year cost X 0.07, where 0.07 is the annualization factor.

<sup>f</sup> Total yearly cost = annual recurring cost + adjusted first year cost annualized.

MSDS maintenance. The costs associated with MSDS maintenance are for keeping MSDSs readily available in each work area. These MSDSs will be provided by the manufacturer of the hazardous chemicals. We estimated that each small mine will need to maintain an average of 40 MSDSs for hazardous chemicals present on mine property. Large mines will need to maintain an average of 70 MSDSs. We estimate that it requires an average of 0.05 hours (3 minutes) of a clerical worker's time to file each MSDS in the notebook or other location in the work area. We did not include the cost for a second or back-up copy of the MSDSs for the operator's central files. (Note that the operator may maintain electronic files of MSDSs to reduce cost so long as miners have immediate access to them.)

Table IV-13 provides our estimate of the total annual cost for maintaining MSDSs.

**TABLE IV-13: Cost for MSDS Maintenance**

Mine Size (# miners)	# of Operators without a HazCom Program <sup>a</sup>	Annual Cost per Operator <sup>b</sup>	Total Annual Cost
<b>Coal</b>			
Small (< 20)	2,553	\$37	\$94,767
Large (≥ 20)	996	\$65	\$64,700
Total	3,549		\$159,468
<b>Metal and Nonmetal</b>			
Small (< 20)	9,414	\$35	\$330,808
Large (≥ 20)	1,276	\$61	\$78,468
Total	10,690		\$409,276

<sup>a</sup> Number of operators without a HazCom program (from Table IV-7).

<sup>b</sup> Annual cost per operator =  $(W_c \times H_c \times N)$ , where  $W_c$  is the hourly wage rate for clerical (\$18.56 at coal mines, \$17.57 at M/NM mines);  $H_c$  is 0.05 hour/MSDS to maintain it (3 minutes); and  $N$  is the average # of MSDS/mine (40/small mine, 70/large mine).

New operations. Based on PEIR data for years 1994 thru 1998, we estimate that 227 small and 73 large coal mines and 570 small and 19 large M/NM mines open each year. The average cost for developing MSDSs at a new operation is the same as that for other mines. That is, it will take an average of 2 hours of a supervisor's time, 1 hour of a clerical worker's time, and \$2 for materials to develop an MSDS.

Table IV-14 provides our estimate of annual compliance costs for developing MSDSs for new operations.<sup>23</sup>

**TABLE IV-14: Costs for MSDSs at New Mines**

Mine Size (# miners)	# of New Operations Opening Annually <sup>a</sup>	Annual Cost per Operator <sup>b</sup>	Total Annual Cost
<b>Coal</b>			
Small (< 20)	227	\$120	\$27,272
Large (≥ 20)	73	\$240	\$17,540
Total	300		\$44,812
<b>Metal and Nonmetal</b>			
Small (<20)	570	\$109	\$62,216
Large (≥ 20)	19	\$437	\$8,295
Total	589		\$70,511

<sup>a</sup> Number of new operations opening annually (from MSHA's PEIR special run data).

<sup>b</sup> Annual cost per operator =  $\{[(W_s \times H_s) + (W_c \times H_c) + M] \times N_1\}$ , where  $W_s$  is the hourly wage rate for supervisor (\$49.79 at coal mines, \$44.79 at M/NM mines),  $H_s$  is the # of hours for supervisor to develop MSDS (2 hours/MSDS);  $W_c$  is the hourly wage rate for clerical (\$18.56 at coal mines, \$17.57 at M/NM mines);  $H_c$  is the # of hours for clerical to prepare MSDS (1 hour/MSDS);  $M$  is the cost of materials (\$2/MSDS); and  $N_1$  is the average # of MSDS developed/mine (1/small mine, 2/large coal mine, 4/large M/NM mine).

Summary of annual costs. Table IV-15 provides our estimate of the total yearly costs for industry to comply with the MSDS provisions of the interim final rule.

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<sup>23</sup> We did not include annual costs for new mines to maintain and update their MSDSs each year because these costs would be offset, more or less, by the avoided annual costs of maintaining and updating MSDSs (estimated in Table IV-12 and Table IV-13) for those existing mines that close each year.

**TABLE IV-15: Summary of Yearly Costs for MSDSs**

Provision	Coal		Metal and Nonmetal		Total
	< 20 miners	≥ 20 miners	< 20 miners	≥ 20 miners	
Develop MSDS	\$12,352	\$2,640	\$57,654	\$7,888	\$80,533
Maintain MSDSs	\$94,767	\$64,700	\$330,808	\$78,468	\$568,743
New mines	\$27,272	\$17,540	\$62,216	\$8,295	\$115,323
Total	\$134,391	\$84,881	\$450,677	\$94,651	\$764,599

Source: Tables IV-12, IV-13, and IV-14.

§ 47.42 MSDS contents.

The compliance costs associated with this section are included in the cost estimates for § 47.41 of the interim final rule.

§ 47.43 MSDS for hazardous waste.

The compliance costs associated with this section are included in the cost estimates for § 47.41 of the interim final rule.

§ 47.43 Ready access to an MSDS.

The compliance costs associated with this section are included in the cost estimates for § 47.41 of the interim final rule.



§ 47.45 Retaining an MSDS.

The compliance costs associated with this section are included in the cost estimates for § 47.41 of the interim final rule.

§ 47.51 HazCom training.

Under this section of the interim final rule operators must ensure that all miners exposed to hazardous chemicals receive HazCom training. Each miner must receive this training before initial assignment, whenever a new chemical hazard is introduced into the work area, and whenever the miner is transferred to an area where the chemical hazards differ from those on which the miner received training. The operator must train the miner about the hazardous chemicals present in the work area, the types of hazards associated with those chemicals, the measures that miners can take to protect themselves against these chemical hazards, and the location and availability of the written HazCom program and MSDSs.

Develop HazCom training. Existing standards currently require mine operators and independent contractors to train miners about the health and safety aspects of their tasks. As a result, the operator will need to develop a HazCom training program only to explain the HazCom rule. Hazard training should already cover the hazards associated with individual chemicals in the work area. We estimate that about 70 percent of small and 63 percent of large

(20-500) coal mines, 81 percent of small and 67 percent of large (20-500) M/NM mines, 35 percent of small and 25 percent of large coal contractors (20-500), 30 percent of small and 26 percent of large M/NM contractors (20-500) have to develop an initial HazCom training program.

We estimate that it will require 4 hours of a supervisor's time and 2 hours of a clerical worker's time to develop a HazCom training program for small operations and 8 hours of a supervisor's time and 4 hours of a clerical worker's time for large operations.

Table IV-16 provides our estimate of the total cost to develop an initial HazCom training program. This one-time, first-year cost has been annualized using an annualization factor of 7 percent.

**TABLE IV-16: Cost for Mines to Develop HazCom Training Program**

Mine Size (# of miners)	# of Operators <sup>a</sup>	Additional First Year Cost per Operator <sup>b</sup>	Total First Year Cost	Total Annualized Cost <sup>c</sup>
<b>Coal</b>				
Small (<20)	2,234	\$236	\$527,850	\$36,949
Large (≥ 20)	724	\$473	\$342,133	\$23,949
Total	2,958		\$869,983	\$60,899
<b>Metal and Nonmetal</b>				
Small (<20)	8,914	\$214	\$1,910,270	\$133,719
Large (≥ 20)	1,135	\$473	\$536,356	\$37,545
Total	10,049		\$2,446,626	\$171,264

<sup>a</sup> # of operators without a HazCom training program =  $(M \times P_m) + (i \times P_i)$ , where M is the total number of mines;  $P_m$  is the percentage without a HazCom training program [70% of small and 63% of large (20-500) coal mines, 81% of small and 67% of large (20-500) M/NM; i is the number of independent contractors; and  $P_i$  is the percentage of independent contractors without a HazCom training program [35% of small coal, 25% of large coal (20-500), 30% of small M/NM, 26% of large M/NM (20-500)].

<sup>b</sup> First-year cost to develop program =  $[(W_s \times H_s) + (W_c \times H_c)]$ , where  $W_s$  is the hourly wage rate for supervisor (\$49.79 at coal operations, \$44.79 at M/NM operations);  $H_s$  is the # of hours for supervisor to develop HazCom program (4 hr/small operation, 8 hr/large operation);  $W_c$  is the hourly wage rate for clerical (\$18.56 at coal operations, \$17.57 at M/NM operations); and  $H_c$  is the # of hours for clerical to prepare written program (2 hr/small operation, 4 hr/large operation).

<sup>c</sup> Annualized first-year cost =  $0.07 \times$  first-year cost (one-time).

Training program administration. We estimate that it will require 1 hour of a supervisor's time and 0.5 hours (30 minutes) of a clerical worker's time annually to administer the HazCom training program at small mines and 2 hours of a supervisor's time and 1 hour of a clerical worker's time at large mines. For this

analysis, we assume that administering the HazCom training program will include such things as: (1) coordinating and integrating HazCom training with the mine's training program under 30 CFR part 48 or part 46, (2) keeping track of training needed and provided, (3) scheduling training as needed, and (4) purchasing training materials.

Table IV-17 provides our estimate of the annual compliance costs for administration of the HazCom training program.

**TABLE IV-17: Annual Cost to Administer HazCom Training Program**

Mine Size (# miners)	# of Operators without a HazCom Training Program <sup>a</sup>	Annual Cost per Operator <sup>b</sup>	Total Annual Cost
<b>Coal</b>			
Small (< 20)	2,234	\$59	\$131,962
Large (≥ 20)	724	\$118	\$85,533
Total	2,958		\$217,496
<b>Metal and Nonmetal</b>			
Small (< 20)	8,914	\$54	\$477,568
Large (≥ 20)	1,135	\$107	\$121,615
Total	10,049		\$599,183

<sup>a</sup> Number of operators without a HazCom training program (from Table IV-16).

<sup>b</sup> Annual cost to administer training program =  $(W_s \times H_s) + (W_c \times H_c)$ , where  $W_s$  is the hourly wage rate for supervisor (\$49.79 at coal mines, \$44.79 at M/NM mines);  $H_s$  is the # of hours for supervisor to administer HazCom program (1 hr/small mine, 2 hr/large mine);  $W_c$  is the hourly wage rate for clerical (\$18.56 at coal mines, \$17.57 at M/NM mines); and  $H_c$  is the # of hours for clerical to administer training program (0.5 hr/small mine, 1 hr/large mine).

Initial miner training. Based on Agency experience, we determined that the amount of time required to train miners about

the HazCom rule, the operation's HazCom program, and chemical hazards in that miner's work area is not dependent on the size of the mining operation. This time may vary by types of activities or operations and the number of chemicals in the work area. On average, however, we estimate that a mine supervisor will require 2 hours to prepare lesson materials for the initial HazCom training. The cost of training materials will average about \$5 per miner (including the trainer).

In addition, we estimate that initial HazCom training will take an average of 1 hour at all operations because much of the information will already have been covered in the mine's existing training program. However, as previously explained, the delayed effective date of the interim final rule will allow operators to include HazCom training as part of their existing part 48 or part 46 miner training program. For that reason, we do not include the cost of the supervisor's and miners' time in delivering and receiving the training as a cost of this interim final rule. The cost of the supervisor's and miners' time has already been included as part of the training costs of 30 CFR part 46 and part 48.

Table IV-18 provides our estimate of the total cost for initial HazCom training. This one-time, first-year cost has been annualized using an annualization factor of 7 percent.

**TABLE IV-18: Cost of Initial HazCom Miner Training**

Mine Size (# miners)	# of Operators without HazCom Training <sup>a</sup>	First Year Cost per Operator <sup>b</sup>	Total First Year Cost	Total Annualized Cost <sup>c</sup>
<b>Coal</b>				
Small (< 20)	2,234	\$124	\$277,628	\$19,434
Large (≥ 20)	724	\$439	\$317,622	\$22,234
Total	2,958		\$595,250	\$41,668
<b>Metal and Nonmetal</b>				
Small (< 20)	8,914	\$117	\$1,043,828	\$73,068
Large (≥ 20)	1,135	\$434	\$492,340	\$34,464
Total	10,049		\$1,536,168	\$107,532

<sup>a</sup> Number of operators without HazCom training (from Table IV-16).

<sup>b</sup> First-year cost for initial training =  $(W_s \times H_s) + (C \times N)$ , where  $W_s$  is the hourly wage rate for supervisor (\$49.79 at coal mines, \$44.79 at MNM mines);  $H_s$  is the # of hours for supervisor to prepare lesson (2 hrs);  $C$  is the cost of materials per miner (\$5/miner); and  $N$  is the average # of miners per operation, 4.9 for small coal, 5.5 small MNM, 67.8 for large coal, and 68.8 for large MNM operator (derived from Tables IV-3 and IV-4).

<sup>c</sup> Annualized first-year cost =  $0.07 \times$  first-year cost (one-time).

New miner training. This section requires that new miners be trained about the chemical hazards in the work area prior to their initial assignment.

We estimate that operators will usually conduct this HazCom training for new miners one-on-one and that the training will last about 1 hour. However, as previously explained, we expect operators to include HazCom training as part of their existing part 48 or part 46 new miner training program. For that reason, we do not include the cost of the supervisor's and miners' time in delivering and receiving the training as a cost of this interim

final rule. That cost has already been included as part of the training costs of 30 CFR part 46 and part 48.

We anticipate that the only compliance cost of new miner training concerning chemical hazards in the work area arising from this interim final rule is the cost of training materials, which we estimate will be \$5 per new miner.

Table IV-19 provides our estimate of the annual compliance cost of training new miners as required under this interim final rule. Our estimate reflects an annual miner turnover rate of 7 percent for coal mines and 19 percent for M/NM mines.

**TABLE IV-19: Annual Cost for Initial HazCom Training for New Miners**

Mine Size (# miners)	# of Operators without Initial HazCom Training <sup>a</sup>	Annual Cost per Operator <sup>b</sup>	Total Annual Cost
<b>Coal</b>			
Small (< 20)	2,234	\$2	\$3,862
Large (≥ 20)	724	\$24	\$17,187
Total	2,958		\$21,048
<b>Metal and Nonmetal</b>			
Small (< 20)	8,914	\$5	\$46,609
Large (≥ 20)	1,135	\$65	\$74,227
Total	10,049		\$120,836

<sup>a</sup> Number of operators without Initial HazCom program (from Table IV-16).

<sup>b</sup> Annual cost per operator (for initial HazCom Training for new miners) = (C x P x N), where C is the cost of materials per miner (\$5/miner); P is the annual employee turnover rate (7% for coal, and 19% for M/NM); and N is the average # of miners per operation, 4.9 for small coal, 5.5 small M/NM, 67.8 for large coal, and 68.8 for large M/NM operator (derived from Tables IV-3 and IV-4).

New operations. Based upon a data run for years 1994 thru 1998 conducted by MSHA's Office of Program Evaluation and Information Resources (PEIR), we estimate that 227 small and 73 large coal operations and 570 small and 19 large M/NM operations open each year. These new operations will need to develop a HazCom training program and provide initial HazCom training.<sup>24</sup>

We assume that the costs of developing a HazCom training program and providing initial HazCom training will be the same for new mines as for existing mines. We therefore estimate that it will require 4 hours of a supervisor's time and 2 hours of a clerical worker's time to develop a HazCom training program for new small mines and 8 hours of a supervisor's time and 4 hours of a clerical worker's time for new large mines. We further estimate that a mine supervisor at a new mine will require 2 hours to prepare lesson materials to train miners about the HazCom rule, the mine's HazCom program, and the chemical hazards in their work area. The cost of training materials will average about \$5 per miner (including the trainer).

Table IV-20 provides our estimate of the annual compliance costs for HazCom training at new operations.

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<sup>24</sup> We did not include annual costs for new mines to administer HazCom training each year because these costs would be offset, more or less, by the avoided annual costs of administering HazCom training (estimated in Table 17) for those existing mines that close each year.



**TABLE IV-20: Cost of HazCom Training for New Operations**

Mine Size (# of miners)	# of Operations Opening or Re-Opening Annually <sup>a</sup>	Annual Cost per Operator <sup>b</sup>	Total Annual Cost
<b>Coal</b>			
Small (< 20)	227	\$361	\$81,846
Large (≥ 20)	73	\$911	\$66,522
Total	300		\$148,368
<b>Metal and Nonmetal</b>			
Small (< 20)	570	\$331	\$188,898
Large (≥ 20)	19	\$862	\$16,385
Total	589		\$205,283

<sup>a</sup> # of operations opening or re-opening annually (from MSHA's PEIR special run data).

<sup>b</sup> Annual cost per operator =  $(W_s \times H_{s1}) + (W_c \times H_c) + (W_s \times H_{s2}) + (C \times N)$ , where  $W_s$  is the hourly wage rate for supervisor (\$49.79 at coal mines, \$44.79 at M/NM mines);  $H_{s1}$  is the # of hours for supervisor to develop program (4 hr/small, 8 hr/large);  $H_{s2}$  is the # of hours for supervisor to prepare lesson (2 hr/mine);  $W_c$  is the hourly wage rate for a clerical worker (\$18.56 at a coal mine, \$17.57 at M/NM mine);  $H_c$  is the # of hours for clerical to prepare training program (2 hr/small, 4 hr/large);  $C$  is the cost of materials per miner (\$5/miner); and  $N$  is the average # of miners per operation, 4.9 for small coal, 5.5 small M/NM, 67.8 for large coal, and 68.8 for large M/NM operator (derived from Tables IV-3 and IV-4).

Training records. Under this subpart of the interim final rule, the operator is required to make a record of HazCom training and keep it for 2 years. The interim final rule is performance-oriented in that it allows the operator to choose the form, format, and content of these records. We estimate that, on average, it will take a clerical worker about 0.05 hours (3 minutes) per miner per year to record HazCom training on the miner's training record.

Table IV-21 provides our estimate of the annual compliance cost of recording HazCom training as required under the interim final rule.

**TABLE IV-21: Annual Cost for HazCom Training Records**

Mine Size (# miners)	# of Operators <sup>a</sup>	Annual Cost per Operator <sup>b</sup>	Total Annual Cost
<b>Coal</b>			
Small (< 20)	2,234	\$5	\$10,239
Large (≥ 20)	724	\$63	\$45,570
Total	2,958		\$55,809
<b>Metal and Nonmetal</b>			
Small (< 20)	8,914	\$5	\$43,101
Large (≥ 20)	1,135	\$60	\$68,640
Total	10,049		\$111,741

<sup>a</sup> Number of operators (from Table IV-16).

<sup>b</sup> Annual cost for HazCom training records =  $(W_c \times H_c \times N)$ , where  $W_c$  is the hourly wage rate for clerical (\$18.56 at coal mines, \$17.57 at M/NM mines);  $H_c$  is the # of hours per miner to make a record of HazCom Training (0.05 hr/miner); and  $N$  is the average # of miners per operation, 4.9 for small coal, 5.5 small M/NM, 67.8 for large coal, and 68.8 for large M/NM operator (derived from Tables IV-3 and IV-4).

Summary of Annual Costs. Table IV-22 summarizes our estimate of the yearly cost for operators to comply with the HazCom training provisions of the interim final rule.

**TABLE IV-22: Summary of Yearly Costs for Training Program**

Provision	Coal		Metal and Nonmetal		Total
	Small (< 20)	Large (≥ 20)	Small (< 20)	Large (≥ 20)	
Develop Program	\$36,949	\$23,949	\$133,719	\$37,545	\$232,163
Administer Program	\$131,962	\$85,533	\$477,568	\$121,615	\$816,679
Initial Training	\$19,434	\$22,234	\$73,068	\$34,464	\$149,199
New Miners	\$3,862	\$17,187	\$46,609	\$74,227	\$141,884
New Operations	\$81,846	\$66,522	\$188,898	\$16,385	\$353,651
Records	\$10,239	\$45,570	\$43,101	\$68,640	\$167,550
Total	\$284,292	\$260,995	\$962,963	\$352,876	\$1,861,126

Source: Tables IV-16, IV-17, IV-18, IV-19, IV-20, and IV-21

§ 47.52 HazCom training contents.

The compliance costs associated with this section are included in the cost estimates for § 47.51 of the interim final rule.

§ 47.53 HazCom training records.

The compliance costs associated with this section are included in the cost estimates for § 47.51 of the interim final rule.

§ 47.61 Access to written materials.

This section provides miners and designated representatives with the right to examine and obtain a copy of written HazCom information. This includes the written HazCom program, written labeling information, the MSDSs, and any other written information required by this part, with the exception of the identity of trade

secret chemicals. The interim final rule also requires operators to provide access to this written HazCom information without cost for the first copy and without cost for a copy of any new information. If the operator has previously provided the miner or designated representative the requested information, then the operator may charge for providing additional copies of this same information.

The interim final rule also requires operators to provide customers, upon their request, with a copy of the labeling information and the MSDS for any chemical purchased from the mine.

Providing copies to miners. We estimate that about 10 percent of the miners will request a copy of HazCom information each year, that it will require a clerical worker about 0.2 hours (12 minutes) to copy and distribute the information, and that the cost for materials will average \$0.60 per request (6 pages at \$0.10/page).

Table IV-23 summarizes our estimate of the annual compliance costs for providing copies of HazCom information to miners and their representatives.

**TABLE IV-23: Cost for Providing Copies of HazCom Information to Miners**

Mine Size (# miners)	# of Operators without a HazCom Program <sup>a</sup>	Annual Cost per Operator <sup>b</sup>	Total Annual Cost
<b>Coal</b>			
Small (< 20)	2,553	\$ 2	\$5,437
Large (≥ 20)	996	\$ 29	\$29,129
Total	3,549		\$34,566
<b>Metal and Nonmetal</b>			
Small (< 20)	9,414	\$ 2	\$21,316
Large (≥ 20)	1,276	\$ 28	\$36,137
Total	10,690		\$57,454

<sup>a</sup> Number of operators without a HazCom program (from Table IV-7).

<sup>b</sup> Annual cost per operator =  $[(W_c \times H_c) + C] \times (0.1 \times N)$ , where  $W_c$  is the hourly wage rate for clerical (\$18.56 at coal mines, \$17.57 at M/NM mines);  $H_c$  is 0.2 hour/miner request (12 minutes);  $C$  is the cost to photocopy and distribute the information (\$0.60 per request); 0.1 is the percentage of miners annually requesting a copy of HazCom information; and  $N$  is the average # of miners per operation, 4.9 for small coal, 5.5 small M/NM, 67.8 for large coal, and 68.8 for large M/NM operator (derived from Tables IV-3 and IV-4).

Providing copies to customers. We estimate that customers will request a copy of a chemical's labeling information and MSDS about 12 times per year at a small mine, 24 times per year at a large coal mine, and 52 times per year at a large M/NM mine. It will require a clerical worker about 0.2 hours (12 minutes) to copy and distribute the information, and the cost for materials will average about \$0.60 per request.

Table IV-24 summarizes our estimate of the annual compliance cost for operators to provide customers with copies of the

labeling information and the MSDS for a hazardous chemical they purchase from the mine.

**TABLE IV-24: Cost for Distribution of HazCom Labeling Information and MSDSs to Customers**

Mine Size (# miners)	# of Operators without a HazCom Program <sup>a</sup>	Annual Cost per Operator <sup>b</sup>	Total Annual Cost
<b>Coal</b>			
Small (< 20)	2,553	\$52	\$132,102
Large (≥ 20)	996	\$103	\$103,074
Total	3,549		\$235,176
<b>Metal and Nonmetal</b>			
Small (< 20)	9,414	\$49	\$464,750
Large (≥ 20)	1,276	\$214	\$272,972
Total	10,690		\$737,722

<sup>a</sup> Number of operators without a HazCom program (from Table IV-7).

<sup>b</sup> Annual cost per operator =  $[(W_c \times H_c) + C] \times R$ , where  $W_c$  is the hourly wage rate for clerical (\$18.56 at coal mines, \$17.57 at MNM mines);  $H_c$  is 0.2 hour to copy and distribute HazCom labeling information or MSDS (12 minutes);  $C$  is the cost of materials (\$0.60/HazCom information); and  $R$  is the average # of times HazCom labeling information or MSDS distributed/year (12/small mine, 24/large coal mine, 52/large MNM mine).

Summary of Annual Costs. Table IV-25 summarizes our estimate of the annual compliance cost for operators to provide HazCom information in response to miner, miner representative, or customer request.

**TABLE IV-25: Summary of Annual Costs for Providing HazCom Information**

Provision	Coal		Metal and Nonmetal		Total
	< 20 miners	≥ 20 miners	< 20 miners	≥ 20 miners	
To Miners and Reps	\$5,437	\$29,129	\$21,316	\$36,137	\$92,020
To Customers	\$132,102	\$103,074	\$464,750	\$272,972	\$972,899
Total	\$137,539	\$132,203	\$486,067	\$309,109	\$1,064,919

Source: Tables IV-23 and IV-24.

§ 47.62 Cost for copies.

The annual compliance costs for this section are included in the cost estimates for § 47.61 of the interim final rule.

§ 47.63 Providing labels and MSDSs to customers.

The annual compliance costs for this section are included in the cost estimates for § 47.61 of the interim final rule.

Subpart H--Trade Secret Hazardous Chemical

Subpart H encompasses § 47.71 through § 47.77 of the interim final rule. We do not associate any compliance costs with these sections.

We note that § 47.77 (review of denial) of the interim final rule allows operators to protect the confidentiality of specific chemical identity information that is a bona fide trade secret. Nevertheless, the interim final rule requires the disclosure of the identity of trade secret hazardous chemicals to health supervisors, miners, and designated representatives who have an

occupational health need for the information and can demonstrate that the information can be kept confidential. As nearly all of these trade secrets will involve chemicals brought onto the mine site, a request for this information will require the operator to obtain the information from the chemical supplier. We estimate that there will be few requests for disclosure of trade secret information.

Based on our analysis, we have concluded that the first-year and annual cost will be negligible. Therefore, we have not calculated a compliance cost for this provision.

#### § 47.81 Exemptions from the HazCom standard.

This section includes a listing of the chemicals and products which are exempt from all or part of the requirements of the interim final rule. We have associated no compliance costs with these exemptions.

#### § 47.82 Exemptions from labeling.

This section includes a listing of the chemicals and products which are exempt from all or part of the labeling requirements of the interim final rule. We have associated no compliance costs with these exemptions.



§ 47.91 Definitions of terms used in this part.

This section defines some specific terms used in the interim final rule. These terms clarify the requirements of the interim final rule. The compliance costs associated with these definitions are included in the cost estimates for the substantive provisions where the terms are used.

FEASIBILITY

As discussed in the preamble of this interim final rule, we have concluded that the requirements of the interim final rule are both technologically and economically feasible.

Technological Feasibility

To demonstrate technological feasibility, an agency must show that modern technology has at least conceived some industrial strategies or devices that are likely to be capable of meeting the standard in question, and which industry is generally capable of adopting.

This interim final rule is not a technology-forcing standard and does not involve activities on the frontiers of scientific knowledge. Nor are there any apparent technological barriers preventing implementation of the requirements of the interim final rule since most of these requirements involve common business practices that are administrative in nature. In addition, the provisions of the interim final rule have been designed to be

performance-oriented and informational, so as to maximize the opportunity for all operators to achieve compliance. Furthermore, mine operators in those States with employee right-to-know laws have already demonstrated an ability to comply with many requirements of the interim final rule. Similarly, businesses in other industries have been able to comply with OSHA's Hazard Communication Standard, which closely parallels our own HazCom interim final rule. We conclude, therefore, that this interim final rule is technologically feasible.

#### Economic Feasibility

As previously estimated in this chapter, the mining industry will incur costs of approximately \$5.7 million yearly to comply with the interim final rule. That these compliance costs represent well less than 1 percent (about 0.01 percent) of mining industry yearly revenues of \$59.7 billion provides, we believe, convincing evidence that the interim final rule is economically feasible. We conclude, therefore, that the interim final rule is economically feasible for the mining industry.

## V. REGULATORY FLEXIBILITY CERTIFICATION

### INTRODUCTION

In accordance with section 605 of the Regulatory Flexibility Act (RFA), we certify that this interim final rule does not have a significant economic impact on a substantial number of small entities that are covered by this rulemaking. Under the Small Business Regulatory Enforcement Fairness Act (SBREFA) amendments to the RFA, we must include in the interim final rule a factual basis for this certification. We must also publish the regulatory flexibility certification statement in the Federal Register, along with the factual basis, followed by an opportunity for the public to comment.

### DEFINITION OF A SMALL MINE

Under the RFA, in analyzing the impact of a final rule on small entities, we must use the SBA definition for a small entity, or after consultation with the SBA Office of Advocacy, establish an alternative definition for the mining industry by publishing that definition in the Federal Register for notice and comment. We have not taken such an action, and hence are required to use the SBA definition.

The SBA defines a small entity in the mining industry as an establishment with 500 or fewer employees (13 CFR 121.201). Almost all of the coal and M/NM mines affected by this rulemaking

fall into this category, and hence can be viewed as sharing the special regulatory concerns which the RFA was designed to address.

Traditionally, the Agency has also looked at the impacts of its final rules on a subset of mines with 500 or fewer employees—those with fewer than 20 employees, which the mining community refers to as "small mines." These small mines differ from larger mines not only in the number of employees, but also, among other things, in economies of scale in material produced, in the type and amount of production equipment, and in supply inventory. Therefore, their costs of complying with the interim final rule and its impact on them will also tend to be different. It is for this reason that "small mines," as traditionally defined by the mining community, are of special concern to us.

This analysis complies with the legal requirements of the RFA for an analysis of the economic impacts on "small entities" while continuing the Agency's traditional look at "small mines." We conclude that we can certify that the interim final HazCom rule would not have a significant economic impact on a substantial number of small entities that are covered by this rulemaking. We determined that this is the case both for mines with fewer than 20 employees and for mines with 500 or fewer employees.

## FACTUAL BASIS FOR CERTIFICATION

### General Approach

Our analysis of economic impacts on "small entities" begins with a "screening" analysis. The screening compares the estimated compliance costs of a final rule for small entities in the sector covered by the rule to the estimated revenues for those small entities. When estimated compliance costs are less than 1 percent of the estimated revenues (for the size categories considered), we believe it is generally appropriate to conclude that there is no significant economic impact on a substantial number of small entities. When estimated compliance costs exceed 1 percent of revenues, it tends to indicate that further analysis may be warranted.

### Derivation of Costs and Revenues

In this interim final rule, compliance costs must be absorbed by both coal and M/NM mines. We examined the relationship between costs and revenues for the coal and M/NM mine sectors as two independent entities, rather than combining them into one category.

The compliance costs noted in this chapter were previously presented in Chapter IV of this document along with an explanation of how they were derived. All underground and surface coal mines and underground and surface M/NM are potentially affected by the interim final HazCom rule.

In determining revenues for underground and surface coal mines, we multiplied mine production data (in tons) by the estimated price per ton of the commodity (\$17.58 per ton in 1998). The production data were obtained from MSHA's CM441 reports<sup>25</sup> and the price estimates were obtained from the Department of Energy.<sup>26</sup> With respect to the M/NM industry, we took the total revenue generated by the M/NM industry (\$40 billion)<sup>27</sup> and divided it by the total number of employee hours to arrive at the average revenue per hour of employee production (\$104.86). We then took the \$104.86 and multiplied it by employee hours in specific size categories to arrive at estimated revenues. We used this approach to determine the estimated revenues for the M/NM mining industry because we do not collect data on M/NM production.

#### Results of Screening Analysis

As shown in Table V-1, for coal mine operators with fewer than 20 employees, the estimated yearly cost of the interim final rule is \$293 per mine operator, and estimated yearly costs as a percentage of revenues are about 0.13 percent. As shown in Table V-2, for coal mine operators with 500 or fewer employees, the estimated yearly cost of the interim final rule is \$272 per mine

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<sup>25</sup> MSHA's 1998 CM441 Report, cycle 1998/198.

<sup>26</sup> U.S. Department of Energy, Energy Information Administration, Annual Energy Review 1998, July 1999, p. 203.

<sup>27</sup> U.S. Department of the Interior, U.S. Geological Survey, January 1999, pp. 3 and 6.

operator, and estimated yearly costs as a percentage of revenues are approximately 0.01 percent.

**TABLE V-1: The Impact of Final Rule on the Coal Mining Industry\***

Mine Type	Estimated Yearly Costs	Estimated Revenues	Estimated Cost per Mine	Costs as % of Revenues
Small (< 20)	\$ 947,261	\$ 716,224,196	\$ 193	0.13%
Large (≥ 20)	\$ 742,828	\$ 19,009,282,146	\$ 554	0.00%

\* Data for revenues derived from: U.S. Department of Labor, Mine Safety and Health Administration, Office of Standards, Regulations, and Variances, based on 1998 Final MIS data (quarter 1 - quarter 4), CM441, cycle 1998/198; and U.S. Department of Energy, Energy Information Administration, Annual Energy Review 1998, DOE/EIA-0384(98), July 1999, p 203.

**TABLE V-2: The Impact of Final Rule on the Coal Mining Industry\***

Mine Type	Estimated Yearly Costs	Estimated Revenues	Estimated Cost per Mine	Costs as % of Revenues
Small (≤ 500)	\$ 1,689,622	\$ 18,251,564,720	\$ 270	0.01%
Large (> 500)	\$ 467	\$ 1,473,941,622	\$ 67	0.00%

<sup>a</sup> Data for revenues derived from: U.S. Department of Labor, Mine Safety and Health Administration, Office of Standards, Regulations, and Variances, based on 1998 Final MIS data (quarter 1 - quarter 4), CM441, cycle 1998/198; and U.S. Department of Energy, Energy Information Administration, Annual Energy Review 1998, DOE/EIA-0384(98), July 1999, p 203.

As shown in Table V-3, for M/NM mines with fewer than 20 employees, the estimated yearly cost of the interim final rule is \$231 per mine operator, and estimated costs as a percentage of revenues are about 0.03 percent. As shown in Table V-4, for M/NM mine operators with 500 or fewer employees, the estimated yearly

cost is \$270 per mine operator, and estimated costs as a percentage of revenues are less than 0.02 percent.

**TABLE V-3: The Impact of Final Rule on the Metal/Nonmetal Mining Industry\***

Mine Type	Estimated Yearly Costs	Estimated Revenues	Estimated Cost per Mine	Costs as % of Revenues
Small (< 20)	\$ 2,994,400	\$ 11,942,164,133	\$ 231	0.03%
Large (≥ 20)	\$ 1,010,113	\$ 28,057,835,867	\$ 517	0.00%

\* Data for revenues derived from: U.S. Department of Labor, Mine Safety and Health Administration, Office of Standards, Regulations, and Variances, based on 1998 Final MIS data (quarter 1 - quarter 4), CM441, cycle 1998/198; and U.S. Department of Energy, Energy Information Administration, Annual Energy Review 1998, DOE/EIA-0384(98), July 1999, p 203.

**TABLE V-4: The Impact of Final Rule on the Metal/Nonmetal Mining Industry\***

Mine Type	Estimated Yearly Costs	Estimated Revenues	Estimated Cost per Mine	Costs as % of Revenues
Small (≤ 500)	\$ 4,002,817	\$ 35,137,308,532	\$ 269	0.01%
Large (> 500)	\$ 1,696	\$ 4,862,691,468	\$ 61	0.00%

\* Data for revenues derived from: U.S. Department of Labor, Mine Safety and Health Administration, Office of Standards, Regulations, and Variances, based on 1998 Final MIS data (quarter 1 - quarter 4), CM441, cycle 1998/198; and U.S. Department of Energy, Energy Information Administration, Annual Energy Review 1998, DOE/EIA-0384(98), July 1999, p 203.

In all cases, the cost of complying with the interim final rule is less than 0.2 percent of revenues, well below the level suggesting that the interim final rule might have a significant economic impact on a substantial number of small entities. Accordingly, we have certified that there is no such impact on small coal mines or small M/NM mines.



As required under the law, we are complying with our obligation to consult with the Chief Counsel for Advocacy on this interim final rule, and on our certification of no significant economic impact on a substantial number of small entities covered by this interim final rule. Consistent with Agency practice, notes of any meetings with the Chief Counsel's office on this interim final rule, or any written communications, will be placed in the rulemaking record.

#### ALTERNATIVES CONSIDERED

In accordance with § 604 of the RFA, we are including a discussion of the regulatory alternatives considered in developing this interim final rule. In part, the limited impact of the interim final rule on small mines reflects our decision not to require more costly regulatory alternatives. At the same time, in considering regulatory alternatives for small mines, we had to observe the requirements of our authorizing statute. Section 101(a)(6)(A) of the Mine Act requires the Secretary to set standards which most adequately assure, on the basis of the best available evidence, that no miner will suffer material impairment of health over his/her working lifetime.

We used OSHA's Hazard Communication Standard (HCS) as a model for our proposed HazCom rule. For the interim final rule, we considered regulatory alternatives suggested by commenters to the proposal. Most of those regulatory alternatives addressed the

scope of the standard—what would be covered and what would be exempted. We did not adopt any alternatives in the interim final rule that were not discussed in the proposal, but we did adopt several provisions that differ from the proposal or OSHA's HCS. The following discussion reviews the six major regulatory alternatives considered.

1. The proposed rule would have exempted hazardous waste from both the labeling and MSDS requirements because the waste is regulated by EPA and exempted from OSHA's HCS. Under the interim final rule, we do not exempt hazardous waste. We determined that such an exemption would put miners at risk of potential injury and illness.

2. As proposed, the interim final rule exempts the raw materials mined or milled from the labeling requirements while on mine property.

3. The proposed rule would have exempted from HazCom's labeling requirements certain hazardous substances regulated and labeled under the authority and standards of other Federal agencies. These hazardous substances include cosmetics, drugs, tobacco products, foods, food additives, and color additives which are labeled in accordance with the requirements of the Food and Drug Administration or the Department of Agriculture. The interim final rule extends these exemptions to the full scope of the rule rather than to labeling only.

4. To be consistent with OSHA's HCS, we included in the interim final rule exemptions from labeling for hazardous substances regulated by EPA under rules that did not exist at the time of the proposed rule.

5. The proposed rule would have required operators to label containers of hazardous product or to provide a copy of the labeling information with the first shipment to an employer. The interim final rule does not automatically require an operator to label a product, if it is a hazardous chemical, for sale to customers who are employers. We require operators to provide the labels or labeling information and an MSDS only when requested.

6. The interim final rule will allow an operator to credit relevant training provided for compliance with other MSHA standards or OSHA'S HCS to meet HazCom's training requirements. The interim final rule requires operators to make a record of HazCom training.

## VI. OTHER REGULATORY CONSIDERATIONS

### INTRODUCTION

On March 30, 1999, we reopened the rulemaking record for the limited purpose of receiving comments on several regulatory mandates, some of which were not in existence when the Agency published the hazard communication proposal in 1990.

(64 FR 15144). These statutory mandates and Executive Orders require the Agency to evaluate the impact of a regulatory action on small mines; on State, local, and tribal governments; on the environment; on constitutionally protected property rights; on the Federal court system; on children; on Indian tribal governments; and on federalism.

### THE UNFUNDED MANDATES REFORM ACT

The Unfunded Mandates Reform Act was enacted in 1995. While much of the Act is designed to assist the Congress in determining whether its actions will impose costly new mandates on State, local, and tribal governments, the Act also includes requirements to assist Federal agencies to make this same determination with respect to regulatory actions.

For purposes of the Unfunded Mandates Reform Act of 1995, the interim final HazCom rule does not include any Federal mandate that may result in increased expenditures by State, local, or

tribal governments or increased expenditures by the private sector of more than \$100 million.

### Analysis

Based on the analysis conducted in Chapter IV of this Regulatory Economic Analysis, the coal and M/NM mining industries will incur compliance costs associated with this interim final rule of approximately \$4.8 million annually. There is no need for further analysis under § 202 of the Unfunded Mandates Reform Act.

The interim final rule will impact 2,459 coal mine operators, 3,801 coal contractors, 11,337 M/NM mine operators, and 3,569 M/NM contractors. With respect to the coal mining industry, MSHA is not aware of any mine owned by state or local governments. Of the 11,337 M/NM mines and 3,569 M/NM contractors, there are 201 M/NM mines (about 1.8 percent) operated and/or owned by either a state or local government. Of these 201 mines, almost all operate in States that have "right to know" laws affecting public employees and, therefore, they will not incur compliance costs as a result of this rulemaking. We do not believe that the mines which are operated and/or owned by either a State or local government will be adversely affected by this rulemaking. All but one of these mines employ fewer than 20 workers. The cost of the interim final rule on the average M/NM mine operator or contractor that employs fewer than 20 workers is approximately \$230 annually. The cost of the interim final rule on the average M/NM mine operator or

contractor that employs 500 or fewer workers is approximately \$270 annually. In the long run, these modest compliance costs should be offset by a reduction in chemically related injuries and illnesses and associated operator costs.

#### NATIONAL ENVIRONMENTAL POLICY ACT

The National Environmental Policy Act (NEPA) of 1969 requires each Federal agency to consider the environmental effects of proposed actions and to prepare an Environmental Impact Statement on major actions significantly affecting the quality of the environment. We have reviewed the interim final HazCom rule in accordance with NEPA requirements (42 U.S.C. 4321 *et. seq.*), the regulations of the Council of Environmental Quality (40 CFR Part 1500), and the Department of Labor's NEPA procedures (29 CFR Part 11). As a result of this review, we have determined that this interim final rule will have no significant environmental impact.

#### EXECUTIVE ORDER 12630: GOVERNMENT ACTIONS AND INTERFERENCE WITH CONSTITUTIONALLY PROTECTED PROPERTY RIGHTS

This interim final rule is not subject to Executive Order 12630, Government Actions and Interference with Constitutionally Protected Property Rights, because it does not involve implementation of a policy with takings implications.

EXECUTIVE ORDER 12988: CIVIL JUSTICE REFORM

The Agency has reviewed Executive Order 12988, Civil Justice Reform, and determined that the interim final HazCom rule will not unduly burden the Federal court system. The interim final rule has been written so as to provide a clear legal standard for affected conduct and has been reviewed carefully to eliminate drafting errors and ambiguities.

EXECUTIVE ORDER 13045: PROTECTION OF CHILDREN FROM ENVIRONMENTAL HEALTH RISKS AND SAFETY RISKS

In accordance with Executive Order 13045, we have evaluated the environmental health and safety effects of the interim final HazCom rule on children. We have determined that the interim final rule will not have an adverse impact on children.

EXECUTIVE ORDER 13084: CONSULTATION AND COORDINATION WITH INDIAN TRIBAL GOVERNMENTS

We certify that the interim final HazCom rule will not impose substantial direct compliance costs on Indian tribal governments.

EXECUTIVE ORDER 13132: FEDERALISM

We have reviewed the interim final HazCom rule in accordance with Executive Order 13132 regarding federalism and have determined that it does not have "federalism implications." The interim final rule does not "have substantial direct effects on

the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government."



## VII. PAPERWORK REDUCTION ACT OF 1995

### INTRODUCTION

The purpose of this chapter is to show the burden hours and related costs which would be borne by underground and surface coal and metal and non-metal (M/NM) mine operators, including independent contractors, as a result of the interim final HazCom rule. The costs in this chapter are derived from Chapter IV of this REA. However, in this chapter, we estimate costs only in relation to the burden hours that the interim final rule imposes. Therefore, not all costs derived in Chapter IV appear below. Those costs derived in Chapter IV that do not have burden hours related to them do not appear in this chapter.

### SUMMARY OF PAPERWORK BURDEN HOURS AND RELATED COSTS

The interim final HazCom rule has first year burden hours (those that occur only in the first year) and annual burden hours (which occur in the first year and every year thereafter). How we calculated the HazCom burden hours and costs, however, requires an explanation. In most cases, the interim final HazCom rule imposes burden hours and costs that will be the same every year, beginning with the first year that the rule goes into effect. These are "annual" burden hours and costs, as traditionally defined.

In a few cases, however, the interim final HazCom rule imposes burden hours and costs which will be the same each year

starting in the second year, but whose first year burden hours and costs are different. We transformed these first year burden hours and costs and annual burden hours and costs starting in Year 2 into adjusted first year burden hours and costs (first year burden hours and costs minus an amount equal to annual burden hours and costs starting with Year 2 after the rule takes effect) and true annual burden hours and costs starting in Year 1 after the rule takes effect.<sup>28</sup>

### Coal Mine Operators

First Year Burden Hours: During the first year the HazCom rule is in effect, coal mine operators will incur total burden hours of 141,487 and associated costs of \$5,160,807. These burden hours and costs are composed of 95,915 first year burden hours and associated costs of \$3,848,097 (these first year costs annualized are \$241,391) that will occur only in the first year (from Table VII-1), and 45,572 annual burden hours and associated costs of \$1,305,321 that will occur every year beginning in the first year (from Table VII-2).

Annual Burden Hours in Second Year and Every Year Thereafter:  
In the second year that the HazCom rule is in effect, and every

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<sup>28</sup> A hypothetical example might help to explain this procedure. Suppose that burden costs are \$2,000 the first year and \$400 each year thereafter. The adjustment procedure simply splits first year burden costs into two parts: (1) \$400, for the first year of annual burden costs; and (2) the residual \$1,600. Consequently, adjusted first year burden costs would be \$1,600 and annual burden costs (starting in year 1) would be \$400.

year thereafter, total annual burden hours for coal mine operators will be 45,572 and associated costs will be \$1,305,321 (from Table VII-2).

#### M/NM Mine Operators

First Year Burden Hours: During the first year the HazCom rule is in effect, M/NM mine operators will incur total burden hours of 370,234 and associated costs of \$12,210,271. These burden hours and costs are composed of: 251,026 first year burden hours and associated costs of \$9,169,121 (these first year costs annualized are \$641,838) that will occur only in the first year (from Table VII-3); and 119,208 annual burden hours and associated costs of \$3,041,150 that will occur every year beginning in the first year (from Table VII-4).

Annual Burden Hours in Second Year and Every Year Thereafter: In the second year that the HazCom rule is in effect, and every year thereafter, total annual burden hours for M/NM mine operators will be 119,208 and associated costs will be \$3,041,150 (from Table VII-4).

**Table VII-1: First Year Paperwork Burden Hours and Costs to Coal Mine Operators for HazCom Rule \***

Paperwork Provisions	\$	Employ < 20			Employ 20 to 500			Employ >500			Total		
		Burden Hours	First Year Costs	Annualized Costs	Burden Hours	First Year Costs	Annualized Costs	Burden Hours	First Year Costs	Annualized Costs	Burden Hours	First Year Costs	Annualized Costs
Develop HazCom Program for Operators w/o Program <sup>a</sup>	47.21	26,807	\$ 1,058,431	\$74,090	20,916	\$825,849	\$57,809	0	\$0	\$0	47,723	\$1,884,280	\$131,900
Review Existing Program	47.21	14,190	\$ 560,279	\$39,220	4,068	\$160,621	\$11,243	168	\$6,633	\$464	18,426	\$727,534	\$50,927
Costs for Developing MSDS <sup>a</sup>	47.41	1,449	\$ 57,212	\$4,005	310	\$12,230	\$856	0	\$0	\$0	1,759	\$69,443	\$4,861
Develop HazCom Training Program	47.51	13,404	\$ 529,245	\$37,047	8,688	\$343,038	\$24,013	0	\$0	\$0	22,092	\$872,283	\$61,060
Prepare for Initial HazCom Training Program	47.51	4,468	\$ 222,462	\$15,572	1,448	\$72,096	\$5,047	0	\$0	\$0	5,916	\$294,558	\$20,619
<b>Total</b>		<b>60,318</b>	<b>\$ 2,427,629</b>	<b>\$ 169,934</b>	<b>35,430</b>	<b>\$ 1,413,835</b>	<b>\$ 98,968</b>	<b>168</b>	<b>\$ 6,633</b>	<b>\$ 464</b>	<b>95,915</b>	<b>\$ 3,848,097</b>	<b>\$269,367</b>

\* Source: Tables VII-5, VII-7, VII-10, VII-14, and VII-16 .

<sup>a</sup> Burden hours, first year costs, and annualized costs are adjusted (first year - annual).

**Table VII-2: Annual Paperwork Burden Hours and Costs to Coal Mine Operators for HazCom Rule\***

Paperwork Provisions	§	Employ <20		Employ 20 to 500		Employ >500		Total	
		Annual Burden Hours	Annual Costs	Annual Burden Hours	Annual Costs	Annual Burden Hours	Annual Costs	Annual Burden Hours	Annual Costs
Develop HazCom Program for Operators w/o Program	47.21	3,830	\$151,204	2,988	\$117,978	0	\$0	6,818	\$269,183
HazCom Program for New Operations	47.21	2,724	\$107,555	1,752	\$69,176	0	\$0	4,476	\$176,731
Cost to Label Containers	47.31	313	\$15,574	124	\$6,169	0	\$0	437	\$21,743
Updating MSDS	47.41	207	\$8,173	44	\$1,747	0	\$0	251	\$9,920
Maintaining MSDS	47.41	5,106	\$94,767	3,486	\$64,700	0	\$0	8,592	\$159,468
Develop MSDS for New Operators	47.41	681	\$26,889	438	\$17,294	0	\$0	1,119	\$44,183
Administer HazCom Training Program	47.51	3,351	\$132,311	2,172	\$85,759	0	\$0	5,523	\$218,071
HazCom Training for New Miners	47.51	1,816	\$76,240	1,022	\$41,766	0	\$0	2,838	\$118,006
Maintain HazCom Training Program	47.53	552	\$10,241	2,455	\$45,566	0	\$0	3,007	\$55,808
Provide Copies of HazCom Information to Miners	47.63	252	\$4,682	1,351	\$25,074	0	\$0	1,603	\$29,756
Provide Copies of HazCom Information to Customers	47.63	6,127	\$113,721	4,781	\$88,732	0	\$0	10,908	\$202,452
<b>Total</b>		<b>24,959</b>	<b>\$ 741,358</b>	<b>20,613</b>	<b>\$ 563,963</b>	<b>0</b>	<b>\$0</b>	<b>45,572</b>	<b>\$1,305,321</b>

\* Source: Tables VII-6, VII-8, VII-9, VII-11, VII-12, VII-13, VII-15, VII-17, VII-18, VII-19, and VII-20.

**Table VII-3: First Year Paperwork Burden Hours and Costs to M/NM Mine Operators for HazCom Rule \***

Paperwork Provisions	§	Employ < 20			Employ >20 & <500			Employ >500			Total		
		Burden Hours	First Year Costs	Annualized Costs	Burden Hours	First Year Costs	Annualized Costs	Burden Hours	First Year Costs	Annualized Costs	Burden Hours	First Year Costs	Annualized Costs
Develop HazCom Program for Operators w/o Program	47.21	98,847	\$3,539,454	\$247,762	26,796	\$959,495	\$67,165	0	\$0	\$0	125,643	\$4,498,949	\$314,926
Review Existing Program	47.21	21,222	\$759,905	\$53,193	7,824	\$280,157	\$19,611	672	\$24,063	\$1,684	29,718	\$1,064,124	\$74,489
Costs for Developing MSDS	47.41	7,445	\$266,568	\$18,660	1,019	\$36,470	\$2,553	0	\$0	\$0	8,463	\$303,038	\$21,213
Develop HazCom Training Program	47.51	53,484	\$1,915,123	\$134,059	13,620	\$487,697	\$34,139	0	\$0	\$0	67,104	\$2,402,820	\$168,197
Prepare for Initial HazCom Training Program	47.51	17,828	\$798,516	\$55,896	2,270	\$101,673	\$7,117	0	\$0	\$0	20,098	\$900,189	\$63,013
<b>Total</b>		<b>198,826</b>	<b>\$ 7,279,566</b>	<b>\$ 509,570</b>	<b>51,529</b>	<b>\$ 1,865,492</b>	<b>\$ 130,584</b>	<b>672</b>	<b>\$ 24,063</b>	<b>\$ 1,684</b>	<b>251,026</b>	<b>\$ 9,169,121</b>	<b>\$ 641,838</b>

\* Source: Tables VII-5, VII-7, VII-10, VII-14, and VII-16.

<sup>a</sup> Burden hours, first year costs, and annualized costs are adjusted (first year - annual).

**Table VII-4: Annual Paperwork Burden Hours and Costs to M/NM Mine Operators for HazCom Rule\***

Paperwork Provisions	§	Employ <20		Employ 20 to 500		Employ >500		Total	
		Annual Burden Hours	Annual Costs	Annual Burden Hours	Annual Costs	Annual Burden Hours	Annual Costs	Annual Burden Hours	Annual Costs
Develop HazCom Program for Operators w/o Program	47.21	14,121	\$505,636	3,828	\$137,071	0	\$0	17,949	\$642,707
HazCom Program for New Operations	47.21	6,840	\$244,923	456	\$16,328	0	\$0	7,296	\$261,251
Cost to Label Containers	47.31	702	\$31,443	204	\$9,124	0	\$0	906	\$40,566
Updating MSDS	47.41	1,064	\$38,081	146	\$5,210	0	\$0	1,209	\$43,291
Maintaining MSDS	47.41	18,828	\$330,808	4,466	\$78,468	0	\$0	23,294	\$409,276
Develop MSDS for New Operators	47.41	1,710	\$61,231	228	\$8,164	0	\$0	1,938	\$69,395
Administer HazCom Training Program	47.51	13,371	\$478,781	3,405	\$121,924	0	\$0	16,776	\$600,705
HazCom Training for New Miners	47.51	4,560	\$173,212	266	\$9,845	0	\$0	4,826	\$183,057
Maintain HazCom Training Program	47.53	2,451	\$43,070	3,907	\$68,640	0	\$0	6,358	\$111,710
Provide Copies of HazCom Labeling Information to Miners	47.63	1,036	\$18,194	1,757	\$30,867	0	\$0	2,792	\$49,061
Provide Copies of HazCom Labeling Information to Customers	47.63	22,594	\$396,970	13,270	\$233,161	0	\$0	35,864	\$630,130
<b>Total</b>		<b>87,276</b>	<b>\$ 2,322,348</b>	<b>31,932</b>	<b>\$ 718,802</b>	<b>0</b>	<b>\$0</b>	<b>119,208</b>	<b>\$3,041,150</b>

\* Source: Tables VII-6, VII-8, VII-9, VII-11, VII-12, VII-13, VII-15, VII-17, VII-18, VII-19, and VII-20.









## Section 47.21 HazCom Program

### Adjusted First Year Burden Hours and Costs For Mine Operators Without a Written HazCom Program to Develop One

Under this section operators currently without a written HazCom program are required to write one.

During the first year that the rule is in effect, there are 2,553 coal mine operators that employ fewer than 20 workers, and 996 coal mine operators that employ 20 to 500 workers that will have to write a HazCom program. In addition, 9,414 M/NM mine operators that employ fewer than 20 workers, and 1,276 M/NM mine operators that employ 20 to 500 workers, will be affected.

MSHA estimates that it will take an average of 8 hours of supervisor time and 4 hours of clerical time to develop such a program for mine operations that employ fewer than 20 workers, and an average of 16 hours of supervisor time and 8 hours of clerical time for mine operations that employ 20 to 500 workers. Therefore, no matter what the mine size, the supervisor spends 67 percent of the time needed to develop the program, while the clerical person spends 33 percent.

For coal mine operators the hourly wage rate is \$49.79 for a supervisor and \$18.56 for a clerical worker. For M/NM mine operators the hourly wage rate is \$44.79 for a supervisor and \$17.57 for a clerical worker.

Table VII-5 shows the adjusted first year burden hours and costs for mine operators without a HazCom program to develop one.

**Table VII-5: Section 47.21  
Adjusted First Year Burden Hours and Costs For Mine  
Operators Without a Written HazCom Program to Develop One**

Adjusted First Year Burden Hours						
Mine Size	No. of Mines	Time to Develop Program <sup>a</sup>	First Year Burden Hours	Annual Burden Hours <sup>b</sup>	Adjusted First Year Burden Hours <sup>c</sup>	
<b>Coal</b>						
Small (<20)	2,553	12	30,636	3,830	26,807	
Large (20-500)	996	24	23,904	2,988	20,916	
<b>Total Coal</b>	<b>3,549</b>		<b>54,540</b>	<b>6,818</b>	<b>47,723</b>	
<b>M/NM</b>						
Small (<20)	9,414	12	112,968	14,121	98,847	
Large (20-500)	1,276	24	30,624	3,828	26,796	
<b>Total M/NM</b>	<b>10,690</b>		<b>143,592</b>	<b>17,949</b>	<b>125,643</b>	
Adjusted First Year Burden Costs						
Mine Size		Wage Rates <sup>d</sup>	First Year Burden Costs <sup>e</sup>	Annual Burden Costs <sup>f</sup>	Adjusted First Year Burden Costs <sup>g</sup>	Adjusted First Year Burden Costs Annualized <sup>h</sup>
<b>Coal</b>						
Small (<20)		\$39.48	\$1,209,635	\$151,204	\$1,058,431	\$74,090
Large (20-500)		\$39.48	\$943,828	\$117,978	\$825,849	\$57,809
<b>Total Coal</b>			<b>\$2,153,463</b>	<b>\$269,183</b>	<b>\$1,884,280</b>	<b>\$131,900</b>
<b>M/NM</b>						
Small (<20)		\$35.81	\$4,045,090	\$505,636	\$3,539,454	\$247,762
Large (20-500)		\$35.81	\$1,096,566	\$137,071	\$959,495	\$67,165
<b>Total M/NM</b>			<b>\$5,141,656</b>	<b>\$642,707</b>	<b>\$4,498,949</b>	<b>\$314,926</b>

<sup>a</sup> For mines with <20 workers, 12 hrs. = (8 Superv. hrs. + 4 clerical hrs.).  
For mines with 20 to 500 workers, 24 hrs. = (16 Superv. hrs. + 8 clerical hrs.).

<sup>b</sup> Equivalent amount of annual burden hours from Table VII-4.

<sup>c</sup> First Year Burden Hours minus annual burden hours.

<sup>d</sup> For Coal, \$39.48 = (0.67 x \$49.79) + (0.33 x \$18.56).  
For M/NM, \$35.81 = (0.67 x \$44.79) + (0.33 x \$17.57).

<sup>e</sup> First year burden hours x wage rates.

<sup>f</sup> Equivalent amount of annual burden costs from Table VII-4.

**Section 47.21 HazCom Program - Continued**

**Annual Burden Hours and Costs For Mine Operators That Developed a HazCom Program to Update it Each Year**

Under this section operators currently without a written HazCom program would need to update their program each year.

Each year the rule is in effect, there are 2,553 coal mine operators that employ fewer than 20 workers, and 996 coal mine operators that employ 20 to 500 workers that will have to update their HazCom program. In addition, 9,414 M/NM mine operators that employ fewer than 20 workers, and 1,276 M/NM mine operators that employ 20 to 500 workers, will be affected.

MSHA estimates that it will take an average of 1 hour of supervisor time and 0.5 hours of clerical time to develop such a program for mine operations that employ fewer than 20 workers, and an average of 2 hours of supervisor time and 1 hour of clerical time for mine operations that employ 20 to 500 workers.

For coal mine operators the hourly wage rate is \$49.79 for a supervisor and \$18.56 for a clerical worker. For M/NM mine operators the hourly wage rate is \$44.79 for a supervisor and \$17.57 for a clerical worker.

Table VII-6 shows annual burden hours and costs for mine operators without a HazCom program to develop one.

**Table VII-6: Section 47.21  
Annual Burden Hours and Costs for Mine Operators That Developed a  
HazCom Program to Update it Each Year, After the First Year**

<b>Annual Burden Hours</b>					
<b>Mine Size</b>	<b>No. of Mines</b>	<b>Time to Update Program<sup>a</sup></b>	<b>Total Annual Burden Hours</b>	<b>Wage Rates<sup>b</sup></b>	<b>Annual Burden Costs</b>
<b>Coal</b>					
<b>Small (&lt;20)</b>	2,553	1.5	3,830	\$39.48	\$151,204
<b>Large (20-500)</b>	996	3	2,988	\$39.48	\$117,978
<b>Total Coal</b>	3,549		6,818		\$269,183
<b>M/NM</b>					
<b>Small (&lt;20)</b>	9,414	1.5	14,121	\$35.81	\$505,636
<b>Large (20-500)</b>	1,276	3	3,828	\$35.81	\$137,071
<b>Total M/NM</b>	10,690		17,949		\$642,707

<sup>a</sup> For mines with <20 workers, 1.5 hrs. = (1 Superv. hr. + 0.5 clerical hrs.)  
For mines with 20 to 500 workers, 3 hrs. = (2 Superv. hrs. + 1 clerical hr.)

<sup>b</sup> Wage rates from Table VII-5.

**Section 47.21 HazCom Program - Continued**

**First Year Burden Hours and Costs For Mine Operators With a HazCom Program to Review Their Existing Programs**

Under this section operators currently with a HazCom program will need to review their existing programs for compliance with the interim final rulemaking.

During the first year that the rule is in effect, there are 2,365 coal mine operators that employ fewer than 20 workers, 339 coal mine operators that employ 20 to 500 workers, and 7 coal mine operators that employ more than 500 workers that will have to review their existing HazCom Program. In addition, 3,537 M/NM mine operators that employ fewer than 20 workers, 652 M/NM mine operators that employ 20 to 500 workers, and 28 M/NM mine operators that employ more than 500 workers, will be affected.

MSHA estimates that it will take an average of 4 hours of supervisor time and 2 hours of clerical time to voluntarily adapt a written HazCom program for mines employing fewer than 20 workers, an average of 8 hours of supervisor time and 4 hours of clerical time for mines employing 20 to 500 workers, and 16 hours of supervisor time and 8 hours of clerical time for mines employing more than 500 workers. Therefore, no matter what the mine size, the supervisor spends 67 percent of the time required for completing a review of the existing program, while the clerical person spends 33 percent.

For coal mine operators the hourly wage rate is \$49.79 for a supervisor and \$18.56 for a clerical worker. For M/NM mine operators the hourly wage rate is \$44.79 for a supervisor and \$17.57 for a clerical worker.

Table VII-7 shows the first year burden hours and costs for operators with a HazCom program to review their existing programs.

**Table VII-7: Section 47.21  
First Year Burden Hours and Costs for Mine Operators With a  
HazCom Program to Review Their Existing Programs**

First Year Burden Hours						
Mine Size	No. of Mines	Time to Review & Modify Program <sup>a</sup>	First Year Burden Hours	Wage Rates <sup>b</sup>	First Year Burden Costs	Annualized First Year Costs <sup>c</sup>
<b>Coal</b>						
Small (<20)	2,365	6	14,190	\$39.48	\$560,279	\$39,220
Large (20-500)	339	12	4,068	\$39.48	\$160,621	\$11,243
Large (>500)	7	24	168	\$39.48	\$6,633	\$464
<b>Total Coal</b>	<b>2,711</b>		<b>18,426</b>		<b>\$727,534</b>	<b>\$50,927</b>
<b>M/NM</b>						
Small (<20)	3,537	6	21,222	\$35.81	\$759,905	\$53,193
Large (20-500)	652	12	7,824	\$35.81	\$280,157	\$19,611
Large (>500)	28	24	672	\$35.81	\$24,063	\$1,684
<b>Total M/NM</b>	<b>4,909</b>		<b>29,718</b>		<b>\$1,064,124</b>	<b>\$74,489</b>

<sup>a</sup> For mines with <20 workers, 6 hrs. = (4 Superv. hrs. + 2 clerical hrs.).  
For mines with 20 to 500 workers, 12 hrs. = (8 Superv. hrs. + 4 clerical hrs.).  
For mines with >500 workers, 24 hrs. = (16 Superv. hrs. + 8 clerical hrs.).

<sup>b</sup> For Coal, \$39.48 = (0.67 x \$49.79) + (0.33 x \$18.56).  
For M/NM, \$35.81 = (0.67 x \$44.79) + (0.33 x \$17.57).

<sup>c</sup> First year burden costs x annualization factor of 0.07.



**ection 47.21 HazCom Program - Continued**

**Annual Burden Hours and Costs For New Mine Operators to Develop a HazCom Program**

Under this section new mine operators will need to develop a HazCom program.

During the first year that the rule is in effect, there are 227 new coal mine operators that employ fewer than 20 workers, and 73 new coal mine operators that employ 20 to 500 workers that will need to develop a HazCom program. In addition, 570 new M/NM mine operators that employ fewer than 20 workers, and 19 new M/NM mine operators that employ 20 to 500 workers, will be affected.

MSHA estimates that it will take an average of 8 hours of supervisor time and 4 hours of clerical time to voluntarily adapt a written HazCom program for mines employing fewer than 20 workers, and an average of 16 hours of supervisor time and 8 hours of clerical time for mines employing 20 to 500 workers. Therefore, no matter what the mine size, the supervisor spends 67 percent of the time needed to develop the program, while the clerical person spends 33 percent.

For coal mine operators the hourly wage rate is \$49.79 for a supervisor and \$18.56 for a clerical worker. For M/NM mine operators the hourly wage rate is \$44.79 for a supervisor and \$17.57 for a clerical worker.

Table VII-8 shows the annual burden hours and costs for new mine operators to develop a HazCom program.

**Table VII-8: Section 47.21  
Annual Burden Hours and Costs for New Mine Operators  
to Develop a HazCom Programs**

<b>Annual Burden Hours</b>					
<b>Mine Size</b>	<b>No. of New Mines</b>	<b>Time to Develop Program<sup>a</sup></b>	<b>Total Annual Burden Hours</b>	<b>Wage Rates<sup>b</sup></b>	<b>Annual Burden Costs</b>
<b>Coal</b>					
<b>Small (&lt;20)</b>	227	12	2,724	\$39.48	\$107,555
<b>Large (20-500)</b>	73	24	1,752	\$39.48	\$69,176
<b>Total Coal</b>	300		4,476		\$176,731
<b>M/NM</b>					
<b>Small (&lt;20)</b>	570	12	6,840	\$35.81	\$244,923
<b>Large (20-500)</b>	19	24	456	\$35.81	\$16,328
<b>Total M/NM</b>	589		7,296		\$261,251

<sup>a</sup> For mines with <20 workers, 12 hrs. = (8 Superv. hrs. + 4 clerical hrs.)

For mines with 20 to 500 workers, 24 hrs. = (16 Superv. hrs. + 8 clerical hrs.)

<sup>b</sup> For Coal, \$39.48 = (0.67 x \$49.79) + (0.33 x \$18.56).

For M/NM, \$35.81 = (0.67 x \$44.79) + (0.33 x \$17.57).

## Section 47.31 Labeling

### Annual Burden Hours and Costs to Label Containers

The operator must ensure that each container of a hazardous chemical has a label.

Annually, there are 391 coal mine operators that employ fewer than 20 workers, and 59 coal mine operators that employ 20 to 500 workers that will need to label containers. In addition, 1,170 M/NM mine operators that employ fewer than 20 workers, and 97 M/NM mine operators that employ 20 to 500 workers, will be affected.

For all mines, in each mine size category, MSHA estimates that it will take 0.2 hours to verify or fill-out information and apply it to a container.

It is estimated that of 8 containers per average coal mine employing fewer than 20 workers, 50 percent (4 containers) need to be labeled. Of the 6 containers per average M/NM mine employing fewer than 20 workers, 50 percent (3 containers) need to be labeled. Of the 30 containers in either the average coal or M/NM mine employing 20 to 500 workers, 35 percent (10.5 containers) need to be labeled.

The hourly wage rate for a health and safety personnel is \$49.79 for coal, and \$44.79 for M/NM.

Table VII-9 shows the annual burden hours and costs to label containers.

**Table VII-9: Section 47.31  
Annual Burden Hours and Costs to Label Containers**

<b>Annual Burden Hours</b>						
<b>Mine Size</b>	<b>No. of Mines</b>	<b>Time to Label Containers<sup>a</sup></b>	<b>No. of Containers to Label per mine<sup>b</sup></b>	<b>Total Annual Burden Hours</b>	<b>Wage Rates</b>	<b>Annual Burden Costs</b>
<b>Coal</b>						
<b>Small (&lt;20)</b>	391	0.2	4	313	\$49.79	\$15,574
<b>Large (20-500)</b>	59	0.2	10.5	124	\$49.79	\$6,169
<b>Total Coal</b>	450			437		\$21,743
<b>M/NM</b>						
<b>Small (&lt;20)</b>	1,170	0.2	3	702	\$44.79	\$31,443
<b>Large (20-500)</b>	97	0.2	10.5	204	\$44.79	\$9,124
<b>Total M/NM</b>	1,267			906		\$40,566

<sup>a</sup> For all mines, 0.2 hrs. to verify or fill-out lable information and apply it to a container.

<sup>b</sup> For coal mines employing fewer than 20 workers, 4 = (8 containers x 0.5).

For M/NM mines employing fewer than 20 workers, 3 = (6 containers x 0.5).

For coal and M/NM mines employing 20 to 500 workers, 10.5 = (30 containers x 0.35).

## Section 47.41 Material Safety Data Sheets

### Adjusted First Year Burden Hours and Costs for Developing Material Safety Data Sheets

For each hazardous chemical produced at the mine, the mine operator must prepare a Material Safety Data Sheet (MSDS).

During the first year that the rule is in effect, there are 552 coal mine operators that employ fewer than 20 workers, and 59 coal mine operators that employ 20 to 500 workers that will need to prepare MSDSs. In addition, 2,836 M/NM mine operators that employ fewer than 20 workers, and 97 M/NM mine operators that employ 20 to 500 workers, will be affected.

For all coal and M/NM mine operators, in all mine size categories, MSHA estimates that it will take an average of 2 hours of supervisor time and 1 hours of clerical time to prepare an MSDS. Therefore, no matter what the mine size, the supervisor spends 67 percent of the time needed to develop the program, while the clerical person spends 33 percent.

The number of MSDS that will need to be developed are: 1 MSDS for either a coal or M/NM mine operator employing fewer than 20 workers; 2 MSDS for a coal mine operator employing 20 to 500 workers; and 4 MSDS for a M/NM mine operator employing 20 to 500 workers.

For coal mine operators the hourly wage rate is \$49.79 for a supervisor and \$18.56 for a clerical worker. For M/NM mine

operators the hourly wage rate is \$44.79 for a supervisor and \$17.57 for a clerical worker.

Table VII-10 shows the adjusted first year burden hours and costs for developing material safety data sheets.

**Table VII-10: Section 47.41  
Adjusted First Year Burden Hours and Costs For  
Developing Material Safety Data Sheets**

Adjusted First Year Burden Hours						
Mine Size	No. of Mines	Time to Develop MSDS <sup>a</sup>	No. of MSDS Developed per Mine	First Year Burden Hours	Annual Burden Hours <sup>b</sup>	Adjusted First Year Burden Hours <sup>c</sup>
<b>Coal</b>						
Small (<20)	552	3	1	1,656	207	1,449
Large (20-500)	59	3	2	354	44	310
<b>Total Coal</b>	<b>611</b>			<b>2,010</b>	<b>251</b>	<b>1,759</b>
<b>M/NM</b>						
Small (<20)	2,836	3	1	8,508	1,064	7,445
Large (20-500)	97	3	4	1,164	146	1,019
<b>Total M/NM</b>	<b>2,933</b>			<b>9,672</b>	<b>1,209</b>	<b>8,463</b>
Adjusted First Year Burden Costs						
Mine Size		Wage Rates <sup>d</sup>	First Year Burden Costs <sup>e</sup>	Annual Burden Costs <sup>f</sup>	Adjusted First Year Burden Costs <sup>g</sup>	Adjusted First Year Burden Costs Annualized <sup>h</sup>
<b>Coal</b>						
Small (<20)		\$39.48	\$65,386	\$8,173	\$57,212	\$4,005
Large (20-500)		\$39.48	\$13,977	\$1,747	\$12,230	\$856
<b>Total Coal</b>			<b>\$79,363</b>	<b>\$9,920</b>	<b>\$69,443</b>	<b>\$4,861</b>
<b>M/NM</b>						
Small (<20)		\$35.81	\$304,649	\$38,081	\$266,568	\$18,660
Large (20-500)		\$35.81	\$41,680	\$5,210	\$36,470	\$2,553
<b>Total M/NM</b>			<b>\$346,329</b>	<b>\$43,291</b>	<b>\$303,038</b>	<b>\$21,213</b>

<sup>a</sup> For all mines, 3 hrs. = (2 Superv. hrs. + 1 clerical hr.).

<sup>b</sup> Equivalent amount of annual burden hours from Table VII-11.

<sup>c</sup> First Year Burden Hours minus annual burden hours.

<sup>d</sup> For Coal, \$39.48 = (0.67 x \$49.79) + (0.33 x \$18.56).  
For M/NM, \$35.81 = (0.67 x \$44.79) + (0.33 x \$17.57).

<sup>e</sup> First year burden hours x wage rates.

<sup>f</sup> Equivalent amount of annual burden costs from Table VII-11.

<sup>g</sup> First Year Burden Costs minus annual burden Costs.

## Section 47.41 Material Safety Data Sheets - Continued

### Annual Burden Hours and Costs for Updating Material Safety Data Sheets

For each hazardous chemical produced at the mine that has an MSDS, the mine operator must update the MSDS annually.

During the first year that the rule is in effect, there are 552 coal mine operators that employ fewer than 20 workers, and 59 coal mine operators that employ 20 to 500 workers that will need to update MSDSs. In addition, 2,836 M/NM mine operators that employ fewer than 20 workers, and 97 M/NM mine operators that employ 20 to 500 workers, will be affected.

MSHA estimates that it will take an average of 1 hour of supervisor time and 0.5 hours of clerical time to update a MSDS for mines employing fewer than 20 workers, and an average of 2 hours of supervisor time and 1 hour of clerical time for mines employing 20 to 500 workers. Therefore, no matter what the mine size, the supervisor spends 67 percent of the time needed to update the MSDS, while the clerical person spends 33 percent.

The number of MSDS that will need to be update annually are 25 percent of those that were initially developed. Thus, 0.25 (1 MSDS x 0.25) for either a coal or M/NM mine operator employing fewer than 20 workers; 0.5 (2 MSDS x 0.25) for a coal mine operator employing 20 to 500 workers; and 1 (4 MSDS x 0.25) for a M/NM mine operator employing 20 to 500 workers.

For coal mine operators the hourly wage rate is \$49.79 for a supervisor and \$18.56 for a clerical worker. For M/NM mine operators the hourly wage rate is \$44.79 for a supervisor and \$17.57 for a clerical worker.

Table VII-11 shows the annual burden hours and costs for updating material safety data sheets.

**Table VII-11: Section 47.41  
Annual Burden Hours and Costs for  
Updating Material Safety Data Sheets**

Annual Burden Hours						
Mine Size	No. of Mines	Time to Update MSDS <sup>a</sup>	No. of MSDS to Update per Mine <sup>b</sup>	Total Annual Burden Hours	Wage Rates <sup>c</sup>	Annual Burden Costs
<b>Coal</b>						
Small (<20)	552	1.5	0.25	207	\$39.48	\$8,173
Large (20-500)	59	1.5	0.5	44	\$39.48	\$1,747
<b>Total Coal</b>	<b>611</b>			<b>251</b>		<b>\$9,920</b>
<b>M/NM</b>						
Small (<20)	2,836	1.5	0.25	1,064	\$35.81	\$38,081
Large (20-500)	97	1.5	1	146	\$35.81	\$5,210
<b>Total M/NM</b>	<b>2,933</b>			<b>1,209</b>		<b>\$43,291</b>

<sup>a</sup> For all mines, 1.5 hrs. = (1 Superv. hr. + 0.5 clerical hrs.)

<sup>b</sup> For each mine size, 25% of the MSDS developed in Table VII-8, will need to be updated annually.

<sup>c</sup> For coal mines, \$39.48 = (0.67 x \$49.79) + (0.33 x \$18.56).

For M/NM mines, \$35.81 = (0.67 x \$44.79) + (0.33 x \$17.57).



## Section 47.41 Material Safety Data Sheets - Continued

### Annual Burden Hours and Costs for Maintaining Material Safety Data Sheets

The mine operator must maintain each MSDS created by the mine operator, as well as those received from other parties.

Maintenance in this case means that a clerical worker will file each MSDS in a notebook or other location in the work area.

Annually, there are 2,553 coal mine operators that employ fewer than 20 workers, and 996 coal mine operators that employ 20 to 500 workers that will need to file MSDSs. In addition, 9,414 M/NM mine operators that employ fewer than 20 workers, and 1,276 M/NM mine operators that employ 20 to 500 workers, will be affected.

For all mines, in all mine size categories, on average, MSHA estimates that it will take a clerical worker about 0.05 hours to maintain the MSDS.

The number of MSDS created by mine operator and those received by other parties that will need to be filed will be 40 per coal or M/NM mine that employs fewer than 20 workers and 70 per coal or M/NM mine that employs 20 to 500 workers.

For coal mine operators the hourly wage rate is \$18.56 for a clerical worker. For M/NM mine operators the hourly wage rate is \$17.57 for a clerical worker.

Table VII-12 shows the annual burden hours and costs for maintaining material safety data sheets.

**Table VII-12: Section 47.41  
Annual Burden Hours and Costs for Maintaining MSDS  
(Filing MSDS)**

<b>Annual Burden Hours</b>						
<b>Mine Size</b>	<b>No. of Mines</b>	<b>Time to File MSDS<sup>a</sup></b>	<b>No. of MSDS to File per Mine<sup>b</sup></b>	<b>Total Annual Burden Hours</b>	<b>Wage Rates</b>	<b>Annual Burden Costs</b>
<b>Coal</b>						
<b>Small (&lt;20)</b>	2,553	0.05	40	5,106	\$18.56	\$94,767
<b>Large (20-500)</b>	996	0.05	70	3,486	\$18.56	\$64,700
<b>Total Coal</b>	3,549			8,592		\$159,468
<b>M/NM</b>						
<b>Small (&lt;20)</b>	9,414	0.05	40	18,828	\$17.57	\$330,808
<b>Large (20-500)</b>	1,276	0.05	70	4,466	\$17.57	\$78,468
<b>Total M/NM</b>	10,690			23,294		\$409,276

<sup>a</sup> For all mines with, takes 0.05 hrs. for clerical worker to file an MSDS.

<sup>b</sup> MSDS are those received from other parties, as well as those that the operator creates.

## Section 47.41 Material Safety Data Sheets - Continued

### Annual Burden Hours and Costs for New Mines to Develop Material Safety Data Sheets

For each hazardous chemical produced at a new mine, the new mine operator must develop a material safety data sheet (MSDS).

During the first year that the rule is in effect, there are 227 new coal mine operators that employ fewer than 20 workers, and 73 new coal mine operators that employ 20 to 500 workers that will need to develop MSDSs. In addition, 570 new M/NM mine operators that employ fewer than 20 workers, and 19 new M/NM mine operators that employ 20 to 500 workers, will be affected.

For all coal and M/NM mine operators, in all mine size categories, MSHA estimates that it will take an average of 2 hours of supervisor time and 1 hours of clerical time to prepare an MSDS. Therefore, no matter what the mine size, the supervisor spends 67 percent of the time needed to develop the program, while the clerical person spends 33 percent.

The number of MSDS that will need to be develop at each new mine are: 1 MSDS for either a coal or M/NM mine operator employing fewer than 20 workers; 2 MSDS for a coal mine operator employing 20 to 500 workers; and 4 MSDS for a M/NM mine operator employing 20 to 500 workers.

For coal mine operators the hourly wage rate is \$49.79 for a supervisor and \$18.56 for a clerical worker. For M/NM mine operators the hourly wage rate is \$44.79 for a supervisor and \$17.57 for a clerical worker.

Table VII-13 shows the annual burden hours and costs for new mines to develop material safety data sheets.

**Table VII-13: Section 47.41  
Annual Burden Hours and Costs for New Mine Operators  
to Develop Material Safety Data Sheets**

Annual Burden Hours						
Mine Size	No. of New Mines	Time to Develop MSDS <sup>a</sup>	No. of MSDS to Update per Mine	Total Annual Burden Hours	Wage Rates <sup>b</sup>	Annual Burden Costs
<b>Coal</b>						
Small (<20)	227	3	1	681	\$39.48	\$26,889
Large (20-500)	73	3	2	438	\$39.48	\$17,294
<b>Total Coal</b>	<b>300</b>			<b>1,119</b>		<b>\$44,183</b>
<b>M/NM</b>						
Small (<20)	570	3	1	1,710	\$35.81	\$61,231
Large (20-500)	19	3	4	228	\$35.81	\$8,164
<b>Total M/NM</b>	<b>589</b>			<b>1,938</b>		<b>\$69,395</b>

<sup>a</sup> For all mines, 3 hrs. = (2 Superv. hrs. + 1 clerical hr.).

<sup>b</sup> For coal mines, \$39.48 = (0.67 x \$49.79) + (0.33 x \$18.56).

For M/NM mines, \$35.81 = (0.67 x \$44.79) + (0.33 x \$17.57).

## Section 47.51 Training

### First Year Burden Hours and Costs to Develop a HazCom Training Program

Mine operator must develop a HazCom training program.

During the first year that the rule is in effect, there are 2,234 coal mine operators that employ fewer than 20 workers, and 724 coal mine operators that employ 20 to 500 workers that will need to develop a HazCom training program. In addition, 8,914 M/NM mine operators that employ fewer than 20 workers, and 1,135 M/NM mine operators that employ 20 to 500 workers, will be affected.

MSHA estimates that it will take an average of 4 hours of supervisor time and 2 hours of clerical time to develop the HazCom training program for mines employing fewer than 20 workers, and an average of 8 hours of supervisor time and 4 hours of clerical time for mines employing 20 to 500 workers. Therefore, no matter what the mine size, the supervisor spends 67 percent of the time associated with developing the HazCom training program, while the clerical worker spends 33 percent.

For coal mine operators the hourly wage rate is \$49.79 for a supervisor and \$18.56 for a clerical worker. For M/NM mine operators the hourly wage rate is \$44.79 for a supervisor and \$17.57 for a clerical worker.

Table VII-14 shows the first year burden hours and costs to develop a HazCom training program.

**Table VII-14: Section 47.51  
 First Year Burden Hours and Costs for Mine Operators  
 to Develop HazCom Training Program**

<b>First Year Burden Hours</b>						
<b>Mine Size</b>	<b>No. of Mines</b>	<b>Time to Develop Training Program<sup>a</sup></b>	<b>FY Burden Hours</b>	<b>Wage Rates<sup>b</sup></b>	<b>FY Burden Costs</b>	<b>FY Burden Costs Annualized<sup>c</sup></b>
<b>Coal</b>						
<b>Small (&lt;20)</b>	2,234	6	13,404	\$39.48	\$529,245	\$37,047
<b>Large (20-500)</b>	724	12	8,688	\$39.48	\$343,038	\$24,013
<b>Total Coal</b>	2,958		22,092		\$872,283	\$61,060
<b>M/NM</b>						
<b>Small (&lt;20)</b>	8,914	6	53,484	\$35.81	\$1,915,123	\$134,059
<b>Large (20-500)</b>	1,135	12	13,620	\$35.81	\$487,697	\$34,139
<b>Total M/NM</b>	10,049		67,104		\$2,402,820	\$168,197

<sup>a</sup> For mines with <20 workers, 6 hrs. = (4 Superv. hrs. + 2 clerical hrs.)  
 For mines with 20 to 500 workers, 12 hrs. = (8 Superv. hrs. + 4 clerical hr.)

<sup>b</sup> For coal mines, \$39.48 = (0.67 x \$49.79) + (0.33 x \$18.56).  
 For M/NM mines, \$35.81 = (0.67 x \$44.79) + (0.33 x \$17.57).

<sup>c</sup> Annualized first year costs = first year burden cost x 0.07 annualization factor.

## Section 47.51 Training - Continued

### Annual Burden Hours and Costs to Administer a HazCom Training Program

The mine operator needs time to administer HazCom training program before teaching miners at the mine about the hazardous chemicals in the work area.

Each year, there are 2,234 coal mine operators that employ fewer than 20 workers, and 724 coal mine operators that employ 20 to 500 workers that will need to administer a HazCom training program. In addition, 8,914 M/NM mine operators that employ fewer than 20 workers, and 1,135 M/NM mine operators that employ 20 to 500 workers, will be affected.

MSHA estimates that it will take an average of 1 hour of supervisor time and 0.5 hours of clerical time to administer the training program for mines employing fewer than 20 workers, and an average of 2 hours of supervisor time and 1 hour of clerical time for mines employing 20 to 500 workers. Therefore, no matter what the mine size, the supervisor spends 67 percent of the time needed to administer the training program, while the clerical worker spends 33 percent.

For coal mine operators the hourly wage rate is \$49.79 for a supervisor and \$18.56 for a clerical worker. For M/NM mine operators the hourly wage rate is \$44.79 for a supervisor and \$17.57 for a clerical worker.

Table VII-15 shows the annual burden hours and costs to administer a HazCom training program.

**Table VII-15: Section 47.51  
Annual Burden Hours and Costs  
to Administer the HazCom Training Program**

<b>Annual Burden Hours</b>					
<b>Mine Size</b>	<b>No. of Mines</b>	<b>Time to Administer Training Program<sup>a</sup></b>	<b>Total Annual Burden Hours</b>	<b>Wage Rates<sup>b</sup></b>	<b>Annual Burden Costs</b>
<b>Coal</b>					
<b>Small (&lt;20)</b>	2,234	1.5	3,351	\$39.48	\$132,311
<b>Large (20-500)</b>	724	3	2,172	\$39.48	\$85,759
<b>Total Coal</b>	2,958		5,523		\$218,071
<b>M/NM</b>					
<b>Small (&lt;20)</b>	8,914	1.5	13,371	\$35.81	\$478,781
<b>Large (20-500)</b>	1,135	3	3,405	\$35.81	\$121,924
<b>Total M/NM</b>	10,049		16,776		\$600,705

<sup>a</sup> For mines employing fewer than 20 workers, 1.5 hrs. = (1 Superv. hr. + 0.5 clerical hrs.).  
For mines employing 20 to 500 workers, 3 hrs. = (2 Superv. hrs. + 1 clerical hr.).

<sup>b</sup> For coal mines, \$39.48 = (0.67 x \$49.79) + (0.33 x \$18.56).  
For M/NM mines, \$35.81 = (0.67 x \$44.79) + (0.33 x \$17.57).



## Section 47.51 Training - Continued

### First Year Burden Hours and Costs for Mine Operators to Prepare for Initial HazCom Training Program

Mine operators need time to prepare initial HazCom training program before providing it to miners.

During the first year that the rule is in effect, there are 2,234 coal mine operators that employ fewer than 20 workers, and 724 coal mine operators that employ 20 to 500 workers that will need to prepare to give the HazCom training program. In addition, 8,914 M/NM mine operators that employ fewer than 20 workers, and 1,135 M/NM mine operators that employ 20 to 500 workers, will be affected.

For both coal and M/NM, MSHA estimates that it will take a supervisor about 2 hours to prepare for the HazCom training.

For coal mine operators the hourly wage rate is \$49.79 for a supervisor. For M/NM mine operators the hourly wage rate is \$44.79 for a supervisor.

Table VII-16 shows first year burden hours and costs for mine operators to prepare for initial HazCom training program.

**Table VII-16: Section 47.51€  
 First Year Burden Hours and Costs for Mine Operators€  
 to Prepare for Initial HazCom Training Program€**

<b>First Year Burden Hours</b>						
<b>Mine Size</b>	<b>No. of Mines</b>	<b>Time to Prepare for Training Program<sup>a</sup></b>	<b>FY Burden Hours</b>	<b>Wage Rates<sup>b</sup></b>	<b>FY Burden Costs</b>	<b>FY Burden Costs Annualized<sup>c</sup></b>
<b>Coal</b>						
<b>Small (&lt;20)</b>	2,234	2	4,468	\$49.79	\$222,462	\$15,572
<b>Large (20-500)</b>	724	2	1,448	\$49.79	\$72,096	\$5,047
<b>Total Coal</b>	2,958		5,916		\$294,558	\$20,619
<b>M/NM</b>						
<b>Small (&lt;20)</b>	8,914	2	17,828	\$44.79	\$798,516	\$55,896
<b>Large (20-500)</b>	1,135	2	2,270	\$44.79	\$101,673	\$7,117
<b>Total M/NM</b>	10,049		20,098		\$900,189	\$63,013

<sup>a</sup> For all mines it takes a supervisor 2 hrs. to prepare for initial HazCom Training.€

<sup>b</sup> For coal mines supervisor's hourly wage rate = \$49.79.€

For M/NM mines supervisor's hourly wage rate = \$44.79.€

<sup>c</sup> Annualized first year costs = 0.07 x first year cost (one-time).€

## Section 47.51 Training - Continued

### Annual Burden Hours and Costs for HazCom Training for New Mines Operators

New mine operators need time to prepare HazCom training program before providing it to miners.

Annually, there are 227 new coal mine operators that employ fewer than 20 workers, and 73 new coal mine operators that employ 20 to 500 workers that will need to prepare to give the HazCom training program. In addition, 570 new M/NM mine operators that employ fewer than 20 workers, and 19 new M/NM mine operators that employ 20 to 500 workers, will be affected.

MSHA estimates that it will take an average of 6 hours of supervisor time (4 hours to develop the training plan and 2 hours to prepare lesson) and 2 hours of clerical time to prepare the training program for mines employing fewer than 20 workers, and an average of 10 hours of supervisor time (8 hours to develop the training plan and 2 hours to prepare lesson) and 4 hours of clerical time to prepare training program for mines employing 20 to 500 workers.

For coal mine operators the hourly wage rate is \$49.79 for a supervisor. For M/NM mine operators the hourly wage rate is \$44.79 for a supervisor.

Table VII-17 shows annual burden hours and costs for HazCom training for new mine operators.

**Table VII-17: Section 47.51  
Annual Burden Hours and Costs For HazCom  
Training for New Mine Operators**

<b>Adjusted First Year Burden Hours</b>				
<b>Mine Size</b>	<b>No. of New Mines</b>	<b>Superv. Time<sup>a</sup></b>	<b>Clerical Time<sup>b</sup></b>	<b>Annual Burden Hours<sup>c</sup></b>
<b>Coal</b>				
Small (<20)	227	6	2	1,816
Large (20-500)	73	10	4	1,022
<b>Total Coal</b>	<b>300</b>			<b>2,838</b>
<b>M/NM</b>				
Small (<20)	570	6	2	4,560
Large (20-500)	19	10	4	266
<b>Total M/NM</b>	<b>589</b>			<b>4,826</b>
<b>Adjusted First Year Burden Costs</b>				
<b>Mine Size</b>		<b>Superv. Wage Rate</b>	<b>Clerical Wage Rate</b>	<b>Annual Burden Costs<sup>d</sup></b>
<b>Coal</b>				
Small (<20)		\$49.79	\$18.56	\$76,240
Large (20-500)		\$49.79	\$18.56	\$41,766
<b>Total Coal</b>				<b>\$118,006</b>
<b>M/NM</b>				
Small (<20)		\$44.79	\$17.57	\$173,212
Large (20-500)		\$44.79	\$17.57	\$9,845
<b>Total M/NM</b>				<b>\$183,057</b>

<sup>a</sup> For mines employing <20 workers, 6 hrs. = (4 hrs. to develop program + 2 hrs. to prepare lesson).

For mines employing 20 to 500 workers, 10 hrs. = (8 hrs. to develop program + 2 hrs. to prepare lesson).

<sup>b</sup> For mines employing <20 workers, 2 hrs. of clerical time to prepare training program.

For mines employing 20 to 500 workers, 4 hrs. of clerical time to prepare training program.

<sup>c</sup> No. of new mines x (supervisor time + clerical time).

<sup>d</sup> Annual costs = (no. of new mines x superv. hrs. x superv. wage)

+ (no. of new mines x clerical hrs. x clerical wage).

**Section 47.51 Training - Continued**

**Annual Burden Hours and Costs for Mine Operators to Make HazCom Training Records**

Mine Operators must make a record of HazCom training.

Each year, there are 2,234 coal mine operators that employ fewer than 20 workers, and 724 coal mine operators that employ 20 to 500 workers that will need to make a record of HazCom training. In addition, 8,914 M/NM mine operators that employ fewer than 20 workers, and 1,135 M/NM mine operators that employ 20 to 500 workers, will be affected.

For coal and M/NM mine operators, in all mine size categories, MSHA estimates that it will take an average of 0.05 hours of clerical time to make a record for each miner trained. The number of miners per mine to be trained are: 4.9 miners per coal operator and 5.5 miners per M/NM mine operator employing fewer than 20 workers; 67.8 miners per coal mine operator employing 20 to 500 workers; and 68.8 miners per M/NM operator employing 20 to 500 workers.

For coal mine operators the hourly wage rate is \$18.56 for a clerical worker. For M/NM mine operators the hourly wage rate is \$17.57 for a clerical worker.

Table VII-18 shows the annual burden hours and costs for mine operators to maintain HazCom training records.

**Table VII-18: Section 47.53  
Annual Burden Hours and Costs for Mine Operators  
to Make HazCom Training Records**

<b>Annual Burden Hours</b>						
<b>Mine Size</b>	<b>No. of Mines</b>	<b>Time to Make Record per Miner</b>	<b>No. of Miners per Mine</b>	<b>Annual Burden Hours</b>	<b>Clerical Wage Rates</b>	<b>Annual Burden Costs</b>
<b>Coal</b>						
<b>Small (&lt;20)</b>	2,234	0.05	4.9	552	\$18.56	\$10,241
<b>Large (20-500)</b>	724	0.05	67.8	2,455	\$18.56	\$45,566
<b>Total Coal</b>	2,958			3,007		\$55,808
<b>M/NM</b>						
<b>Small (&lt;20)</b>	8,914	0.05	5.5	2,451	\$17.57	\$43,070
<b>Large (20-500)</b>	1,135	0.05	68.8	3,907	\$17.57	\$68,640
<b>Total M/NM</b>	10,049			6,358		\$111,710

## Section 47.63 Providing Information

### Annual Burden Hours and Costs for Mine Operators to Provide Copies of HazCom Information to Miners

Mine operators must provide copies of HazCom information to miners who request them.

Each year, there are 2,553 coal mine operators that employ fewer than 20 workers, and 996 coal mine operators that employ 20 to 500 workers that will need to provide copies of HazCom information to miners. In addition, 9,414 M/NM mine operators that employ fewer than 20 workers, and 1,276 M/NM mine operators that employ 20 to 500 workers, will be affected.

For coal and M/NM mine operators, in all mine size categories, MSHA estimates that it will take an average of 0.2 hours of clerical time to process a request from each miner. MSHA estimates that 10 percent of miners in each mine size category will request such information. The number of miners per mine is: 4.9 miners per coal and 5.5 miners per M/NM operator employing fewer than 20 workers; 67.8 miners per coal and 68.8 miners per M/NM operator employing 20 to 500 workers.

For coal mine operators the hourly wage rate is \$18.56 for a clerical worker. For M/NM mine operators the hourly wage rate is \$17.57 for a clerical worker.

Table VII-19 shows the annual burden hours and costs for mine operators to provide copies of HazCom information to miners.

**Table VII-19: Section 47.63€  
Annual Burden Hours and Costs for Mine Operators to€  
Provide Copies of HazCom Information to Miners€**

Annual Burden Hours						
Mine Size	No. of Mines	Time to Make Process Request	No. of Request <sup>a</sup> per Mine	Annual Burden Hours	Clerical Wage Rates	Annual Burden Costs
<b>Coal</b>						
<b>Small (&lt;20)</b>	2,553	0.2	0.5	252	\$18.56	\$4,682
<b>Large (20-500)</b>	996	0.2	6.8	1,351	\$18.56	\$25,074
<b>Total Coal</b>	3,549			1,603		\$29,756
<b>M/NM</b>						
<b>Small (&lt;20)</b>	9,414	0.2	0.6	1,036	\$17.57	\$18,194
<b>Large (20-500)</b>	1,276	0.2	6.9	1,757	\$17.57	\$30,867
<b>Total M/NM</b>	10,690			2,792		\$49,061

<sup>a</sup> For coal mines employing fewer than 20 workers, 0.5 = (0.1 x 4.9 miners per mine).€  
 For M/NM mines employing fewer than 20 workers, 0.6 = (0.1 x 5.5 miners per mine).€  
 For coal mines employing 20 to 500 workers, 6.8 = (0.1 x 67.8 miners per mine).€



**Section 47.63 Providing Information - Continued**

**Annual Burden Hours and Costs for Mine Operators to Distribute Copies of HazCom Labeling Information and MSDSs to Customers**

Mine operators must distribute copies of HazCom labeling information and MSDSs to customers that request them.

Each year, there are 2,553 coal mine operators that employ fewer than 20 workers, and 996 coal mine operators that employ 20 to 500 workers that will need to provide copies of HazCom labeling information to customers. In addition, 9,414 M/NM mine operators that employ fewer than 20 workers, and 1,276 M/NM mine operators that employ 20 to 500 workers, will be affected.

For coal and M/NM mine operators, in all mine size categories, MSHA estimates that it will take an average of 0.2 hours of clerical time to process a request from each customer. MSHA estimates that the number of customers making requests will be: 12 in a coal or M/NM that employs fewer than 20 workers, 24 in a coal mine that employs 20 to 500 workers, and 52 in a M/NM mine that employs 20 to 500 workers.

For coal mine operators the hourly wage rate is \$18.56 for a clerical worker. For M/NM mine operators the hourly wage rate is \$17.57 for a clerical worker.

Table VII-20 shows the annual burden hours and costs for mine operators to provide copies of HazCom information to customers.

**Table VII-20: Section 47.63  
Annual Burden Hours and Costs for Mine Operators to Provide  
Copies of HazCom Labeling Information and MSDSs to Customers**

<b>Annual Burden Hours</b>						
<b>Mine Size</b>	<b>No. of Mines</b>	<b>Time to Make Process Request</b>	<b>No. of Request per Mine<sup>a</sup></b>	<b>Annual Burden Hours</b>	<b>Clerical Wage Rates</b>	<b>Annual Burden Costs</b>
<b>Coal</b>						
<b>Small (&lt;20)</b>	2,553	0.2	12	6,127	\$18.56	\$113,721
<b>Large (20-500)</b>	996	0.2	24	4,781	\$18.56	\$88,732
<b>Total Coal</b>	3,549			10,908		\$202,452
<b>M/NM</b>						
<b>Small (&lt;20)</b>	9,414	0.2	12	22,594	\$17.57	\$396,970
<b>Large (20-500)</b>	1,276	0.2	52	13,270	\$17.57	\$233,161
<b>Total M/NM</b>	10,690			35,864		\$630,130

<sup>a</sup> The average # of times HazCom information distributed per year (12/small mine, 24/large coal mine, and 52/ large M/NM mine).

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