

PRELIMINARY REGULATORY ECONOMIC ANALYSIS

AND

REGULATORY FLEXIBILITY ANALYSIS

PROPOSED RULE ON 30 CFR PART 46

PROPOSED STANDARDS AND REGULATIONS

TRAINING AND RETRAINING OF MINERS ENGAGED IN SHELL DREDGING OR  
EMPLOYED AT SAND, GRAVEL, SURFACE STONE, SURFACE CLAY, COLLOIDAL  
PHOSPHATE, OR SURFACE LIMESTONE MINES

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TABLE OF CONTENTS

I. EXECUTIVE SUMMARY . . . . . 1

    INTRODUCTION . . . . . 1

    AFFECTED MINES AND MINERS . . . . . 1

    PROPOSED RULE SUMMARY . . . . . 2

    BENEFITS SUMMARY . . . . . 2

    COMPLIANCE COST SUMMARY . . . . . 4

    REGULATORY FLEXIBILITY CERTIFICATION AND ANALYSIS . . . . . 5

II. INDUSTRY PROFILE . . . . . 6

    INTRODUCTION . . . . . 6

    OVERALL STRUCTURE OF THE MINING INDUSTRY . . . . . 6

    METAL/NONMETAL MINES IMPACTED BY THE RULE . . . . . 11

    METAL/NONMETAL MINE CLASSIFICATION AND REVIEW . . . . . 15

    COMMODITY SYNOPSIS . . . . . 17

        Crushed Stone . . . . . 17

        Dimension Stone . . . . . 18

        Clays . . . . . 18

        Sand and Gravel - Construction . . . . . 19

        Sand and Gravel - Industrial . . . . . 20

        Feldspar . . . . . 21

III. BENEFITS . . . . . 22

    INTRODUCTION . . . . . 22

    METHODOLOGY . . . . . 22

    POPULATION AT RISK . . . . . 23

    ANALYSIS OF DATA . . . . . 24

    PROJECTED BENEFITS . . . . . 30

    CONCLUSION . . . . . 35

IV. COST OF COMPLIANCE . . . . . 36

    SUMMARY . . . . . 36

    METHODOLOGY . . . . . 39

SCOPE . . . . .	41
SECTION-BY-SECTION DISCUSSION . . . . .	49
V. REGULATORY FLEXIBILITY CERTIFICATION AND	
INITIAL REGULATORY FLEXIBILITY ANALYSIS . . . . .	86
INTRODUCTION . . . . .	86
DEFINITION OF A SMALL MINE . . . . .	86
FACTUAL BASIS FOR CERTIFICATION . . . . .	88
VI. THE UNFUNDED MANDATES REFORM ACT OF 1995	
AND OTHER REGULATORY CONSIDERATIONS . . . . .	94
THE UNFUNDED MANDATES REFORM ACT . . . . .	94
Background . . . . .	94
Analysis . . . . .	95
EXECUTIVE ORDER 13045: PROTECTION OF CHILDREN FROM	
ENVIRONMENTAL HEALTH RISKS AND SAFETY RISKS . . . . .	96
EXECUTIVE ORDER 13084: CONSULTATION AND COORDINATION WITH	
INDIAN TRIBAL GOVERNMENTS . . . . .	96
VII. THE PAPERWORK REDUCTION ACT OF 1995 . . . . .	
REFERENCES . . . . .	121

## I. EXECUTIVE SUMMARY

### INTRODUCTION

The Mine Safety and Health Administration (MSHA) is proposing regulations that would supersede existing MSHA health and safety training regulations in 30 CFR Part 48 for shell dredging, sand and gravel, surface stone, surface clay, colloidal phosphate, and surface limestone mines. MSHA has been prohibited by Congress from expending funds to enforce training requirements at these mines since FY 1980. This proposed rule would implement the training requirements of § 115 of the Federal Mine Safety and Health Act of 1977 and provide for effective miner training at the exempt mines, while at the same time allowing operators at these mines to tailor their training programs to the specific needs of their miners and their operations.

The Agency considers this rulemaking not to be economically significant under Executive Order 12866. Based upon the Preliminary Regulatory Economic Analysis (PREA), MSHA has determined that this proposed rule would not have an annual effect of \$100 million or more on the economy.

### AFFECTED MINES AND MINERS

The proposed rule would apply to approximately 120,000 miners in 10,150 nonmetal mines. This covers approximately

92 percent of all metal and nonmetal (M/NM) mines, and about 61 percent of all miners employed in such mines. As mentioned above, the proposed rule applies only to certain commodities in the nonmetal mining industry. In addition, the proposed rule applies only to surface mines.

#### PROPOSED RULE SUMMARY

For the nonmetal mines affected by the proposed rule, various aspects of miner training are covered. The proposed rule provides for: definitions related to training; the development and implementation of training plans; 24 hour of training for newly-hired miners who have no experience; training for newly-hired experienced miners; training before a miner begins a new task; annual refresher training for all miners; the development of miner training records; compensation for miners who receive training; and hazard training for non-miners who are on mining property.

#### BENEFITS SUMMARY

Safety and health professionals from all sectors of industry recognize that training is a critical element of an effective safety and health program. Training informs miners of safety and health hazards inherent in the workplace and enables them to identify and avoid such hazards. Training becomes even more

important in light of certain conditions that can exist when production demands increase: such as an influx of new and less experienced miners and mine operators; longer work hours to meet production demands; and increased demand for contractors who may be less familiar with the dangers on mine property.

Although there may be some differences in production technology and the production environment between the exempt mining industry and other surface nonexempt mining industries, the data presented in Chapter III of this document indicate that the lack of training in exempt mines contributes significantly to the disproportionate number of fatalities that occur at such mines. Chapter III points out that in the period from 1993 to 1997, there were 200 fatalities at surface mines. Of these, 163 occurred at exempt mines. Thus, exempt mines accounted for 82 percent of all fatalities at surface mines during this period. During the same period, however, employees at exempt mines accounted for only 64 percent of the total number of hours worked at surface mines.

One of the major reasons that exempt mines have experienced a higher fatality rate than the surface mining industry as a whole is that smaller operations, those which employ fewer than 20 workers, make up the vast majority of exempt mines. These small operations have the highest rates of noncompliance with part 48 training and also the highest fatality rates.

It is plausible to assert that at least some of these fatalities may have been prevented if victims had received appropriate miner safety training. Similarly, MSHA believes that compliance with the requirements of this proposed training rule will, in turn, reduce the number of fatalities at exempt mines. As discussed in greater detail in Chapter III of this document, MSHA estimates that compliance with the proposed rule would prevent about 10 fatalities per year. Although not quantified, MSHA further expects that better trained exempt miners will have a positive impact on reducing mining accidents, injuries, and illnesses. MSHA believes that this proposed rule will make training more responsive to the needs of the industry and more effective for individual miners, thereby raising the compliance rate and reducing mine injuries and fatalities.

#### COMPLIANCE COST SUMMARY

MSHA estimates that the yearly compliance costs (annualized costs plus annual costs) resulting from the proposed rule would be approximately \$16.2 million, of which about \$14.9 million would be borne by the affected nonmetal mine operators. (The remaining \$1.3 million in costs associated with the proposed rule would be borne primarily by non-miners who receive hazard training, or by their employers.) Compliance costs would total about \$5.9 million for mines with 5 or fewer employees, about

\$5.9 million for mines with between 6 and 19 employees, and \$3.15 million for mines with 20 or more employees.

#### REGULATORY FLEXIBILITY CERTIFICATION AND ANALYSIS

Pursuant to the Regulatory Flexibility Act of 1980, MSHA has analyzed the impact of this proposed rule on small businesses. Further, MSHA has made a preliminary determination with respect to whether it can certify that this proposed rule will not have a significant economic impact on a substantial number of small entities. Under the Small Business Regulatory Enforcement Fairness Act (SBREFA) amendments to the Regulatory Flexibility Act, MSHA must include in the proposed rule a factual basis for this certification. If MSHA cannot certify that this proposed rule does not have significant economic impact on a substantial number of small entities, then the Agency must develop an Initial Regulatory Flexibility Analysis.

Based upon MSHA's analysis, the Agency has determined that the proposed rule will not have a significant economic impact on a substantial number of small surface nonmetal mine operators, and has so certified to the Small Business Administration (SBA). The factual basis for this certification is discussed in Chapter V of this document and will be included in the preamble to the proposed rule for publication in the Federal Register.



## II. INDUSTRY PROFILE

### INTRODUCTION

This industry profile provides background information describing the structure and economic characteristics of the surface metal/nonmetal (M/NM) mining industry. It also provides more detailed information about the following types of surface mines which are affected by this proposed rule: sand and gravel, stone, clay, limestone, shell dredging, and colloidal phosphate. This profile provides data on the number of mines, their size, and the number of employees in each segment, as well as information about selected market characteristics.

Although this particular rulemaking does not apply to the underground M/NM sector, information about underground M/NM mines is provided here in order to give context for the discussions on surface mining. In that regard, some subsectors of the M/NM mining industry—in particular, metal mining—would not be affected by this proposed rule.

### OVERALL STRUCTURE OF THE MINING INDUSTRY

MSHA divides the mining industry into two major segments based on commodity: the coal industry and the M/NM mining industry. These major industry segments are further divided based on type of operations (i.e., underground mines or surface

mines). MSHA maintains its own data on mine type, size, and employment. MSHA also collects data on the number of contractors and contractor employees. Although, there are 2,578 coal mines (968 underground mines and 1,610 surface mines),<sup>1</sup> this industry profile will not further discuss such mines. Instead the discussion in this chapter will focus on the M/NM industry, which contains within it the surface mines that are affected by this proposed rule.

MSHA has categorized mines as to size on the basis of the number of employees. Over the past 20 years, for rulemaking purposes, MSHA has consistently defined small mines to be those having fewer than 20 employees and large mines to be those having at least 20 employees. However, for purposes of the Small Business Regulatory Enforcement Fairness Act (SBREFA) amendments to the Regulatory Flexibility Act (RFA), MSHA must evaluate the impact on small mines, as defined by SBA, which, for the mining industry, are mines with 500 or fewer employees.

Table II-1 presents the total number of small and large surface and underground M/NM mines and the corresponding number of miners, excluding contractors, by three employment categories: (1) fewer than 20 employees (MSHA's definition of a small mine); (2) between 20 and 500 employees; and (3) over 500 employees.

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<sup>1</sup>U.S. Department of Labor, Mine Safety and Health Administration, Office of Standards, Regulations, and Variances, based on 1997 Final MIS data (quarter 1 - quarter 4), CM441 cycle 1997/184.

The M/NM mines consist of metal mines (such as gold, copper, and silver); nonmetal mines (such as clay, salt, and trona); stone mines (such as limestone, marble, and granite); and sand and gravel mines. Table II-1 shows that most M/NM mines are surface mines (approximately 98 percent) and employ most of the M/NM miners (about 90 percent of all M/NM miners, exclusive of office workers). Sand and gravel mines are all surface mines and account for about 56 percent of all nonmetal mines.

Table II-2 provides data on the number of independent contractors and contractor workers by mine type and size of mine.

**Table II-1: Distribution of Operations and Employment  
(excluding contractors) by Mine Type and Size**

Mine Type	Size of M/NM Mine						All M/NM Mines	
	Fewer than 20 Employees		20 to 500*		Over 500*			
	Mines	Empl.	Mines	Empl.	Mines	Empl.	Mines	Empl.
<b>Under-ground</b>	132	1,127	123	11,106	7	5,399	262	17,632
<b>Surface</b>	9,316	52,497	1,409	79,316	23	19,085	10,748	150,898
<b>Office Workers</b>	-	9,158	-	15,441	-	2,902	-	27,501
<b>Total M/NM</b>	9,448	62,782	1,532	105,863	30	27,386	11,010	196,031

\* Based on MSHA's traditional definition, large mines include all mines with employees of 20 or greater.

Source: U.S. Department of Labor, Mine Safety and Health Administration, Office of Standards, Regulations, and Variances, based on 1997 Final MIS data (quarter 1 - quarter 4), CM441 cycle 1997/184. Data for total office workers from Mine Injury and Worktime Quarterly (1997 Closeout Edition) Table 2, p. 6.

**Table II-2: Distribution of Contractors and Contractor Employment by Size of Operation**

Contractors	Size of Contractor						All Contractors	
	Fewer than 20 Employees		20 to 500* Employees		Over 500* Employees		Firms	Empl.
	Firms	Empl.	Firms	Empl.	Firms	Empl.		
<b>Firms</b>	2,933	14,740	393	19,885	5	3,338	3,331	37,963
<b>Office Workers</b>	-	660	-	891	-	370	-	1,921
<b>Total Contractors</b>	2,933	15,400	393	20,776	5	3,708	3,331	39,884

\* Based on MSHA's traditional definition, large contractors include contractors with employees of 20 or greater.

Source: U.S. Department of Labor, Mine Safety and Health Administration, Office of Standards, Regulations, and Variances, based on 1997 Final MIS data (quarter 1 - quarter 4), CT441 cycle 1997/184. Data for total office workers from Mine Injury and Worktime Quarterly (1997 Closeout Edition) Table 6, p. 21.

## METAL/NONMETAL MINES IMPACTED BY THE RULE

This rule affects no surface metal mines and only certain surface nonmetal mines. These include several types of surface stone mines (both crushed/broken and dimension): stone; granite; marble; sandstone; slate; and traprock. Also included in this category are surface feldspar mines and surface common shale mines. The rule also affects all surface sand and gravel mines (which encompasses the entire sand and gravel mining sector, because it contains no underground mines). In addition, surface limestone mines (both crushed/broken and dimension) are affected by the rule. Included in this category are surface hydraulic cement, surface lime, and shell dredging mines. With respect to the rest of surface nonmetal mines, only colloidal phosphate and clay mines are affected by this rule. The types of clay mines affected are ceramic and refractory mineral clays, common clays, and fire clay.

The impact of this rule on mines with fewer than 20 employees is not uniform. Therefore, MSHA has chosen to develop costs for the following three employment size categories: (1) mines with 5 or fewer employees; (2) mines with between 6 and 19 employees; and (3) mines with more than 20 employees.<sup>2</sup>

Table II-3 presents the number of surface M/NM mines affected by the proposed rule for these three size categories.

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<sup>2</sup>Since none of the mines affected by this rule employ more than 500 employees, all affected mines are considered small mines based on SBA's definition.

Table II-4 presents similar information for independent contractors and contractor workers.

Some of the exempt mines counted in Table II-3 and Table II-4 are in compliance with existing part 48 training requirements and would also be in compliance with the proposed rule. These mines, therefore, would not incur compliance costs as a result of this rule.

**Table 11-3: NUMBER OF MINES AND MINERS  
AFFECTED BY THE PROPOSED RULE<sup>a</sup>**

Commodity	1-5 Employees		6-19 Employees		20 Plus Employees <sup>b</sup>		Totals	
	Mines	Empl.	Mines	Empl.	Mines	Empl.	Mines	Empl.
Sand & Gravel	4,092	11,231	1,848	17,891	278	8,911	6,218	38,033
Limestone <sup>c</sup>	504	1,626	955	11,097	659	37,872	2,118	50,595
Stone <sup>d</sup>	548	1,659	630	6,770	314	12,513	1,492	20,942
Clays <sup>e</sup>	151	463	64	640	106	8,175	321	9,278
Colloidal Phosphate	2	8	1	6	0	0	3	14
<b>Total</b>	<b>5,297</b>	<b>14,987</b>	<b>3,498</b>	<b>36,404</b>	<b>1,357</b>	<b>67,471</b>	<b>10,152</b>	<b>118,862</b>

<sup>a</sup> All mines affected by the rule are surface nonmetal mines.

<sup>b</sup> No mine affected by the rule has over 500 employees.

<sup>c</sup> The limestone category includes the following: crushed/broken limestone, dimension limestone, hydraulic cement, and lime mines.

<sup>d</sup> The stone category includes the following: crushed/broken and dimension stone mines(stone, granite, marble, sandstone, slate, and traprock), as well as feldspar and shale mines.

<sup>e</sup> The clay category includes the following: ceramic and refractory mineral clays, common clays, and fire clay mines.



**Table II-4: NUMBER OF INDEPENDENT CONTRACTORS (ICs) AND  
INDEPENDENT CONTRACTOR WORKERS (CWs)  
COVERED BY THE PROPOSED RULE<sup>a</sup>**

Size By Number of Empl.	Those Designated as Mine Operators & Miners <sup>b</sup>		Those Not Designated as Mine Operators & Miners <sup>c</sup>		Totals	
	IC	CW	IC	CW	IC	CW
	1-5	305	863	1,221	3,453	1,526
6-19	169	1,657	675	6,626	844	8,283
20 or More	69	2,922	275	11,688	344	14,610
<b>Total</b>	<b>543</b>	<b>5,442</b>	<b>2,171</b>	<b>21,767</b>	<b>2,714</b>	<b>27,209</b>

<sup>a</sup> Number of independent contractors and contractor workers covered by proposed rule not directly available from MSHA data. Estimate taken as a percentage of surface independent contractors and contractor workers based on ratio of surface M/NM mine operators and miners covered by rule compared to total number of surface M/NM mine operators and miners.

<sup>b</sup> Estimate based on the assumption that 20 percent of the independent contractors and contractor workers covered by rule are designated as mines and miners.

<sup>c</sup> Estimate based on the assumption that 80 percent of independent contractors and contractor workers covered by rule are not designated as mines and miners.

## METAL/NONMETAL MINE CLASSIFICATION AND REVIEW

The M/NM mining industry consists of about 70 different commodities that can be divided into four categories. These are: metals, nonmetals, stone, and sand and gravel. Typical metal commodities are gold, silver and copper, while potash, salt, and trona are examples of nonmetal commodities.

The estimated value of U.S. raw nonfuel minerals production in 1997 was \$39.5 billion,<sup>3</sup> an increase of 2% above the 1996 value. Some \$12.4 billion (31.4%) were contributed by the metals mining subsector while the remaining \$27.1 billion (68.6%) were provided by industrial minerals. The total contribution of M/NM production in the U.S. economy was about 0.5% of the Gross Domestic Product.

The commodities which would be directly affected by this rule are listed under five surface nonmetal mine categories. These are stone, limestone, colloidal phosphate, clays, and sand and gravel. Table IV-5 summarizes production volume and revenues for these categories. No information was found for colloidal phosphate. However, since there are only 3 colloidal phosphate mines operating in the United States, each employing fewer than 10 miners, their revenues should be minuscule compared to the other affected industries.

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<sup>3</sup> Mineral Commodity Summaries, U.S. Dept. Of Interior, U.S. Geological Survey, 1998



Table II-5 1997 Production and Value of Affected Sectors

Affected Commodities	Production (in tons)	Price (per ton)	Total Value
Stone <sup>a</sup>			
Crushed/broken	1,420,000,000	\$5.66	\$8,037,200,000
Dimension	1,660,000	\$190.53	\$316,279,800
Clays	76,200,000	\$40.58	\$3,092,196,000
Sand & Gravel			
Construction	952,000,000	\$4.47	\$4,255,440,000
Industrial	28,500,000	\$18.17	\$517,845,000
Feldspar	900,000	\$46.70	\$42,030,000
<b>Total Value</b>			<b>\$16,260,990,800</b>

<sup>a</sup>Includes all stones and limestone

Source: Data for stone and clay from Mineral Industry Surveys, Mining & Quarrying Trends, USGS 1997 Annual Review. Tables 2 and 3. Data for all other commodities from USGS Minerals Information - 1997.

## COMMODITY SYNOPSIS

### Crushed Stone

Crushed stone is one of the most common available natural resources and the major basic material used in construction, agriculture, and other industries using chemical and metallurgical processes. Being a major contributor to a nation's infrastructural development, the crushed stone industry is a barometer of how the economy is performing.

Some 1.42 billion metric tons of crushed stone were produced in the United States in 1997 in surface operations.<sup>4</sup> This is a 7.1% increase compared with total production for 1996. Accordingly, this tonnage represents the highest production level ever recorded in the U.S. and is an indication of increased demand for construction aggregates. Crushed limestone output in 1997, an integral part of crushed stone, increased by 5.5% to 916 million tons, valued at \$4.8 billion.

The average unit price (f.o.b. plant) of crushed stone was \$5.66 per ton, a 4.8% increase relative to 1996. Average unit prices, by kind of stone, showed only modest increases in 1997, ranging from between 2% for slate to 7.5% for miscellaneous stone. However, the unit value of crushed marble showed a dramatic increase of 74%.

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<sup>4</sup>USGS, Minerals Information (Crushed Stone), 1997.

### Dimension Stone

Dimension stone consists of rough stone and quarried blocks of igneous, sedimentary, and metamorphic rocks such as granite, marble, and slate. Because of their toughness and resistance to environmental damage, these stones are commonly used as panels, slabs, and other shapes in building and construction, as well as in monuments.

Unlike crushed stone, production data for dimension stone were derived from Mining and Quarrying Trends for producers of rough and finished dimension stone. The 1997 production was estimated at 1.66 million tons with a unit price of \$190.53.<sup>5</sup>

### Clays

Total clay production for 1997 was estimated at 76.2 million tons with an average unit value of \$40.58, giving a total value of some \$3 billion.<sup>6</sup> During 1997, production of ball clay, bentonite, fire clay, and kaolin increased while production of common clay and fuller's earth decreased. Common clays accounted for 58% of the tonnage, and kaolin accounted for 62% of the value of clays produced in 1997. Most clay mining in the U.S. is done by open pit methods; less than 1% of U.S. clay output is from underground mines.

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<sup>5</sup>USGS, Mining Quarrying Trends, 1997 Annual Review (Dimension Stone).

<sup>6</sup>USGS, Mining Quarrying Trends, 1997 Annual Review (Clay).

## Sand and Gravel - Construction

Construction sand and gravel are also among the commonly accessible natural resources. It is a major basic raw material used mostly by the construction industry. Despite the low value of its basic products, the construction sand and gravel industry is also a major contributor to and indicator of the performance of the national economy.

A total of 952 million metric tons of construction sand and gravel was produced in the U.S. in 1997.<sup>7</sup> This represented a 4.2% increase compared with production levels in 1996. After a decrease in production in 1991, sand and gravel production increased for the following six years, an indication of a continuous strong demand for construction aggregates in the U.S.

The construction industry is the largest consumer of sand and gravel. Sand and gravel production increased during 1997 due to continued growth in construction activity. Total construction activity advanced by 5% to \$346 billion. This followed a 6% increase in 1996 and represented the sixth straight year of moderate increases for the construction industry.<sup>8</sup>

Compared with the previous year, the 1997 average unit price of construction sand and gravel increased about 2% to \$4.47 per ton. By use, the unit prices varied from a high of \$8.97 for

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<sup>7</sup>USGS, Minerals Information, (Construction Sand and Gravel), 1997.

<sup>8</sup>USGS, Minerals Information,(Construction Sand and Gravel) 1997.



roofing granules to a low of \$2.74 for fill. The largest price increases were recorded for roofing granules, 55%; and filtration, 11.7%. The largest average unit price declines were for railroad ballast, 23%; and road stabilization, 22%.

#### Sand and Gravel - Industrial

Industrial sand and gravel, often termed "silica," "silica sand," or "quartz sand," includes sands and gravels with high silicon dioxide (SiO<sub>2</sub>) content. These sands are used in glassmaking, in foundry production, as abrasives, and for many other uses.

Industrial sand and gravel production was 28.5 million metric tons in 1997, a 2.5% increase compared with 1996. This level of production was only exceeded in 1979, when 30.4 million tons were sold or used.<sup>9</sup> The increase in production was a result of higher demand for sand in blasting, containers, speciality glass, and other uses.

There was also a significant demand for silica gravel, which is used for the production of silicon and ferrosilicon. Compared to 1996, the average value (f.o.b. plant) for silicon gravel increased slightly to \$18.17 per metric ton. Silica prices commonly range from several dollars to hundreds of dollars, and occasionally prices exceed the \$1,000 level. Nationally, ground

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<sup>9</sup>USGS, Minerals Information (Silica), 1997.

sand used as fillers for rubber, paint, and putty had the highest value of \$127.88 per ton.

### Feldspar

Feldspars are alumino-silicates, having varying amounts of sodium, potassium, or calcium. In glassmaking, the largest end use, feldspar provides alumina for improving hardness, durability, and resistance to chemical corrosion. In ceramics, feldspar is used as a flux, lowering the vitrifying temperature of a ceramic body during firing and forming a glassy phase.

The U.S. production of feldspar (including aplite) in 1997 was about 900,000 metric tons, with an estimated value of \$42,000,000.<sup>10</sup>

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<sup>10</sup>USGS, Minerals Information, (Feldspar and Nepheline Syenite), 1997.

### III. BENEFITS

#### INTRODUCTION

In the period from 1993 to 1997, there were 200 fatalities at surface mines. Of these, 163 occurred at exempt mines. Thus, exempt mines accounted for 82% of all fatalities at surface mines during this period, but only for 64% of the total number of hours worked at surface mines. Although there may be some differences in production technologies and the mining environment between the exempt mining industry and other surface mining industries, it is likely that the lack of training in exempt mines contributes significantly to the disproportionate number of fatalities that occur at such mines. MSHA believes that this proposed training rule will make training more responsive to the needs of the industry and more effective for individual miners, thereby raising the compliance rate and consequently reducing the number of injuries and fatalities at exempt mines. This chapter of the PREA presents MSHA's estimate of the number of fatalities that would be prevented by the final rule, as well as a discussion of other qualitative and quantitative benefits.

#### METHODOLOGY

MSHA reviewed its own accident and injury data for the five-year period between 1993 to 1997 (data were not yet available for

1998) as the basis for determining the numbers of fatalities and injuries befalling miners employed at exempt mines. These data contain the number of exempt miners by company employment size, employee hours, lost time injuries, fatalities, and fatal injury incidence rate. MSHA believes these data are the most comprehensive set of mining injury and fatality data currently available. MSHA also used data developed by MSHA's Office of Program Evaluation and Information Resources to determine the current number of exempt mines and miners by commodity, employee hours reported, and mine size.

MSHA assumes that the past history of mining fatalities can be used as a basis to forecast the number of mining fatalities in future years. Furthermore, MSHA believes that lack of training is largely responsible for the disproportionate number of miners killed at exempt mines. Conversely, MSHA expects that training can contribute significantly to a reduction in accidents, injuries, illnesses, and fatalities by fostering safe work practices, increasing job skills, and enhancing hazard awareness and prevention. The decrease in the number of fatalities which MSHA has estimated is based on these assumptions.

#### POPULATION AT RISK

The population at risk is miners employed by exempt mines. MSHA estimates that there are approximately 10,150 exempt mines

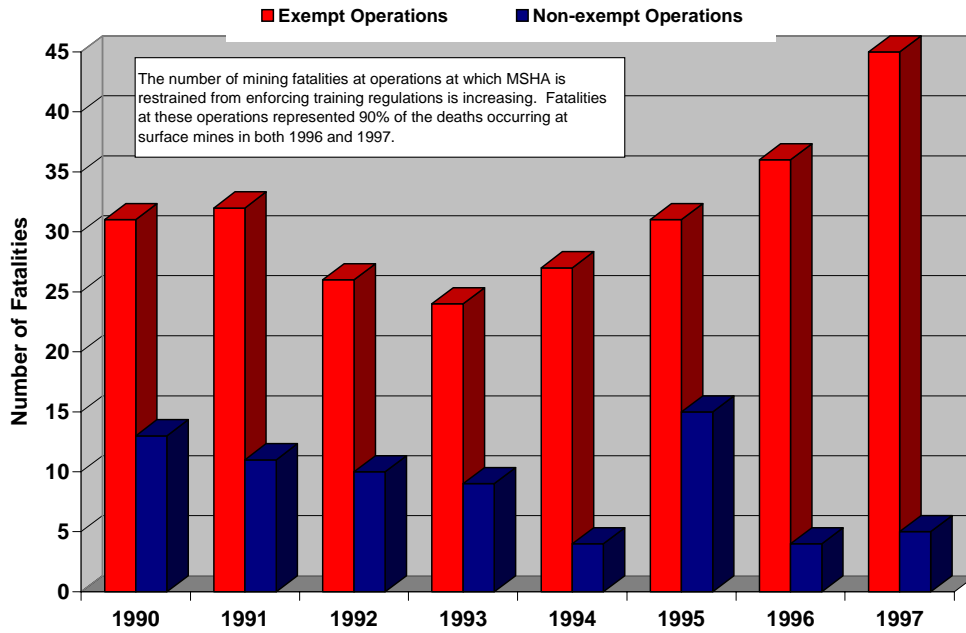
and approximately 120,000 miners that will be affected by the proposed training rule.

#### ANALYSIS OF DATA

Since fiscal year 1980, the year in which the congressional appropriations rider took effect, more than 600 miners have been killed in occupationally-related incidents at mines where Congress has prohibited MSHA from enforcing miner training requirements ("exempt mines"). The rider affects approximately 10,150 surface nonmetal mines and 120,000 miners. Approximately 9,800 of these sites are surface aggregate operations; the remainder are surface operations mining other commodities such as clay and colloidal phosphate.

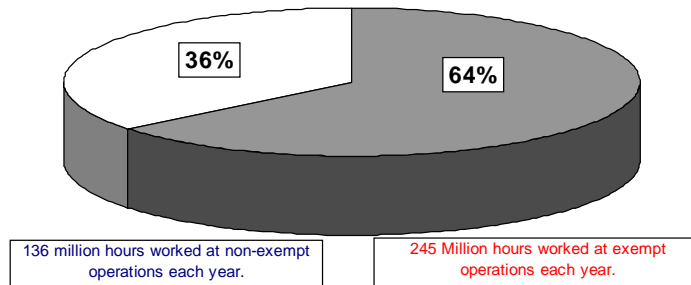
Our data indicate that, of the 200 miners involved in fatal accidents at surface metal and nonmetal mines from 1993 to 1997, 163 miners (81.5%) worked at exempt mines. Employees at exempt mines, however, accounted for only 64.3% of the total number of hours worked at surface metal and nonmetal mines.

### Fatalities at Surface Mining Operations



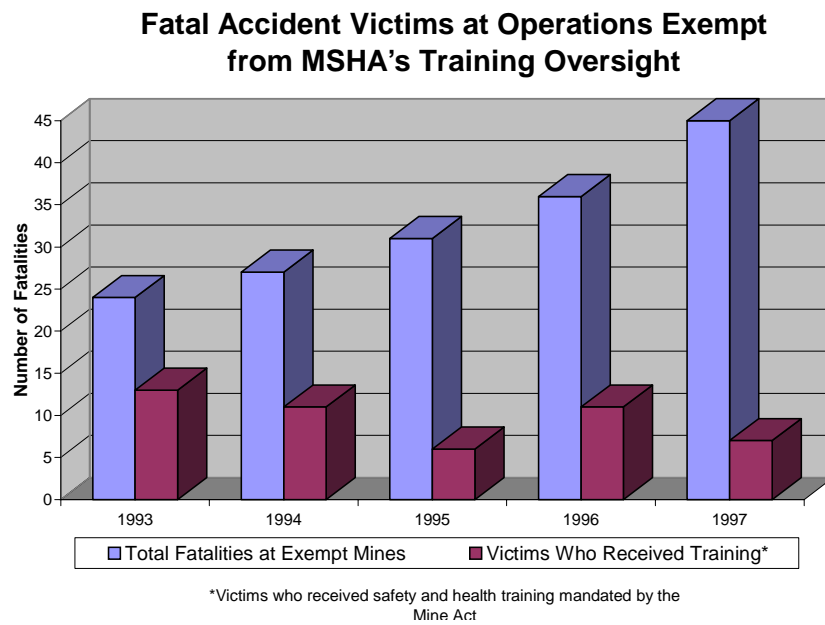
### Hours Worked at Surface Metal and Nonmetal Mines

Almost two-thirds of mine employment occurs at operations at which MSHA is restrained from enforcing training regulations.



Lack of training is arguably the most significant factor contributing to this trend. We believe that at least some of these fatalities might have been prevented if victims had

received appropriate, basic miner safety training. Our fatal accident investigations indicate that, during the period 1993-1997, some 70% of miners involved in fatal accidents at mines affected by the rider had not received health and safety training that complied with the requirements of part 48. In 1997, approximately 85% of fatal accident victims at metal and nonmetal mines had not received health and safety training in accordance with part 48.



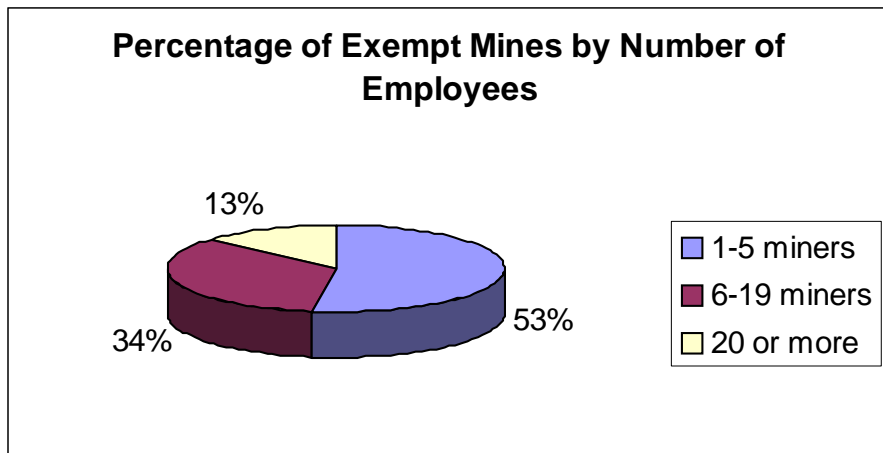
Safety and health professionals from all sectors of industry recognize that training is a critical element of an effective safety and health program. Training of new employees, refresher training for experienced miners, and training for new tasks serve

to inform workers of safety and health hazards inherent in the workplace and, just as important, to enable workers to identify and avoid those hazards. Training contributes to a reduction in accidents, injuries, illnesses, and fatalities by fostering safe work practices, increasing job skills, and enhancing awareness and prevention. Congress clearly recognized these principles by specifically including training provisions in the 1977 Mine Act.

One of the major reasons that exempt mines have experienced a higher fatality rate than the surface mining industry as a whole is that smaller operations, those which employ fewer than 20 workers, make up the vast majority of exempt mines. These smaller operations are believed to have the highest rates of noncompliance with part 48 training and, not surprisingly, the highest fatality rates. The data fully support these assertions.

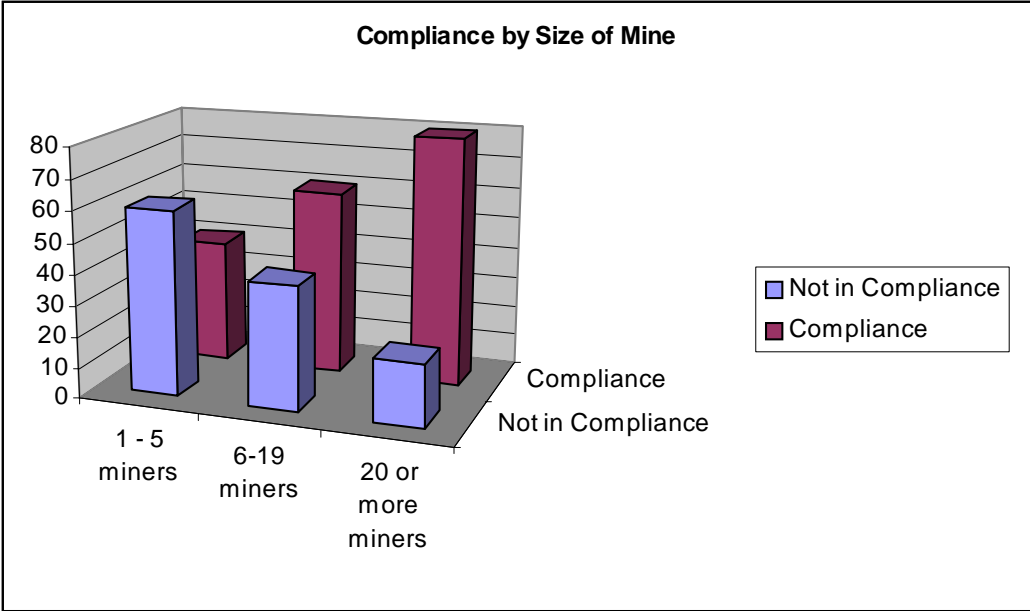
Of the 10,152 exempt mines, only 1,352 (13%) employ 20 miners or more. Approximately 3,498 (34%) employ between 6 and 19 miners, and approximately 5,300 (53%) employ 5 or fewer miners. Combined, operations that employ fewer than 20 miners account for 87% of all exempt mines.





Although all exempt mines are required to be in compliance with part 48 training requirements (though MSHA cannot enforce such requirements at exempt mines), MSHA experience (supported by comments provided at the preproposal public meetings) indicates that actual compliance is directly proportional to the size of the mine. Put simply, the larger the operation the greater the degree of compliance. Conversely, the smaller the mine the greater the degree of noncompliance. MSHA estimates that operations that employ 20 or more miners have a compliance rate of 80%. These mines make up only 13% of the total number of exempt mines. MSHA further estimates that operations that employ between 6 and 19 miners have a compliance rate of 60%. These mines make up about a third (34%) of the total number of exempt mines. Finally, MSHA estimates that the smallest mines, those that employ 5 or fewer miners, have a compliance rate of only

40%. These mines account for over half (53%) of all exempt mines.<sup>11</sup>



MSHA’s time-series data clearly support the premise that the smaller the mine the greater the fatality rate. Exempt mines with fewer than 20 employees have fatality rates approximately twice as high as exempt mines with 20 or more workers. Even more dramatic is the fact that exempt mines with 5 or fewer employees have fatality rates that are almost 4 times as large as exempt operations with 20 or more employees.

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<sup>11</sup>For an explanation of how MSHA derived its estimates of compliance rates by mine size, see the discussion in the Scope section of Chapter IV of this PREA.

Part of the reason that smaller operations have higher fatality rates may be that they do not have the same level of resources as larger operations to invest in newer technology, which is often safer than older technology. Whatever the underlying cause, the data plainly indicate that the size of the mine substantially affects the fatality rate.

Thus, there is a high correlation between the size of the mine, the level of training compliance, and the fatality rate. In short, smaller mines provide less training and experience higher fatality rates than larger mines.

#### PROJECTED BENEFITS

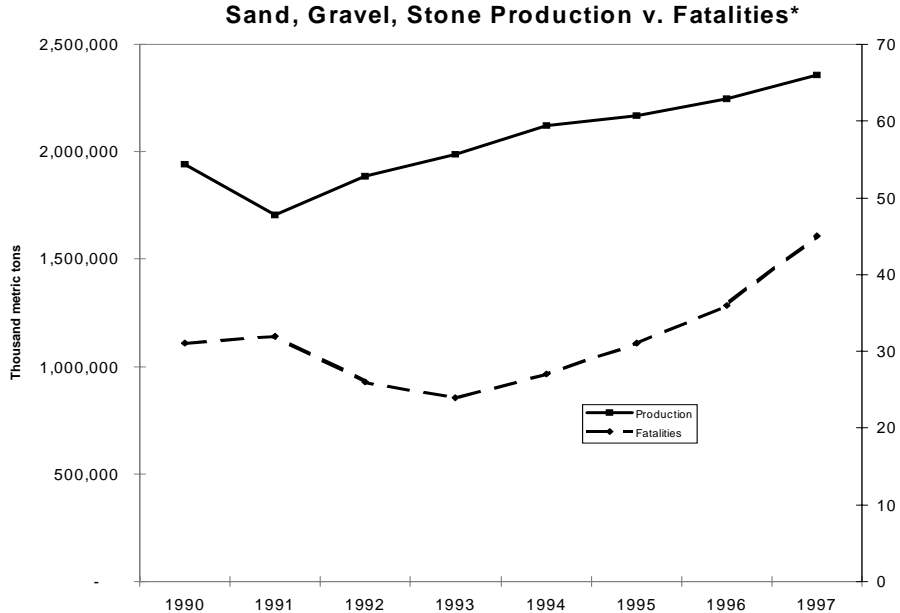
As previously mentioned, of the 200 miners involved in fatal accidents at surface mines from 1993 to 1997, exempt mines accounted for 163, or 81.5%, of the fatalities even though exempt mines accounted for only 64.3% of the hours worked at all surface mines. Conversely, non-exempt surface mines, which must provide training, accounted for 37, or 18.5%, of the fatalities, while working 35.7% of the hours.

MSHA expects that mining hazards encountered at exempt mines are broadly similar to those encountered at other metal/nonmetal surface mines, and, therefore, the fatality rates should be similar as well. If the fatality rate at exempt mines were the same as that at non-exempt mines, exempt mines would have

experienced approximately 66 deaths over the 1993-1997 period, rather than the 163 deaths that actually occurred. Thus, 97 fatalities, averaging 19.4 fatalities per year, would have not occurred if exempt and non-exempt mines had had similar fatality rates.

That estimate of 19.4 excess fatalities may be conservative as a measure of possible excess fatalities in the future, since the number of fatalities at exempt mines has been increasing. During the 1993-97 five-year period, the number of fatal accidents at exempt mines grew at a compounded rate of 17% annually, almost doubling from 24 fatalities in 1993 to 45 fatalities in 1997.

Probably the factor most responsible for the increase in the number of fatalities is growth in production, which has been growing at a rate of approximately 5% per year in the 1990s. MSHA believes, however, that fatalities are not merely proportional to production levels, but that the fatality rate will often increase in response to increased production. There are several factors connected to increased production that can contribute to an increase in the fatality rate, including (1) an influx of new and less experienced miners and mine operators; (2) longer work hours to meet production demands; and (3) increased demand for contractors who may be less familiar with the dangers on mine property.



\* Fatalities at operations where MSHA is prohibited from enforcing training  
 Production data per U.S. Geological Survey

On June 9, 1998, President Clinton signed the Transportation Equity Act for the 21<sup>st</sup> Century, commonly known as "TEA-21," which is the largest public works legislation in the nation's history and appropriates almost \$218 billion for highway and transit programs. TEA-21 builds on the initiatives established in the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), which was probably the major cause of increased production in exempt mines over the past seven years. Since TEA-21 provides a 40 percent funding increase over the ISTEA levels for highway and transit programs, the demand for materials produced by exempt mines is anticipated to increase substantially. Therefore, production at exempt mines is expected to increase accordingly,

and absent the proposed rule, mine fatalities might increase as well.

Of course, MSHA recognizes that the higher fatality rate at exempt mines may not be attributable entirely to lack of training. As previously mentioned, small mines (those which employ fewer than 20 miners) make up a disproportionate percentage of exempt mines, and it is precisely small mines which do not have access to resources, not only for training purposes, but for other investments in safety which create a safer work environment. These small mines may not have the most modern equipment, which tends to be safer than older equipment. For instance, new trucks may have, as standard equipment, features that provide added safety. For example, wipers with washers provide better visibility; retractable, anticinching seat belts are more likely to be worn by drivers than older seat belts; ergonomic seats reduce fatigue which may be responsible for some accidents; and padded, nonmetal dashboards absorb shock better than older dashboards, reducing head injuries. Smaller mines also may not be able to afford safety engineers and other safety specialists, which larger mines often employ.

Another factor which contributes to the high fatality rate at exempt mines is the higher level of truck traffic associated with the industry and the resulting haulage accidents. Historically, haulage accidents at all mines, coal and metal/nonmetal, surface

and underground, have accounted for approximately 30% of all fatalities. In recent years, exempt mines have accounted for a disproportionate share of metal/nonmetal haulage fatalities: 67% in 1996, 74% in 1997, and 80% in 1998, versus approximately 64% of total hours worked in metal/nonmetal mines. Of course, the contribution of inadequate training to haulage fatalities in exempt mines is not readily known.

While it is difficult to quantify the effect on the fatality rate of factors such as increased production and the inherent difference between the exempt mining industry and other surface mining industries, MSHA estimates that these factors are responsible for approximately 50 percent of the disparity in fatality rates between exempt mines and other surface mines. Thus, MSHA anticipates that this training rule can reasonably be expected to reduce the number of fatalities at exempt mines by saving about 10 lives per year (50% x 19.4), ignoring the additional possible lives saved arising from increased production in exempt mines. Although not quantified, MSHA believes that this training rule will also contribute to reducing the overall frequency and severity of accidents.

There may be factors other than training that make exempt mines different from other surface mines and that influence the fatality rate. MSHA requests comments on what factors, other than training, might make the exempt industries more dangerous or

hazardous than nonexempt mines. In addition, MSHA requests comments on any part of this analysis, including estimates of the number of fatalities likely to be prevented by the proposed rule, estimates of increased production levels expected at exempt mines, and the effect of increased production levels on the number of fatalities and the fatality rate.

#### CONCLUSION

MSHA believes that, based on the available data, compliance with the requirements of this training rule will reduce the number of fatalities at exempt mines. MSHA estimates that about 10 fatalities would be prevented per year as a result of the proposed rule. Although not quantified, MSHA expects that better trained exempt miners will also result in fewer mining accidents, injuries, and illnesses.



#### IV. COST OF COMPLIANCE

##### SUMMARY

MSHA estimates that the total net cost of the proposed new 30 CFR part 46 training requirements would be approximately \$16.2 million annually, of which about \$14.9 million would be borne by mine operations in the following surface nonmetal mining sectors: shell dredging, sand, gravel, stone, clay, colloidal phosphate, and limestone. Since fiscal year 1980, Congress has prohibited MSHA from enforcing existing MSHA health and safety training regulations in 30 CFR part 48 at mines ("exempt mines") in these sectors of the surface nonmetal mining industry. The exempt mines that are not currently in compliance with the existing part 48 training requirements would incur costs of approximately \$17 million annually to comply with the proposed rule, while those currently in compliance with the existing part 48 training requirements would derive savings of approximately \$2.1 million annually.

Over the past 20 years, MSHA has consistently categorized a mine as being small if it employs fewer than 20 workers and as being large if it employs 20 or more workers. For the purposes of this Proposed Regulatory Economic Analysis (PREA), however, MSHA has identified three mine size categories based on the number of employees, which are relevant to the estimation of the cost of the

proposed rule: (1) mines employing 5 or fewer workers; (2) mines employing between 6 and 19 workers; and (3) mines employing 20 or more workers.<sup>12</sup> These mine categories are important because they are believed to have significantly different compliance rates for existing part 48 training requirements. For this proposed rule, MSHA estimates that the following percentages of exempt mines by size category are currently not in compliance with existing part 48 requirements: 60 percent of mines with 5 or fewer employees; 40 percent of mines with between 6 and 19 employees; and 20 percent of mines with 20 or more employees.

In 1997, there were 10,152 exempt mines covered by the proposed rule. MSHA estimates that the average cost per exempt mine to comply with the proposed rule would be approximately \$1,500 annually. For the 5,297 exempt mines with 5 or fewer employees, MSHA estimates that the average cost of the proposed rule per mine would be approximately \$1,100 annually. For the 3,498 exempt mines with between 6 and 19 employees, MSHA estimates that the average cost of the proposed rule per mine would be approximately \$1,700 annually. For the 1,357 exempt mines with 20 or more employees, MSHA estimates that the average cost of the proposed rule per mine would be approximately \$2,300 annually.

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<sup>12</sup>There is, in principle, a fourth relevant mine size: mines employing more than 500 workers. This mine size category (and its converse, mines with 500 or fewer employees) is needed for MSHA's analysis of the effects of the proposed rule on small entities (in Chapter V of this PREA), as required by the Regulatory Flexibility Act. For the mine sectors covered by the proposed rule, however, there are no mine operations with more than 500 employees.

These costs per mine may be slightly misleading insofar as the exempt mines currently in compliance with existing part 48 training requirements would also be substantially in compliance with the proposed rule and would therefore incur no compliance costs. In fact, as previously stated, these mines would derive savings of approximately \$2.1 million annually as a result of the proposed rule.<sup>13</sup> For the exempt mine operators (including independent contractors that employ miners) not currently in compliance with existing part 48 training requirements, the annual cost of complying with the proposed rule would, on average, be approximately \$1,800 per mine operator with 5 or fewer workers; \$4,400 per mine operator with between 6 and 19 workers; and \$15,500 per mine operator with 20 or more workers.

Table IV-1 summarizes MSHA's estimate of the yearly costs of the proposed rule by mine size and by provision. These costs reflect first year costs of \$16,583,155 and costs of \$16,147,112 each subsequent year.

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<sup>13</sup>These savings arise from paragraph (e) of § 46.4, which allows all documented employee safety meetings, regardless of duration, to be credited toward training requirements. (Under the existing part 48 training requirements, employee safety meetings lasting less than 30 minutes may not be credited toward training requirements.) For details about these savings, see Table IV-22 and the text that precedes it.

**Table IV-1: Summary of Yearly Compliance Costs for the Proposed Rule \***

Requirement/ Provision	Mines with 1-5 Employees	Mines with 6-19 Employees	Mines with 20+ Employees	Total Cost for All Mines	Total Cost for Other Parties	Total Cost
§ 46.3	\$ 18,567	\$ 8,102	\$ 3,013	\$ 29,682	\$ 841	\$ 30,523
§ 46.5	\$2,431,069	\$1,943,402	\$ 762,385	\$ 5,136,856	\$ -	\$ 5,136,856
§ 46.6	\$ 389,353	\$ 281,137	\$ 99,589	\$ 770,079	\$ -	\$ 770,079
§ 46.7	\$ 225,783	\$ 450,693	\$ 441,197	\$ 1,117,672	\$ -	\$ 1,117,672
§ 46.8	\$2,131,047	\$2,520,492	\$1,482,488	\$ 6,134,027	\$ -	\$ 6,134,027
§ 46.9	\$ 81,563	\$ 173,352	\$ 168,280	\$ 423,195	\$ -	\$ 423,195
§ 46.11	\$ 579,807	\$ 506,046	\$ 196,788	\$ 1,282,641	\$1,282,641	\$ 2,565,282
<b>Total</b>	<b>\$5,857,188</b>	<b>\$5,883,225</b>	<b>\$3,153,740</b>	<b>\$ 14,894,153</b>	<b>\$1,283,482</b>	<b>\$16,177,635</b>

\*Source: Table IV-12, Table IV-17, Table IV-19, Table IV-20; Table IV-23, Table IV-25, and Table IV-26.

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 proposed rule, MSHA 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 annually. Capital expenditures, such as the cost of

purchasing compliance equipment, are an example of one-time costs. Another example of a one-time cost is the cost of writing a training plan. For the purposes of this REA, one-time training costs have been amortized using a (real) discount rate of 7%, 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 discount rate, and "n" is the economic life of the one-time investment. As "n" becomes large, the value of "a" approaches the discount rate. Therefore, for one-time training costs with an infinite life, MSHA has applied an annualization factor equal to the discount rate of 7% (that is, the annualized cost is equal to 7% of the one-time cost).

Converting one-time costs to annualized costs allows them to be added to annual costs in order to compute the total yearly costs of a rule. Annual costs are costs that normally recur annually. Two examples of annual costs are (annual) refresher training costs and recordkeeping costs.

MSHA used an hourly compensation rate of \$17 for a clerical worker; \$23 for a miner working in an exempt surface nonmetal mine; and \$36 for a supervisor working in an exempt surface

nonmetal mine.<sup>14</sup> These figures include benefits, but they do not reflect shift differentials or overtime pay. The Agency assumed that contractor workers receive the same wage as their fellow miners working in exempt surface nonmetal mines.

Many of the assumptions and estimates of cost components in this chapter rely exclusively on MSHA's own knowledge and experience. MSHA invites comments on any of these assumptions and estimates, or on any other aspect of the Agency's analysis of the costs of compliance with the proposed rule.

#### SCOPE

Table IV-2 indicates the number of mines and miners, excluding independent contractors and contractor workers, covered by the proposed part 46 training rule. These estimates, previously presented in Chapter II, are disaggregated by mine size and by the five surface nonmetal commodity sectors that comprise the exempt mines: sand and gravel, limestone, stone, clay, and colloidal phosphate mines.

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<sup>14</sup>Data derived from Schumacher, Otto L., ed. Western Mine Engineering, Mine Cost Service. Spokane, Washington: Western Mine Engineering, 1997.

**Table IV-2: Number of Mines and Miners Covered by the Proposed Rule\***

Commodity	1-5 Employees		6-19 Employees		20+ Employees <sup>a</sup>		Total Mines
	Mines	Employees	Mines	Employees	Mines	Employees	
Sand & Gravel	4,092	11,231	1,848	17,891	278	8,911	6,218
Limestone <sup>b</sup>	504	1,626	955	11,097	659	37,872	2,118
Stone <sup>c</sup>	548	1,659	630	6,770	314	12,513	1,492
Clays <sup>d</sup>	151	463	64	640	106	8,175	321
Colloidal Phosphate	2	8	1	6	-	-	3
Total	5,297	14,987	3,498	36,404	1,357	67,471	10,152

\* All mines covered by the rule are surface nonmetal mines. Source: U.S. Department of Labor, Mine Safety and Health Administration, Office of Standards, Regulations, and Variances, based on 1997 MIS data (quarter 4, 1997). Independent contractors are not included in these estimates. Office workers and contractor workers are not included in these employment figures.

<sup>a</sup> No mine covered by the rule has more than 500 employees.

<sup>b</sup> This category includes the following: crushed and broken limestone, dimension limestone, hydraulic cement lime mines.

<sup>c</sup> This category includes the following: crushed and broken stone mines (stone, granite, marble, sandstone and traprock), as well as feldspar and shale mines.

<sup>d</sup> This category includes the following: ceramic and refractory mineral clay, common clay, and fire clay mines.

The number of independent contractors and contractor workers working in exempt surface nonmetal mines covered by the proposed training rule is provided in Table IV-3. Of this total, MSHA estimates that only 20 percent of the contractor workers would be designated as miners, as defined in § 46.2 of the proposed rule (stipulating, in part, that the "miner" be engaged in mining operations integral to extraction or production), and therefore

required, under the proposed rule, to receive comprehensive training (that is, new miner training, experienced miner training, and annual refresher training, as appropriate). MSHA estimates that only 20 percent of the independent contractors employ miners as defined in § 46.2 of the proposed rule.

**Table IV-3: Number of Independent Contractors (ICs) and Contractor Workers (CWs) Covered by the Proposed Rule\***

Mine Size by Number of Employees	Those Designated as Mine Operators & Miners <sup>a</sup>		Those Not Designated as Mine Operators & Miners <sup>b</sup>		Total	
	ICs	CWs	ICs	CWs	ICs	CWs
1-5	305	863	1,221	3,453	1,526	4,316
6-19	169	1,657	675	6,626	844	8,283
20 or More	69	2,922	275	11,688	344	14,610
Total	543	5,442	2,171	21,767	2,714	27,209

\* Number of independent contractors and contractor workers covered by the proposed rule not directly itemized in MSHA data. Estimate of the percentage of surface independent contractors and contractor workers based on ratio of surface M/NM mine operators and miners covered by rule to total number of surface M/NM mine operators and miners. Estimate of the number of contractor workers excludes office workers.

<sup>a</sup> Estimate based on the assumption that 20 percent of the independent contractors and contract workers covered by rule are designated as mines and miners.

<sup>b</sup> Estimate based on the assumption that 80 percent of the independent contractors and contract workers covered by rule are not designated as mines and miners.



Table IV-4, which combines data from Table IV-2 and Table IV-3, indicates MSHA's estimate, disaggregated by mine size and commodity classification, of the number of mine operations and miners covered by the proposed rule—including independent contractors who employ miners as defined in § 46.2 of the proposed rule and contractor workers who are defined as miners in § 46.2 of the proposed rule. In this PREA, unless otherwise specified, discussion of mine operations and miners covered by the proposed

**Table IV-4: Number of Mine Operators and Miners, Including Designated Independent Contractors and Contractor Workers, Covered by the Proposed Rule\***

Commodity	1-5 Employees		6-19 Employees		20+ Employees <sup>a</sup>		Total
	Mines	Employees	Mines	Employees	Mines	Employees	
Sand & Gravel	4,328	11,878	1,937	18,705	292	9,297	6,557
Limestone <sup>b</sup>	533	1,720	1,001	11,602	693	39,512	2,227
Stone <sup>c</sup>	580	1,755	660	7,078	330	13,055	1,570
Clays <sup>d</sup>	160	490	67	669	111	8,529	338
Colloidal Phosphate	2	8	1	6	-	-	3
<b>Total</b>	<b>5,602</b>	<b>15,850</b>	<b>3,667</b>	<b>38,061</b>	<b>1,426</b>	<b>70,393</b>	<b>10,695</b>

\* Source: Table IV-2 and Table IV-3. Independent contractors designated as mine operators and contractor workers designated as miners (in Table IV-3) were apportioned to commodity classifications in the same proportion as the distribution of mine operators and miners by commodity classification (in Table IV-2).

<sup>a</sup> No mine covered by the rule has more than 500 employees.

<sup>b</sup> This category includes the following: crushed and broken limestone, dimension limestone, hydraulic cement, and lime mines.

<sup>c</sup> This category includes the following: crushed and broken stone mines (stone, granite, marble, sandstone, traprock), as well as feldspar and shale mines.

<sup>d</sup> This category includes the following: ceramic and refractory mineral clay, common clay, and fire clay mines.

rule will refer to the estimates in Table IV-4.

Table IV-5 provides MSHA's estimate of the number of exempt mine operations and miners that are not currently in compliance with existing part 48 training requirements. MSHA anticipates that only the mine operations identified in Table IV-5 would incur costs to comply with the comprehensive training requirements of the proposed rule. The other exempt mine operations and miners are expected to be currently in substantial compliance with existing part 48 training requirements and therefore, for all intents and purposes, to be already in compliance with the proposed rule.

**Table IV-5: Number of Mines and Miners Not Currently in Compliance with the Propose**

Commodity	1-5 Employees <sup>a</sup>		6-19 Employees <sup>b</sup>		20+ Employees <sup>c</sup>		Tc
	Mines	Employees	Mines	Employees	Mines	Employees	Mines
Sand & Gravel	2,597	7,127	775	7,482	58	1,859	3,430
Limestone <sup>d</sup>	320	1,032	400	4,641	139	7,902	859
Stone <sup>e</sup>	348	1,053	264	2,831	66	2,611	678
Clays <sup>f</sup>	96	294	27	268	22	1,706	145
Colloidal Phosphate	1	5	0	3	-	-	2
Total	3,361	9,510	1,467	15,224	285	14,079	5,113

<sup>a</sup> Number affected = 60% of those exempted mines and miners in this size class. (Source: Table IV-4).

<sup>b</sup> Number affected = 40% of those exempted mines and miners in this size class. (Source: Table IV-4).

<sup>c</sup> Number affected = 20% of those exempted mines and miners in this size class. (Source: Table IV-4).

<sup>d</sup> This category includes the following: crushed and broken limestone, dimension limestone, hydraulic ceramic lime mines.

<sup>e</sup> This category includes the following: crushed and broken stone mines (stone, granite, marble, sandstone traprock), as well as feldspar and shale mines.

<sup>f</sup> This category includes the following: ceramic and refractory mineral clay, common clay, and fire clay mine

MSHA does not have reliable data on which to estimate the number or percentage of mines not currently in compliance with part 48 training requirements. Instead, MSHA has had to rely on comments provided at the seven preproposal public meetings and written comments on the subject. The prevailing opinion reflected in the comments was that there was significant non-compliance, particularly among the smaller mines, and that as mine size increased compliance rates also increased. Several commenters specifically mentioned very small "mom and pop" operations, where family members are the employees, as currently having particularly high rates of non-compliance (or substantial non-compliance) with existing part 48 training requirements. MSHA has interpreted "mom and pop" operations broadly to mean mines with 5 or fewer employees.

MSHA received two estimates of non-compliance rates. A commenter at the Dallas preproposal public meeting estimated that roughly 60 percent of exempt mines in Texas, most of which have fewer than 10 employees, are currently not in compliance with existing part 48 training requirements. A commenter at the Albany preproposal public meeting estimated that, in New York, approximately 50 percent of small mines, employing 20 or fewer employees, are currently not in compliance with existing part 48 training requirements.

MSHA took these comments into account in developing its estimates of current non-compliance rates with existing part 48 training requirements. For this PREA, MSHA estimates that 60 percent of exempt mines with 5 or fewer employees, 40 percent of exempt mines with between 6 and 19 employees, and 20 percent of exempt mines with 20 or more employees are currently not in compliance with existing part 48 training requirements. Applying these estimates to the population of exempt mines, MSHA calculates that some 48 percent of exempt mines overall are currently not in compliance with part 48 training requirements.<sup>15</sup> The Agency believes that these estimates are basically consistent both with the comments received and with the fatality rates by mine size provided in Chapter III. However, MSHA requests comments and any supporting evidence related to the non-compliance estimates used in this PREA. In addition, MSHA requests comments and any supporting evidence related to its assumption that exempt mines are either fully in compliance or fully out of compliance (as opposed to being partially in compliance) with existing part 48 training requirements.

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<sup>15</sup>MSHA recognizes that many, and perhaps most, exempt mines are neither 100% in compliance with nor 100% out of compliance with existing part 48 training requirements. Nevertheless, the Agency believes that most exempt mines that it has categorized as being "in compliance" are either fully or almost fully (substantially) in compliance. The degree of compliance of "non-compliant" exempt mines is less certain, but for purposes of this PREA, MSHA assumes they are completely out of compliance with existing part 48 training requirements. To the extent that this assumption is wrong, the Agency will have overestimated the costs of the proposed rule.

## SECTION-BY-SECTION DISCUSSION

### § 46.3 Training Plans

This section contains a number of requirements—in paragraphs (a), (c), (d), (e), (g), and (h)—that have associated costs.

§ 46.3(a) requires each mine operator to develop (and implement) a written plan that provides effective programs in new miner training, experienced miner training, new task training, annual refresher training, and hazard training.

MSHA estimates that, in mines with fewer than 20 employees, a supervisor would require 2 hours, on average, to develop a written training plan complying with § 46.3(a). For mines with 20 or more employees, MSHA estimates a supervisor would require 4 hours, on average, to develop a written training plan complying with § 46.3(a). These estimates are contingent upon MSHA, industry, and labor developing model training plans and materials for use by mine operators, particularly small operators.

Table IV-6 provides MSHA's estimate of the cost of § 46.3(a) for the exempt mines currently not in compliance with existing part 48 training requirements. This one-time, first-year cost has been converted to yearly costs in Table IV-6 using an annualization factor of 7%.

**Table IV-6: Cost to Write Training Plan in Accordance  
with § 46.3 (a) of the Proposed Rule**

Mine Size by Number of Employees	# of Mines <sup>a</sup>	Cost per Mine <sup>b</sup>	Total Cost	Total Annualized Cost <sup>c</sup>
1-5	3,361	\$ 72	\$ 242,006	\$ 16,940
6-19	1,467	\$ 72	\$ 105,610	\$ 7,393
20 or More	285	\$ 144	\$ 41,069	\$ 2,875
<b>Total</b>	<b>5,113</b>		<b>\$ 388,685</b>	<b>\$ 27,208</b>

<sup>a</sup> Number of mines = the number of mines not currently in compliance (from Table IV-5).

<sup>b</sup> Cost per mine =  $h \times \$36$ , where  $h$  is the number of hours of supervisor's time required to develop a training plan and  $h=2$  for mines with fewer than 20 employees and  $h=4$  for mines with 20 or more employees. \$36 is the hourly wage rate for a MNM mine supervisor.

<sup>c</sup> Total annualized cost =  $0.07 \times$  total (one-time, first-year) cost.

§ 46.3(c) requires the mine operator to submit the training plan for approval by the Regional Manager (or designee for the region where the mine is located) if the plan fails to contain the minimum information specified in paragraphs § 46.3(b)(1) through (b)(5). Miners and their representatives may also request review and approval of the plan by the Regional Manager.

MSHA estimates that 20 percent of the exempt mines not currently in compliance with existing part 48 training requirements would have to submit a training plan for approval—either because the mine operator developed a training plan that did not contain the minimum information needed for automatic approval or because a miner or miners' representative requested

review and approval of the plan by the Regional Manager. For each of these mines, MSHA estimates that submitting a training plan for approval would involve 0.1 hours for a clerical worker to photocopy and mail the training plan, \$0.75 in photocopying expense, and \$1.00 for postage.

Table IV-7 presents MSHA's estimate of the cost of § 46.3(c) for the exempt mines currently not in compliance with existing part 48 training requirements. This one-time, first-year cost has been converted to yearly costs in Table IV-7 using an annualization factor of 7%.



**Table IV-7: Cost of Submitting Training Plan for Approval  
in Accordance with § 46.3 (c) of the Proposed Rule**

Mine Size by Number of Employees	# of Mines <sup>a</sup>	Cost per Mine <sup>b</sup>	Total Cost	Total Annualized Cost <sup>c</sup>
1-5	672	\$ 3.45	\$ 2,319	\$ 162
6-19	293	\$ 3.45	\$ 1,012	\$ 71
20 or More	57	\$ 3.45	\$ 197	\$ 14
<b>Total</b>	1,023		\$ 3,528	\$ 247

<sup>a</sup> Number of mines = 20% X m, where m is the number of mines not currently in compliance (from Table IV-5).

<sup>b</sup> Cost per mine = (0.1 X \$17) + (5 X \$0.15) + \$1, where 0.1 is the number of hours required for a clerical worker to photocopy and mail the training plan; \$17 is the hourly wage rate for a clerical worker; 5 is the number of pages to be photocopied; \$0.15 is the photocopying cost per page; and \$1 is the cost of postage.

<sup>c</sup> Total annualized cost = 0.07 X total (one-time, first-year) cost.

§ 46.3(d) requires the mine operator to provide the miners' representative, if any, with a copy of the training plan. At mines where no miners' representative has been designated, the operator must post a copy of the plan at the mine site or provide a copy to each miner.

For each exempt mine not currently in compliance with existing part 48 training requirements, MSHA estimates that § 46.3(d) would impose the following cost burden: 0.1 hours for a clerical worker to photocopy and either post or deliver the training plan and \$0.75 in photocopying expense.

Table IV-8 displays MSHA's estimate of the total cost of § 46.3(d). This one-time, first-year cost has been converted to yearly costs in Table IV-8 using an annualization factor of 7%.

**Table IV-8: Cost of Providing Plan to Mine Representative or Posting Plan in Accordance with § 46.3 (d) of the Proposed Rule**

Mine Size by Number of Employees	# of Mines <sup>a</sup>	Cost per Mine <sup>b</sup>	Total Cost	Total Annualized Cost <sup>c</sup>
1-5	3,361	\$ 2.45	\$ 8,235	\$ 576
6-19	1,467	\$ 2.45	\$ 3,594	\$ 252
20 or More	285	\$ 2.45	\$ 699	\$ 49
Total	5,113		\$ 12,527	\$ 877

<sup>a</sup> Number of mines = the number of mines not currently in compliance (from Table IV-5).

<sup>b</sup> Cost per mine = (0.1 X \$17) + (5 X \$0.15), where 0.1 is the number of hours required for a clerical worker to photocopy and either post or deliver the training plan; \$17 is the hourly wage rate for a clerical worker; 5 is the number of pages to be photocopied; and \$0.15 is the photocopying cost per page.

<sup>c</sup> Total annualized cost = 0.07 X total (one-time, first-year) cost.

§ 46.3(e) allows miners or their representatives to submit written comments on the training plan to the operator or to the Regional Manager, as appropriate.

MSHA assumes that miners or their representatives who submit written comments would prepare those comments while off-duty and would not receive compensation from the mine operator for their efforts. Therefore, this provision would not impose a cost on mine operators. MSHA believes, however, that there would be a

cost associated with this provision, in the form of the opportunity cost of the time spent by miners and miners' representatives preparing written comments. MSHA further believes the appropriate opportunity cost to be the wage rate for the miner or miners' representative.

MSHA estimates that a miner or miners' representative would submit written comments on the training plan for only 5 percent of the exempt mines that are currently not in compliance with existing part 48 training requirements. MSHA further estimates that a miner or miners' representative would require 2 hours, on average, to prepare written comments on the training plan and that mailing the written comments would impose postage costs of \$1.00.

Table IV-9 provides MSHA's estimate of the total cost to miners and miners' representatives associated with § 46.3(e). This one-time, first-year cost has been converted to yearly costs in Table IV-9 using an annualization factor of 7%.

**Table IV-9: Cost of Miners or Their Representatives Submitting Written Comment about the Plan in Accordance with § 46.3 (e) of the Proposed Rule\***

Mine Size by Number of Employees	# of Mines <sup>a</sup>	Cost per Mine <sup>b</sup>	Total Cost	Total Annualized Cost <sup>c</sup>
1-5	168	\$ 47	\$ 7,899	\$ 553
6-19	73	\$ 47	\$ 3,447	\$ 241
20 or More	14	\$ 47	\$ 670	\$ 47
Total	256		\$ 12,016	\$ 841

\* These costs are not borne by mine operators, but by miners and miner representatives.

<sup>a</sup> Number of mines for which a miner or miner representative submits written comments =  $0.05 \times m$ , where  $m$  is the number of mines not currently in compliance (Table IV-5).

<sup>b</sup> Cost per mine =  $(2 \times \$23) + \$1$ , where 2 is the number of hours needed to prepare written comments; \$23 is the hourly wage rate for a MNM miner; and \$1 is the cost of postage.

<sup>c</sup> Total annualized cost =  $0.07 \times$  total (one-time, first-year) cost.

§ 46.3(g) permits an operator, miner, or miners' representative to appeal a decision of the Regional Manager regarding the approval status of a training plan.

MSHA assumes that appeals would be rare and would come predominantly from mine operators. MSHA estimates that 2 percent of mine operators that submitted a written training plan for approval would appeal their approval status. Of these, MSHA estimates that 90% would have a mine supervisor write a written

appeal (taking 4 hours per appeal to write) and that 10% would use a lawyer to appeal (at a cost of \$2,000 per appeal).

Table IV-10 presents MSHA's estimate of the appeal costs associated with § 46.3(g) for the exempt mines currently not in compliance with existing part 48 training requirements. This one-time, first-year cost has been converted to yearly costs in Table IV-10 using an annualization factor of 7%.

**Table IV-10: Cost of Appealing Approval Status of the Training Plan in Accordance with § 46.3 (g) of the Proposed Rule**

Mine Size by Number of Employees	# of Mines <sup>a</sup>	Cost per Mine <sup>b</sup>	Total Cost	Total Annualized Cost <sup>c</sup>
1-5	13	\$ 330.50	\$ 4,444	\$ 311
6-19	6	\$ 330.50	\$ 1,939	\$ 136
20 or More	1	\$ 330.50	\$ 377	\$ 26
Total	20		\$ 6,760	\$ 473

<sup>a</sup> The number of mines = 2% X 20% X m, where m is the number of mines not currently in compliance (from Table IV-5); 20% is the proportion of those mines that will submit a training plan for approval; and 2% is the proportion of those that appeal their approval status.

<sup>b</sup> Cost per mine = (0.9 X (4 X \$36 + \$1)) + (0.1 X \$2,000), where 0.9 is the share of those appealing that do not use a lawyer to appeal; 4 is the number of hours needed for a mine supervisor to prepare a written appeal; \$36 is the hourly wage rate for a MNM mine supervisor; \$1 is the cost of postage for mailing; 0.1 is the share of those appealing that use a lawyer to appeal; and \$2,000 is the cost of using legal services to appeal.

<sup>c</sup> Total annualized cost = 0.07 X total (one-time, first-year) cost.

§ 46.3 (h) requires the mine operator to make available a copy of the current training plan for inspection by MSHA and for

examination by miners and their representatives at the mine site.

For each exempt mine not currently in compliance with existing part 48 training requirements, MSHA estimates that § 46.3(h) would impose the following cost burden: 0.1 hours for a clerical worker to photocopy and file the training plan and \$0.75 in photocopying expense.

Table IV-11 displays MSHA’s estimate of the total cost of § 46.3(h). This one-time, first-year cost has been converted to yearly costs in Table IV-11 using an annualization factor of 7%.

**Table IV-11: Cost of Maintaining Copy of Current Training Plan in Accordance with § 46.3 (h) of the Proposed Rule**

Mine Size by Number of Employees	# of Mines <sup>a</sup>	Cost per Mine <sup>b</sup>	Total Cost	Total Annualized Cost <sup>c</sup>
1-5	3,361	\$ 2.45	\$ 8,235	\$ 576
6-19	1,467	\$ 2.45	\$ 3,594	\$ 252
20 or More	285	\$ 2.45	\$ 699	\$ 49
Total	5,113		\$ 12,527	\$ 877

<sup>a</sup> Number of mines = the number of mines not currently in compliance (from Table IV-5).

<sup>b</sup> Cost per mine = (0.1 X \$17) + (5 X \$0.15), where 0.1 is the number of hours required for a clerical worker to photocopy and file the training plan; \$17 is the hourly wage rate for a clerical worker; 5 is the number of pages to be photocopied; and \$0.15 is the photocopying cost per page.

<sup>c</sup> Total annualized cost = 0.07 X total (one-time, first-year) cost.

Table IV-12 summarizes MSHA’s estimate of the yearly costs to comply with § 46.3 of the proposed rule.

**Table IV-12: Summary of Yearly Costs to Comply with § 46.3 of the Proposed Rule \***

Requirement/ Provision	Mines with 1-5 Employees	Mines with 6-19 Employees	Mines with 20+ Employees	Total Cost for All Mines	Total Cost for Other Parties	Total Cost
§ 46.3 (a)	\$ 16,940	\$ 7,393	\$ 2,875	\$ 27,208	\$ -	\$ 27,208
§ 46.3 (c)	\$ 162	\$ 71	\$ 14	\$ 247	\$ -	\$ 247
§ 46.3 (d)	\$ 576	\$ 252	\$ 49	\$ 877	\$ -	\$ 877
§ 46.3 (e)	\$ -	\$ -	\$ -	\$ -	\$ 841	\$ 841
§ 46.3 (g)	\$ 311	\$ 136	\$ 26	\$ 473	\$ -	\$ 473
§ 46.3 (h)	\$ 576	\$ 252	\$ 49	\$ 877	\$ -	\$ 877
Total	\$ 18,567	\$ 8,102	\$ 3,013	\$ 29,682	\$ 841	\$ 30,523

\*Source: Table IV-6, Table IV-7, Table IV-8, Table IV-9, Table IV-10, and Table IV-11.

The costs summarized in Table IV-12, for developing a training plan in accordance with § 46.3 of the proposed rule, only reflect the one-time costs borne by existing exempt mines. MSHA recognizes, however, that, in the normal course of events each year, some mines will close and other, new mines will open.<sup>16</sup> These new mines would also be subject to the requirements of § 46.3 of the proposed rule to develop a training plan.

If the costs of developing a training plan under the proposed rule were the same for new mines as for existing mines, then the compliance costs for new mines would be approximately \$10,000 annually, or less than 0.01 percent to the total estimated cost of

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<sup>16</sup>Based on its analysis of mine data for this decade, MSHA estimates that, in the absence of cyclical effects, approximately 200 new mines open annually.

the proposed rule. MSHA has not included these costs in the PREA. Instead, in order to develop a more informed estimate of these costs, MSHA requests comments on (1) whether new mines are predominantly opened by current mine owners (who would presumably be able to adopt an approved training plan), and (2) more generally, whether the cost assumptions for existing mines—such as the percentage of mines that would submit a training plan for approval and the percentage of mines that would appeal the approval status of the training plan—are equally applicable to new mines. Based on comments received in response to this request, MSHA will prepare estimates, for inclusion in the REA for the final rule, of the annual costs for new mines to develop a training plan.

#### § 46.5 New Miner Training

Paragraph (a) of this section requires that each operator provide each new miner with at least 24 hours of training. Those miners who have not received the full 24 hours of new miner training must work under the close supervision of an experienced miner. Paragraph (e) of this section exempts certain new miners—those who have less than 12 months of surface mining or equivalent experience and have completed new miner training under this section or under § 48.25 within 36 months of beginning work—from having to repeat new miner training.



In order to determine the costs of new miner training under § 46.5, MSHA began by estimating the number of new employees hired each year in exempt mines currently not in compliance with existing part 48 training requirements. MSHA's estimates of the number of new employees each year for these mines, disaggregated by mine size and commodity classification, is presented in Table IV-13. These estimates reflect MSHA's estimates of the following annual hire rates for the various commodity classifications: sand and gravel mines, 40%; limestone mines and stone mines, 10%; and clay mines and colloidal phosphate mines, 5%.

**Table IV-13: Number of New Employees in Mines Not Currently in Compliance with the Pro**

Commodity	1-5 Employees		6-19 Employees		20+ Employees		Total
	Mines <sup>a</sup>	Employees <sup>b</sup>	Mines <sup>a</sup>	Employees <sup>b</sup>	Mines <sup>a</sup>	Employees <sup>b</sup>	
Sand & Gravel	2,597	2,851	775	2,993	58	744	3,430
Limestone <sup>c</sup>	320	103	400	464	139	790	859
Stone <sup>d</sup>	348	105	264	283	66	261	678
Clays <sup>e</sup>	96	15	27	13	22	85	145
Colloidal Phosphate	1	0	0	0	-	-	2
<b>Total</b>	<b>3,361</b>	<b>3,074</b>	<b>1,467</b>	<b>3,754</b>	<b>285</b>	<b>1,880</b>	<b>5,113</b>

<sup>a</sup> Number of mines = the number of mines not currently in compliance (from Table IV-5).

<sup>b</sup> Number of new employees = n X h, where n is the number of miners in mines that are not currently in compliance and h is hire rate (as a percentage of miners); h=40% for sand and gravel mines; h=10% for limestone mines; and h=5% for clay mines and colloidal phosphate mines.

<sup>c</sup> This category includes the following: crushed and broken limestone, dimension limestone, hydraulic cement mines.

<sup>d</sup> This category includes the following: crushed and broken stone mines (stone, granite, marble, sandstone, taprock), as well as feldspar and shale mines.

<sup>e</sup> This category includes the following: ceramic and refractory mineral clay, common clay, and fire clay mines.

MSHA estimates that approximately 50 percent of newly-hired employees are new miners who have less than 12 months of surface mining or equivalent experience and have not previously completed new miner training within 36 months of starting work. (Thus, this estimate excludes those miners exempt from new miner training under paragraph (e) of § 46.5.) Table IV-14 provides MSHA's estimate of the number of miners—those in exempt mines currently

not in compliance with existing part 48 training requirements—who annually qualify as new miners and would require new miner training under § 46.5 of the proposed rule.

**Table IV-14: Number of New Employees Who Are New Miners and Require Training under § 46.5 of the Proposed Rule**

	Mines with 1-5 Employees	Mines with 6-19 Employees	Mines with 20+ Employees	Total for All Mines
# of New Employees <sup>a</sup>	3,074	3,754	1,880	8,708
# of New Employees that Are Experienced Miners <sup>b</sup>	1,537	1,877	940	4,354
# of New Miners Requiring New Miner Training under § 46.5 <sup>c</sup>	1,537	1,877	940	4,354

<sup>a</sup> Source: Table IV-13.

<sup>b</sup> Number of new employees that are miners with at least some surface mining or equivalent experience =  $p = 50\% \times n$ , where  $n$  is the number of new employees.

<sup>c</sup> Number of new miners requiring new miner training under § 46.5 =  $n - p$ .

MSHA anticipates that new miners receive the majority of, but not all, new miner training on-site. For purposes of this PREA, MSHA assumes that, on average, new miners receive 16 hours of new miner training on-site and 8 hours of new miner training off-site.

The cost per miner for on-site new miner training is equal to the miner's hourly wage rate of \$23 multiplied by the number of hours of training received. The actual number of hours of on-site

new miner training required, however, is only 13.48 hours per miner, rather than 16 hours per miner, because of two provisions in the proposed rule.

First, as provided in paragraph (c) of § 46.4, new miners would be permitted to substitute equivalent training required by the Occupational Safety and Health Administration (OSHA), or other federal or state agencies, to meet requirements under part 46, where appropriate. MSHA believes that training required by OSHA, or other federal or state agencies, could be appropriately substituted for new miner training as required under this section of the proposed rule. MSHA estimates that 20 percent of new miners would receive an average of 16 hours of training required by OSHA, or other federal or state agencies, that is equivalent to on-site new miner training.

Second, as provided in paragraph (c) of § 46.7, new task training may be credited toward new miner training, as appropriate. MSHA estimates that miners in the exempt industries receive, on average, 0.6 hours of new task training per year. Since new miner training must be completed within 60 days after a new miner begins work (as specified in paragraph (d) of § 46.5), MSHA estimates that only 20% of the 0.6 hours of annual new task training could properly be applied to on-site new miner training.

On-site new miner training would impose other costs as well on exempt mines not currently in compliance with the proposed

rule. MSHA estimates that, for each such mine, a mine supervisor giving the on-site new miner training would require 6 hours of preparation. In addition, that mine supervisor would provide 13.48 hours of on-site new miner training per session (where a session here refers to the complete package of on-site new miner training received by each new miner in a particular mine). The average number of sessions provided per mine is determined by the number of new miners annually per mine divided by the number of new miners trained per session. MSHA estimates that the number of new miners trained per session would be 1 for mines with 5 or fewer employees; 2 for mines with between 6 and 19 employees; and 4 for mines with 20 or more employees.

Table IV-15 provides MSHA's estimate of the cost of on-site new miner training borne by exempt mine operators to comply with § 46.5 of the proposed rule. As indicated in Table IV-15, these costs are a function of both the number of affected mines and the number of affected miners.

**Table IV-15: Annual Cost of On-Site New Miner Training in Accordance with § 46.5 of the Proposed Rule**

Mine Size by Number of Employees	# of Mines <sup>a</sup>	Cost per Mine <sup>b</sup>	Total Cost Related to # of Mines	# of Miners <sup>c</sup>	Cost per Miner <sup>d</sup>	Total Cost Related to # of Miners
1-5	3,361	\$ 438	\$ 1,471,906	1,537	\$ 310	\$ 476,539
6-19	1,467	\$ 526	\$ 772,212	1,877	\$ 310	\$ 581,879
20 or More	285	\$ 616	\$ 175,667	940	\$ 310	\$ 291,497
<b>Total</b>	<b>5,113</b>		<b>\$2,419,785</b>	<b>4,354</b>		<b>\$1,349,915</b>

<sup>a</sup> Number of mines = the number of mines not currently in compliance (from Table IV-5).

<sup>b</sup> Cost per mine =  $(6 \times \$36) + (13.48 \times \$36 \times n/m \times 1/r)$ , where 6 is the number of hours of preparatio supervisor to give on-site new miner training; \$36 is the hourly wage rate for a M/NM mine superviso the number of hours of on-site new miner training per session;  $(n/m \times 1/r)$  is the number of session: miner training; n is the number of new miners in that mine size class; m is the number of mines in th class; and r is the number of miners per session, where  $r=1$  for mines with 1-5 em ployees;  $r=2$  for n 19 employees; and  $r=4$  for mines with 20 or more employees.

<sup>c</sup> The number of miners = the number of new miners requiring new miner training under § 46.5 (from 14).

<sup>d</sup> The cost per miner =  $(16 \times \$23) - (0.2 \times 12 \times \$23) - (0.2 \times 0.6 \times \$23)$ , where 16 is the number of ho site new miner training; \$23 is the hourly wage rate for a M/NM miner; 0.2 is the fraction of miners re equivalent training from OSHA or other Federal or State agencies; 12 is the average number of hours equivalent training received; 0.2 is the fraction of annual task training received within 60 days of hire; the number of hours of annual task training received.

The cost per miner for off-site new miner training consists of the following: (1) the miner's hourly wage rate of \$23 multiplied by the 8 hours of off-site new miner training received; (2) the off-site new miner training fee, which MSHA estimates (based on a composite of fees charged by private training consultants and free or subsidized rates for state grant training programs) would average \$35 per miner; (3) \$30 for per diem meal

costs; (4) \$30, on average, for transportation costs to and from the training site; and (5) \$35, on average, for overnight lodgings (assuming half the new miners require one night of overnight lodgings at a cost of \$70).

Table IV-16 provides MSHA's estimate of the cost of off-site new miner training borne by exempt mine operators to comply with § 46.5 of the proposed rule.

**Table IV-16: Annual Cost of Off-Site New Miner Training in Accordance with § 46.5 of the Proposed Rule**

Mine Size by Number of Employees	# of Miners <sup>a</sup>	Cost per Miner <sup>b</sup>	Total Cost
1-5	1,537	\$ 314	\$ 482,625
6-19	1,877	\$ 314	\$ 589,311
20 or More	940	\$ 314	\$ 295,220
Total	4,354		\$1,367,156

<sup>a</sup> The number of miners = the number of miners requiring new miner training under § 46.5 (from Table IV-14).

<sup>b</sup> The cost per miner =  $(8 \times \$23) + \$35 + \$30 + \$30 + (0.5 \times \$70)$ , where 8 is the number of hours of off-site new miner training; \$23 is the hourly wage rate for a M/NM miner; \$35 is the average off-site new miner training fee; \$30 is the per diem cost for meals; \$30 is the average transportation cost to and from the training site; 0.5 is the fraction of miners requiring overnight lodgings for the off-site training; and \$70 is the average cost of overnight lodgings.

Based on the sum of on-site and off-site new miner training costs, Table IV-17 summarizes MSHA's estimate of the yearly costs to comply with § 46.5 of the proposed rule.

**Table IV-17: Summary of Yearly Costs to Comply with § 46.5 of the Proposed Rule \***

	Mines with 1-5 Employees	Mines with 6-19 Employees	Mines with 20+ Employees	Total Cost
On-Site Training	\$1,948,444	\$1,354,091	\$ 467,165	\$3,769,700
Off-Site Training	\$ 482,625	\$ 589,311	\$ 295,220	\$1,367,156
<b>Total</b>	<b>\$2,431,069</b>	<b>\$1,943,402</b>	<b>\$ 762,385</b>	<b>\$5,136,856</b>

\*Source: Table IV-15 and Table IV-16.

§ 46.6 Newly-Hired Experienced Miner Training

Paragraph (a) of this section requires each operator to provide each newly-hired experienced miner with training in the following four areas before the miner begins work: an introduction to the work environment; instruction on the recognition and avoidance of hazards; a review of the mine's escape and emergency evacuation plans; and instruction on the health and safety aspects of the tasks to be assigned.

In order to determine the costs of newly-hired experienced miner training under § 46.6, MSHA began by estimating the number of experienced miners hired each year in exempt mines currently not in compliance with existing part 48 training requirements. MSHA estimates that half of the newly-hired employees are new miners and that the other half have at least some work experience.



The newly-hired experienced miners include some miners, such as drillers or blasters, who are employees of independent contractors and who work at the mine on a short-term basis. Under paragraph (d) of § 46.6, these miners have the option of receiving site-specific hazard training rather than experienced miner training. MSHA expects that all miners covered under paragraph (d) of this section would exercise this option. MSHA estimates that 25 percent of the contractor workers who are designated as miners would qualify for the option in paragraph (d) of this section.

Of the remaining newly-hired miners with at least some work experience, MSHA estimates that 20 percent are experienced miners who return to the same mine, following an absence of 12 months or less. Under paragraph (c) of this section, these miners must receive training on any changes at the mine that would have occurred during their absence that could adversely affect their health or safety, as well as any annual refresher training the miners might have missed during their absence.

MSHA estimates that another 20 percent of the remaining newly-hired miners with at least some work experience are new miners with less than 12 months of surface mining or equivalent experience who have completed new miner training under § 46.5 or under § 48.25 within 36 months before beginning work at the mine. These miners are covered under paragraph (e) of § 46.5, which

provides that these miners receive training (specified in paragraph (b) of § 46.5) similar in content to that provided newly-hired experienced miners under paragraph (a) of § 46.6.

Table IV-18 presents MSHA's estimates of the number of miners who require training under the various provisions of § 46.6 of the proposed rule.

**Table IV-18: Number of Newly-Hired Experienced Miners Who Require Training under § 46.6 of the Proposed Rule**

	Mines with 1-5 Employees	Mines with 6-19 Employees	Mines with 20+ Employees	Total for All Mines
# of New Employees <sup>a</sup>	3,074	3,754	1,880	8,708
# of New Employees with at Least Some Experience <sup>b</sup>	1,537	1,877	940	4,354
# of Contractor Workers Who Are Exempt under § 46.6 (d) <sup>c</sup>	21	20	10	51
# of Newly-Hired Experienced Miners Requiring Training under §46.6 <sup>d</sup>	1,516	1,856	930	4,303
# of Experienced Miners Requiring Training under §46.6 (b) <sup>e</sup>	910	1,114	558	2,582
# of Experienced Miners Covered under § 46.6 (c) <sup>f</sup>	303	371	186	861
# of Experienced Miners Covered under § 46.5 (e) <sup>g</sup>	303	371	186	861

<sup>a</sup> Source: Table IV-14.

<sup>b</sup> Number of new employees with at least some experience = e = n - v, where n is the number of new employees number of new employees that are new miners (from Table IV-14).

<sup>c</sup> The number of contractor workers who are exempted under § 46.6 (d) = c= w X y X n/k X 0.5 X 0.25, where w is the number of contractor workers designated as miners (from Table IV-3); y is the proportion of miners not currently in compliance with § 46.6 (b) (from Table IV-5); n/k is the hire rate where n is the number of new employees and k is the number of miners not currently in compliance with § 46.6 (b) (from Table IV-5); 0.5 is the proportion of new employees who are not new miners; and 0.25 is the proportion of contractor workers who are short-term, specialized extraction or production workers covered under § 46.6 (d).

<sup>d</sup> The number of newly-hired experienced miners requiring training under § 46.6 (b) = d = e - f - g

The cost per miner for newly-hired experienced miner training is equal to the miner's hourly wage rate of \$23 multiplied by the number of hours of training received. MSHA estimates that those miners covered under paragraph (a) of § 46.6 would require 4 hours of training; those miners covered under paragraph (e) of § 46.5 would require 2 hours of training; and those miners covered under paragraph (c) of § 46.6 would require 1 hour of training to comply with these respective provisions.

Newly-hired experienced miner training would impose other costs as well on exempt mines not currently in compliance with the proposed rule. MSHA estimates that, for each such mine, a mine supervisor giving newly-hired experienced miner training would require 1 hour of preparation. In addition, that mine supervisor would provide a weighted average of 3 hours of newly-hired experienced miner training per session (where a session here refers to the complete package of experienced miner training received by newly-hired experienced miners in a particular mine). The average number of sessions provided per mine is determined by the number of experienced miners hired annually per mine divided by the number of newly-hired experienced miners trained per session. MSHA estimates that the number of newly-hired experience miners trained per session would be 1 for mines with 5 or fewer employees; 2 for mines with between 6 and 19 employees; and 4 for mines with 20 or more employees.

Table IV-19 presents MSHA's estimate of the cost of newly-hired experienced miner training borne by exempt mine operators to comply with § 46.6 (and paragraph (e) of § 46.5) of the proposed rule.

**Table IV-19: Annual Cost of Newly-Hired Experienced Miner Training under § 46.6 of the Proposed Rule**

Mine Size by Number of Employees	# of Mines <sup>a</sup>	Cost per Mine <sup>b</sup>	Total Cost Related to # of Mines	# of Miners <sup>c</sup>	Cost per Miner <sup>d</sup>	Total Cost Related to # of Miners
1-5	3,361	\$ 85	\$ 284,742	1,516	\$ 69	\$ 104,611
6-19	1,467	\$ 104	\$ 153,048	1,856	\$ 69	\$ 128,089
20 or More	285	\$ 124	\$ 35,389	930	\$ 69	\$ 64,200
Total	5,113		\$ 473,179	4,303		\$ 296,900

<sup>a</sup> Source: Table IV-5.

<sup>b</sup> Cost per mine =  $(1 \times \$36) + (\$36 \times (0.6 \times 4 + 0.2 \times 2 + 0.2 \times 1) \times (n/m \times 1/r))$ , where 1 is the number of hours of experienced miner training preparation for a supervisor to give experienced miner training; \$36 is the hourly wage rate for a M/N supervisor;  $(0.6 \times 4 + 0.2 \times 2 + 0.2 \times 1)$  is the number of hours of experienced miner training given by supervisor per (composite) session, where 4 is the number of hours of experienced miner training under § 46.6 (a); 0.6 is the fraction of experienced miners covered under § 46.6 (a); 2 is the number of hours of experienced miner training under § 46.5 (e); 0.2 is the fraction of miners with at least some experience receiving training under § 46.5 (e); 1 is the number of hours of experienced miner training under § 46.6 (c); and 0.2 is the fraction of experienced miners covered under § 46.6 (c); and  $(n/m \times 1/r)$  is the number of (composite) sessions of experienced miner training, where n is the number of experienced miners in that mine size class, m is the number of mines in that size class, and r is the number of miners per session, where r=1 for mines with 1-5 employees; r=2 for mines with 6-19 employees; and r=4 for mines with 20 or more employees.

<sup>c</sup> The number of miners = the number of newly-hired experienced miners requiring training under § 46.6 (and paragraph (e) of § 46.5) (Table IV-18).

<sup>d</sup> Cost per miner =  $\$23 \times (0.6 \times 4 + 0.2 \times 2 + 0.2 \times 1)$ , where \$23 is the hourly wage rate for a M/NM miner;  $(0.6 \times 4 + 0.2 \times 2 + 0.2 \times 1)$  is the number of hours of experienced miner training under § 46.6 (a); 0.6 is the fraction of experienced miners covered under § 46.6 (a); 2 is the number of hours of experienced miner training under § 46.5 (e); 0.2 is the fraction of miners with at least some experience receiving training under § 46.5 (e); 1 is the number of hours of experienced miner training under § 46.6 (c); and 0.2 is the fraction of experienced miners covered under § 46.6 (c).

#### § 46.7 New Task Training

Under this section, the operator must train a miner in (1) the safety and health aspects and safe work procedures specific to a task for which the miner has no previous experience and (2) any changes that have occurred in the miner's regularly assigned task.

MSHA expects that this section would apply to all miners, except the supervisor giving the new task training, in all exempt mines currently not in compliance with existing part 48 training requirements. The cost per miner is equal to the miner's hourly wage rate of \$23 multiplied by the number of hours of new task training received. MSHA estimates that each miner would be given, on average, three new or significantly-changed tasks each year. The duration of each new task training could vary substantially, depending on the task. For example, some new task training could last 2 minutes or less (for instance, showing a miner how to shovel safely along a moving conveyor belt) while others could last 20 minutes or more (for instance, instructing a miner about hearing protection, respiratory protection, and avoiding acute hazards when working near an operating crusher). MSHA estimates that, on average, each new task training, as required under § 46.7, would last approximately 0.2 hours.

New task training would impose other costs as well on exempt mines not currently in compliance with the proposed rule. MSHA

estimates that, for each such mine, a mine supervisor giving new task training would require 0.25 hours of preparation. In addition, that mine supervisor would provide 0.6 hours of new task training per session (where a session here refers to the complete package of new task training received annually by miners in a particular mine). The average number of sessions provided per mine is determined by the number of miners receiving new task training per mine divided by the number of miners trained per session. MSHA anticipates that new task training would usually be one-on-one between a supervisor and a miner, but that occasionally the supervisor would give task training to two or three miners at once, as appropriate. MSHA estimates that the number of miners trained per session would average 1.2 regardless of mine size.

Table IV-20 provides MSHA's estimate of the cost of new task training borne by exempt mine operators to comply with § 46.7 of the proposed rule.

**Table IV-20: Annual Cost of Task Training in Accordance with § 46.7 of the Propos**

Mine Size by Number of Employees	# of Mines <sup>a</sup>	Cost per Mine <sup>b</sup>	Total Cost Related to # of Mines	# of Miners <sup>c</sup>	Cost per Miner <sup>d</sup>	Total Cost Related to # of Miners
1-5	3,361	\$ 42	\$ 140,929	6,149	\$ 14	\$ 84,853
6-19	1,467	\$ 178	\$ 260,838	13,758	\$ 14	\$ 189,855
20 or More	285	\$ 880	\$ 250,848	13,793	\$ 14	\$ 190,349
Total	5,113		\$ 652,615	33,700		\$ 465,057

<sup>a</sup> Source: Table IV-5.

<sup>b</sup> Cost per mine =  $(0.25 \times \$36) + (0.6 \times \$36 \times n/m \times 1/1.2)$ , where 0.25 is the number of hours of prep supervisor to give task training; \$36 is the hourly wage rate for a M/NM mine supervisor; 0.6 is the number of hours of task training per (composite) session given by the supervisor annually;  $(n/m \times 1/1.2)$  is the number of sessions of task training; n is the number of miners in that mine size class, m is the number of mines in that mine size class, and 1.2 is the average number of miners per session.

<sup>c</sup> The number of miners =  $n - (m \times 1)$ , where n is the number of miners not currently in compliance (from Table IV-5); m is the number of mines not currently in compliance (Table IV-5); and 1 is the number of supervisors giving training.

<sup>d</sup> Cost per miner =  $0.6 \times \$23$ , where 0.6 is the number of hours of task training annually and \$23 is the hourly wage rate for a M/NM miner.

§ 46.8 Annual Refresher Training

At least once every 12 months, each mine operator must provide each miner with no less than 8 hours of refresher training.

MSHA expects that this section would apply to all miners, except the supervisor giving the annual refresher training, in all exempt mines currently not in compliance with existing part 48 training requirements. The cost per miner is equal to the miner's



hourly wage rate of \$23 multiplied by the 8 hours of annual refresher training received.

Annual refresher training would impose other costs as well on exempt mines not currently in compliance with the proposed rule. MSHA estimates that, for each such mine, a mine supervisor giving the annual refresher training would require 3 hours of preparation. In addition, that mine supervisor would provide 8 hours of annual refresher training per session (where a session here refers to the complete package of refresher training received annually by each miner in a particular mine). The average number of sessions provided per mine is determined by the number of miners per mine receiving refresher training annually divided by the number of miners trained per session. MSHA anticipates that, in most cases, in mines with fewer than 20 employees, the miners would receive annual refresher training together in one session and that, in mines with 20 or more employees, two sessions of refresher training would be provided annually. Accordingly, MSHA estimates that, on average, the number of miners trained per session would be 2 for mines with 5 or fewer employees; 10 for mines with between 6 and 19 employees; and 24 for mines with 20 or more employees.

Table IV-21 provides MSHA's estimate of the cost of annual refresher training borne by exempt mine operators, not currently

in compliance with existing part 48 training requirements, to comply with § 46.8 of the proposed rule.

**Table IV-21: Cost of Annual Refresher Training (to Currently Non-Compliant Mines in Accordance with § 46.8 of the Proposed Rule)**

Mine Size by Number of Employees	# of Mines <sup>a</sup>	Cost per Mine <sup>b</sup>	Total Cost Related to # of Mines	# of Miners <sup>c</sup>	Cost per Miner <sup>d</sup>	Total Cost Related to # of Miners
1-5	3,361	\$ 371	\$ 1,248,437	6,149	\$ 184	\$1,131,379
6-19	1,467	\$ 378	\$ 554,633	13,758	\$ 184	\$2,531,398
20 or More	285	\$ 688	\$ 196,322	13,793	\$ 184	\$2,537,986
Total	5,113		\$ 1,999,392	33,700		\$6,200,763

<sup>a</sup> Source: Table IV-5.

<sup>b</sup> Cost per mine =  $(3 \times \$36) + (8 \times \$36 \times n/m \times 1/s)$ , where 3 is the number of hours of preparation for supervisor to give refresher training; \$36 is the hourly wage rate for a M/NM mine supervisor; 8 is the hours of refresher training per session given annually by the supervisor; and  $(n/m \times 1/s)$  is the number of sessions of refresher training, where n is the number of miners in that size class, m is the number of mines in that size class, and s is the average number of miners per session, where s=2 for mines with 1-5 employees, s=10 for mines with 6-19 employees, and s=24 for mines with 20 or more employees.

<sup>c</sup> Number of miners =  $n - (m \times 1)$ , where n is the number of miners not currently in compliance (from Table IV-5); m is the number of mines not currently in compliance (from Table IV-5); and 1 is the number of mines giving annual refresher training.

<sup>d</sup> Cost per miner =  $8 \times \$23$ , where 8 is the number of hours of annual refresher training received and \$23 is the hourly wage rate for a M/NM miner.

MSHA believes that, as a result of the proposed rule, some exempt operations currently in compliance with existing part 48 training requirements would enjoy savings in the resources they devote to the combination of short employee safety meetings (lasting less than 30 minutes) and annual refresher training.

Under the existing part 48 rule, short employee safety meetings may not be credited toward training requirements. Under paragraph (e) of § 46.4, however, all documented employee safety meetings, regardless of duration, may be credited toward training requirements. MSHA believes that some operations would take advantage of this option by crediting short-term employee safety meetings toward annual refresher training.

MSHA estimates that approximately 30 percent of the exempt mines currently in compliance with existing part 48 training requirements hold short employee safety meetings. Of that total, MSHA anticipates that half would choose to credit short employee safety meetings toward annual refresher training and reduce the other forms of annual refresher training accordingly. (The other half, MSHA expects, would find their current level of training to be worthwhile and effective and would not reduce it in response to the proposed rule.)

MSHA estimates that mines that hold short employee safety meetings devote approximately 6 hours annually to them. Therefore, each exempt, currently-compliant mine that chose to take advantage of paragraph (e) of § 46.4 would derive savings—equal to 6 hours of time (valued at the miner's hourly wage rate) currently devoted to other types of annual refresher training—for each of its miners (except the supervisor giving the annual refresher training).

These mines would derive other other savings as well. MSHA estimates that, for each such mine, a mine supervisor giving the annual refresher training would be able to eliminate 2.25 hours of training preparation. In addition, that mine supervisor would provide 6 fewer hours of annual refresher training per session (relative to current levels of annual refresher training, net of short employee safety meetings provided under existing part 48 training requirements).

Table IV-22 provides MSHA's estimate of the savings accruing to exempt mine operators, currently in compliance with existing part 48 training requirements, in accordance with § 46.8 (and paragraph (e) of § 46.4) of the proposed rule. MSHA requests comments on the assumptions concerning short employee safety meetings used to derive the estimate of exempt mine operator savings in Table IV-22.

**Table IV-22: Savings to Mines Currently in Compliance with Part 48 Requirements Applied to Annual Refresher Training in § 46.8 of the Proposed Rule\***

Mine Size by Number of Employees	# of Mines <sup>a</sup>	Savings per Mine <sup>b</sup>	Total Savings Related to # of Mines	# of Miners <sup>c</sup>	Savings per Miner <sup>d</sup>	Total Savings Related to # of Miners
1-5	336	\$ 370	\$ 124,489	901	\$ 138	\$ 124,280
6-19	330	\$ 302	\$ 99,654	3,376	\$ 138	\$ 465,886
20 or More	171	\$ 524	\$ 89,654	8,421	\$ 138	\$1,162,166
<b>Total</b>	<b>837</b>		<b>\$ 313,796</b>	<b>12,698</b>		<b>\$1,752,332</b>

\* Savings to mines currently in compliance arise from the removal in § 46.4(e) of restriction in part 48 training on application of short safety meetings (lasting less than 30 minutes) to training requirements. Savings are from refresher training under § 46.8 of the proposed rule.

<sup>a</sup> Number of mines =  $m = (b - d) \times 0.3 \times 0.5$ , where m is the number of exempted mines currently in compliance with training requirements; b is the number of exempted mines covered by the proposed rule (from Table IV-4); d is the number of exempted mines currently not in compliance (from Table IV-5); 0.3 is the fraction of currently compliant mines that hold short safety meetings; and 0.5 is the fraction of those mines that would reduce refresher training hours in response to § 46.4(e).

<sup>b</sup> Savings per mine =  $(2.25 \times \$36) + (6 \times \$36 \times n/m \times 1/s)$ , where 2.25 is the number of hours of preparation to give 6 hours of refresher training; \$36 is the hourly wage rate for a M/NM mine supervisor; 6 is the reduction in number of hours of refresher training per session given annually by the supervisor; and  $(n/m \times 1/s)$  is the number of sessions of refresher training, where n is the number of miners in that size class, m is the number of mines in that size class, and s is the average number of miners per session, where s=2 for mines with 1-5 employees, s=1 for mines with 6-19 employees, and s=24 for mines with 20 or more employees.

<sup>c</sup> Number of miners =  $((n-h) - (m \times 1)) \times 0.3 \times 0.5$ , where n is the number of miners covered by the proposed rule (from Table IV-4); h is the number of miners not currently in compliance (from Table IV-5); m is the number of mines currently in compliance; 1 is the number of supervisors per mine giving annual refresher training; 0.3 is the fraction of currently compliant mines that hold short safety meetings; and 0.5 is the fraction of those mines that would reduce refresher training hours in response to § 46.4(e).

<sup>d</sup> Savings per miner =  $6 \times \$23$ , where 6 is the reduction in the number of hours of annual refresher training and \$23 is the hourly wage rate for a M/NM miner.

Table IV-23 summarizes MSHA's estimate of the net cost of annual refresher training resulting from § 46.8 of the proposed rule.

**Table IV-23: Summary of Net Cost of Annual Refresher Training  
Associated with § 46.8 of the Proposed Rule \***

	Mines with 1-5 Employees	Mines with 6-19 Employees	Mines with 20+ Employees	Total Cost
Cost to Currently Non- Compliant Mines	\$2,379,816	\$3,086,032	\$2,734,308	\$8,200,156
Savings to Currently Compliant Mines	\$ 248,769	\$ 565,540	\$1,251,820	\$2,066,129
Net Cost	\$2,131,047	\$2,520,492	\$1,482,488	\$6,134,027

\*Source: Table IV-21 and Table IV-22.

§ 46.9 Records of Training

Under this section, upon completion of each training program, the operator must record and certify that each miner has completed the training. The operator must provide a copy of the training certificate to each miner at the completion of each training program; in addition, when the miner leaves the operator's employ, the operator must provide a copy of the miner's training certificates, upon request. The operator must also make available a copy of each miner's training certificates for inspection by MSHA and for examination by miners and their representatives.

Table IV-24 shows the number of completed miner training programs under §§ 46.5, 46.6, 46.7, and 46.8, summed for all miners working in exempt mines not currently in compliance with

existing part 48 training requirements. MSHA estimates that each miner requires, on average, new task training for 3 new or significantly-changed tasks annually. Training for each task counts as a separate training program under this section. Employee safety meetings may contribute to the various training programs and be recorded as such, but they have no recordkeeping requirements as a separate training program, under this section.

**Table IV-24: Number of Completed Miner Training Programs Annually\***

Requirement/ Provision	Mines with 1-5 Employees	Mines with 6-19 Employees	Mines with 20+ Employees	Total for All Mines
§ 46.5	1,537	1,877	940	4,354
§ 46.6	1,516	1,856	930	4,303
§ 46.7 <sup>a</sup>	18,446	41,273	41,380	101,099
§ 46.8	6,149	13,758	13,793	33,700
Total	27,648	58,764	57,044	143,456

\*Source: Table IV-15, Table IV-19, Table IV-20, and Table IV-21.

<sup>a</sup>Each miner is assumed to require training for 3 new or significantly-changed tasks annually. Training for each task counts as a separate training program.

For each completed training program for each miner, MSHA estimates that the recordkeeping costs under this section would be 0.05 hours for a supervisor to record and certify completion of the training program; 0.05 hours for a clerical worker to copy and distribute the certificate twice and file the form; and \$0.30 in photocopying expense for two copies of the certificate.

Table IV-25 summarizes MSHA's estimate of the annual cost of recordkeeping in accordance with § 46.9 of the proposed rule.

**Table IV-25: Annual Cost of Recordkeeping in Accordance with § 46.9 of the Proposed Rule**

Mine Size by Number of Employees	# of Completed Mining Training Programs <sup>a</sup>	Recordkeeping Cost per Completed Miner Training Program <sup>b</sup>	Total Cost
1-5	27,648	\$ 2.95	\$ 81,563
6-19	58,764	\$ 2.95	\$ 173,352
20 or More	57,044	\$ 2.95	\$ 168,280
Total	143,456		\$ 423,195

<sup>a</sup> Source: Table IV-24.

<sup>b</sup> Recordkeeping cost per completed miner training program =  $(0.05 \times \$36) + (0.05 \times \$17) + (2 \times 1 \times \$0.15)$ , where 0.05 is the number of hours required for a supervisor to record and certify completion of a training program for each miner; \$36 is the hourly wage rate for MNM mine supervisor; 0.05 is the number of hours required for a clerical worker to copy and distribute the certificate (twice) and file the form and certificate; \$17 is the hourly wage rate for a clerical worker; 2 is the number of copies made of the certificate; 1 is the number of pages per certificate; and \$0.15 is the cost per page for photocopying.

§ 46.11 Hazard Training

Under this section, each mine operator must provide site-specific hazard training to any person who is not one of its miners as defined under § 46.2 of this part. The group includes scientific workers; delivery workers and customers; occasional short-term maintenance or service workers; and outside vendors, visitors, office, or staff personnel who do not work at the mine site on a continuous basis. In addition, each mine operator must



provide site-specific hazard training to each employee of an independent contractor who is working at the mine as a miner, unless the miner receives newly-hired experienced miner training. Hazard training is not required for any person who is accompanied at all times by an experienced miner who is familiar with hazards specific to the mine site.

MSHA estimates that the number of persons (including non-miners as well as miners lacking newly-hired experienced miner training) required to receive hazard training annually under this section would be 50 persons for mines with fewer than five employees; 100 persons for mines with between 6 and 19 employees; and 200 persons for mines with 20 or more employees. MSHA assumes that most mines would have a miner provide hazard training one-on-one to each person. The cost per mine, for each mine not currently in compliance with existing part 48 training requirements, would be 0.15 hours for a miner to provide hazard training (valued in terms of the miner's hourly wage rate) multiplied by the number of persons receiving hazard training at that mine.

Other parties—the employers of the persons receiving the hazard training—would also incur costs related to § 46.11 of the proposed rule. Their costs per mine would be 0.15 hours for a person to receive hazard training (valued in terms of that person's hourly wage rate) multiplied by the number of persons

receiving hazard training at that mine. MSHA estimates that the persons receiving hazard training would have an hourly wage rate comparable to a miner's.

Table IV-26 provides MSHA's estimate of the cost of annual hazard training borne by exempt mine operators, not currently in compliance with existing part 48 training requirements, and by other parties to comply with § 46.11 of the proposed rule. MSHA requests comments on the assumptions concerning hazard training—particularly the number of persons requiring hazard training—used to derive the cost estimates in Table IV-26.

**Table IV-26: Annual Cost of Hazard Training in Accordance with § 46.11 of the Proposed Rule**

Mine Size by Number of Employees	# of Mines <sup>a</sup>	Cost per Mine <sup>b</sup>	Total Cost for Mines	Other Party Costs Per Mine <sup>c</sup>	Total Cost for Other Parties	Total Cost
1-5	3,361	\$ 173	\$ 579,807	\$ 173	\$ 579,807	\$ 1,159,614
6-19	1,467	\$ 345	\$ 506,046	\$ 345	\$ 506,046	\$ 1,012,092
20 or More	285	\$ 690	\$ 196,788	\$ 690	\$ 196,788	\$ 393,576
Total	5,113		\$1,282,641		\$1,282,641	\$ 2,565,282

<sup>a</sup> Number of mines = the number of mines not currently in compliance (from Table IV-5).

<sup>b</sup> Cost per mine =  $t \times 0.15 \times \$23$ , where  $t$  is the number of persons required to receive hazard training each year and  $t=50$  for mines with 5 or fewer employees,  $t=100$  for mines with 6-19 employees, and  $t=200$  for mines with 20 or more employees; 0.15 is the number of hours needed for a miner to give hazard training; and \$23 is the hourly wage rate for a M/NM miner.

<sup>c</sup> Other party costs per mine =  $t \times 0.15 \times \$23$ , where 0.15 now refers to the number of hours needed for a non-miner or a miner lacking newly-hired experienced miner training to receive hazard training from a miner.

V. REGULATORY FLEXIBILITY CERTIFICATION AND  
INITIAL REGULATORY FLEXIBILITY ANALYSIS

INTRODUCTION

Pursuant to the Regulatory Flexibility Act of 1980, MSHA has analyzed the impact of this rule on small businesses. Further, MSHA has made a preliminary determination with respect to whether or not it can certify that this proposal will not have a significant economic impact on a substantial number of small entities that are affected by this rulemaking. Under the Small Business Regulatory Enforcement Fairness Act (SBREFA) amendments to the Regulatory Flexibility Act (RFA), MSHA must include in the proposal a factual basis for this certification. If the proposed rule does have a significant economic impact on a substantial number of small entities, then the Agency must develop an initial regulatory flexibility analysis.

DEFINITION OF A SMALL MINE

Under the RFA, in analyzing the impact of a proposed rule on small entities, MSHA 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. MSHA has not taken such an action, and hence is required to use the SBA definition.

The SBA defines a small entity as an establishment with 500 or fewer employees (13 CFR 121.201). All nonmetal 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.

The Agency is concerned, however, that looking only at the impacts of the proposed rule on all the mines does not provide the Agency with a very complete picture on which to make decisions. Traditionally, the Agency has also looked at the impacts of its proposed rules on what the mining community refers to as "small mines"—those with fewer than 20 employees. The way these small mines perform mining operations is generally recognized as being different from the way other mines operate. In addition, MSHA has chosen to break out mines with 5 or fewer employees for purposes of this rulemaking because these mines appear to have different compliance rates and compliance costs than the other mines in the fewer-than-20-employee category.

This analysis complies with the legal requirements of the RFA for an analysis of the impacts on "small entities" while continuing MSHA's traditional look at "small mines." MSHA concludes that it can certify that the proposed rule has no significant impact on a substantial number of small entities that

are affected by this rulemaking. The Agency determined that this is the case for affected mines that have: five or fewer employees, between 6 and 19 employees, 20 or more employees, and 500 or fewer employees (which, in this case, are all mines affected by this rule).

#### FACTUAL BASIS FOR CERTIFICATION

General approach: The Agency's analysis of impacts on "small entities" begins with a "screening" analysis. The screening compares the estimated compliance costs of the proposed rule for small mine operators in the affected sector to the estimated revenues for that sector. When estimated compliance costs are less than 1 percent of estimated revenues (for the size categories considered) the Agency believes it is generally appropriate to conclude that there is no significant impact on a substantial number of small entities. When estimated compliance costs approach or exceed 1 percent of revenue, it tends to indicate that further analysis may be warranted. The Agency welcomes comment on its approach in this regard.

Derivation of costs and revenues: In the case of this proposed rule, because the compliance costs must be absorbed by the nonmetal mines affected by this rule, the Agency decided to focus its attention exclusively on the relationship between costs

and revenues for these mines, rather than looking at the entire metal and nonmetal mining sector as a whole.

The compliance costs noted in this chapter are presented earlier in Chapter IV of this document along with an explanation of how they were derived. In estimating compliance costs, different assumptions often had to be made for mines of different employment sizes in order to account for differences in mining operations. For example, MSHA varied assumptions on the basis of mine size concerning the following: the current compliance rate of exempted mines with existing part 48 training requirements, the number of persons trained per mine, and the number of training sessions a mine will have annually.

In determining revenues for the nonmetal mines affected by this rulemaking, MSHA multiplied their production data (in tons) by the price per ton of the commodity. The production and price data were obtained from the United States Geological Survey (USGS), Mining and Quarrying Trends 1997 Annual Review and other Minerals Information publications.<sup>17</sup>

The Agency welcomes comment on alternative data sources that can help it more accurately estimate revenues for the final rule.

Results of screening analysis. As shown in Table V-1 with respect to the exempt nonmetal mines with 5 or fewer employees,

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<sup>17</sup>U.S. Department of the Interior/U.S. Geological Survey. Mining and Quarrying Trends, 1997 Annual Review. Tables 2 and 3. 1997. USGS Minerals Information - 1997.

the estimated annual costs of the proposed rule as a percentage of annual revenues are 0.30 percent. For exempt nonmetal mines that have between 6 and 19 employees, the estimated annual costs of the rule as a percentage of annual revenues are 0.13 percent. For exempt nonmetal mines with 20 or more employees, the estimated annual costs of the proposed rule as a percentage of annual revenues are 0.03 percent. Finally, for all exempt nonmetal mines (which are mines that have 500 or fewer employees) the estimated annual costs of the rule as a percentage of annual revenues are 0.09 percent.

These estimated costs as a percentage of revenues may be slightly misleading insofar as they include the compliance cost savings and the revenues of exempt mines currently in compliance with existing part 48 training requirements. As shown in Table V-2, for the exempt mines not currently in compliance with existing part 48 training requirements, the annual costs of the proposed rule as a percentage of annual revenues are 0.78 percent for mines with 5 or fewer employees, 0.23 percent for mines with between 6 and 19 employees, and 0.06 percent for mines with 20 or more employees. For all exempt mines not currently in compliance with existing part 48 training requirements, the annual cost of the proposed rule is 0.15 percent of annual revenues.

In every case, the estimated compliance costs are substantially less than 1 percent of revenues, well below the

level suggesting that the proposed rule might have a significant impact on a substantial number of small entities. Accordingly, MSHA has certified that there is no such impact for small entities that mine the commodities that are affected by this rule.

As required under the law, MSHA is complying with its obligation to consult with the Chief Counsel for Advocacy on this proposed rule, and on the Agency's certification of no significant economic impact on the mines affected by this rule. Consistent with Agency practice, notes of any meetings with the Chief Counsel's office on this rule, or any written communications, will be placed in the rulemaking record. The Agency will continue to consult with the Chief Counsel's office as the rulemaking process proceeds.



**TABLE V-1: Exempt Nonmetal Mines Covered by  
the Proposed Rule<sup>a</sup>  
(dollars in thousands)**

<b>Employment Size</b>	<b>Estimated Costs</b>	<b>Estimated Revenues<sup>b</sup></b>	<b>Costs as Percentage of Revenues</b>
<b>(1-5)</b>	5,857	1,949,366	0.30%
<b>(6-19)</b>	5,883	4,555,543	0.13%
<b>(20 or more)</b>	3,154	9,756,081	0.03%
<b>All Mines<sup>c</sup></b>	14,894	16,260,990	0.09%

<sup>a</sup> All mines covered by the proposed rule are surface mines.

<sup>b</sup> Data for revenues derived from U.S. Department of the Interior/U.S. Geological Survey. Mining and Quarrying Trends, 1997 Annual Review. 1997. Tables 2 and 3.

<sup>c</sup> Every mine affected by rule has 500 or fewer employees.

**TABLE V-2: Exempt Nonmetal Mines Not Currently  
in Compliance with the Proposed Rule<sup>a</sup>  
(dollars in thousands)**

<b>Employment Size</b>	<b>Estimated Costs<sup>b</sup></b>	<b>Estimated Revenues<sup>c</sup></b>	<b>Costs as Percentage of Revenues</b>
(1-5)	6,106	779,746	0.78%
(6-19)	6,449	2,733,326	0.24%
(20 or more)	4,406	7,804,865	0.06%
<b>All Mines<sup>d</sup></b>	<b>16,961</b>	<b>11,317,937</b>	<b>0.15%</b>

<sup>a</sup> All mines covered by the proposed rule and not currently in compliance with existing part 48 training requirements are surface mines.

<sup>b</sup> The estimated costs of the proposed rule do not include the savings to exempt mines currently in compliance with existing part 48 training requirements

<sup>c</sup> Data for revenues derived from U.S. Department of the Interior/U.S. Geological Survey. Mining and Quarrying Trends, 1997 Annual Review. 1997. Tables 2 and 3.

<sup>d</sup> Every mine affected by rule has 500 or fewer employees.

VI. THE UNFUNDED MANDATES REFORM ACT OF 1995  
AND OTHER REGULATORY CONSIDERATIONS

THE UNFUNDED MANDATES REFORM ACT

MSHA has determined that, for purposes of § 202 of the Unfunded Mandates Reform Act of 1995, this proposed rule does not include any Federal mandate that may result in increased expenditures by State, local, or tribal governments in the aggregate of more than \$100 million, or increased expenditures by the private sector of more than \$100 million. Moreover, the Agency has determined that for purposes of § 203 of that Act, this proposed rule would not significantly or uniquely affect small governments.

Background

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.

## Analysis

Based on the analysis in this Agency's Preliminary Regulatory Economic Analysis (PREA), the compliance cost of this proposed rule for the nonmetal mine operators affected by this rulemaking would be approximately \$14.9 million per year. Accordingly, there is no need for further analysis under § 202 of the Unfunded Mandates Reform Act.

MSHA has concluded that small governmental entities would not be significantly or uniquely impacted by the proposed regulation. The proposed rule would affect 10,152 surface nonmetal mining operations; however, increased costs would be incurred only by those nonmetal mines affected by the rule who are not fully in compliance with the proposed rule's provisions. There are 185 nonmetal mines affected by this proposed rule that are state or local government owned. MSHA believes that all 185 of these mines are already in compliance with existing part 48 training requirements. Therefore, all these state or local government owned mines are already in compliance with the proposed rule, and no state or local government owned nonmetal mine would incur increased compliance costs as a result of the proposed rule.

MSHA requests comments on its assumption that all state or local government owned non-metal mines are currently in compliance with the proposed rule.

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

In accordance with Executive Order 13045, MSHA has evaluated the environmental health and safety effects of the proposed rule on children. The Agency has determined that the proposal would have no effect on children.

EXECUTIVE ORDER 13084: CONSULTATION AND COORDINATION WITH INDIAN  
TRIBAL GOVERNMENTS

MSHA certifies that the proposed rule would not impose substantial direct compliance costs on Indian tribal governments.

## VII. THE PAPERWORK REDUCTION ACT OF 1995

The proposed rule contains information collection requirements for nonmetal (NM) mines affected by the proposed rule. The provisions that require paperwork for mine operators are contained in the following sections: §§ 46.3, 46.5, 46.6, 46.7, 46.8, 46.9, and 46.11. In addition, one provision (§46.3) also contains paperwork for miners and/or miner representatives.

Table VII-1 displays mine operators' one-time burden hours and costs related to those burden hours by provision and mine size. Table VII-2 provides similar information for mine operators' annual burden hours and costs. Table VII-3 shows one-time burden hours and costs by provision and mine size for miners and miners' representatives.

The proposed rule imposes first year total burden hours of 239,188 and costs related to those hours are \$7,721,549. The first year burden hours and costs are composed by summing the figures in Tables VII-1, VII-2, and VII-3. After the first year, the annual burden hours would be 226,685 and costs related to those hours are \$7,299,449.<sup>18</sup>

Following the tables is an explanation of how the burden hours and compliance costs related to each provision were

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<sup>18</sup>All of the preceding costs for Table VII-1, Table VII-2, and Table VII-3 do not include photocopying and postage costs. These costs are itemized in Chapter IV of this PREA and summarized in the accompanying paperwork package submitted to OMB for this proposed rule.

determined. Although the paperwork compliance costs are included in the total compliance costs of the proposed rule estimated in Chapter IV of this document, the paperwork compliance costs are again presented in this section in order to show their relationship to burden hours.

MSHA invites comments on: (1) whether the proposed collection of information is necessary for proper performance of MSHA's functions, including whether the information will have practical utility; (2) the accuracy of MSHA's estimate of the burden of the proposed collection of information, including the validity of the methodology and assumptions used; (3) ways to enhance the quality, utility, and clarity of information to be collected; and (4) ways to minimize the burden of the collection of information on respondents, including through the use of automated collection techniques, when appropriate, and other forms of information technology.

Table VII-1 Mine Operators' One-Time Burden Hours and Costs								
Prov.	Mines (1-5)		Mines (6-19)		Mines ( $\geq$ 20)		Totals	
	Hrs.	Costs	Hrs.	Costs	Hrs.	Costs	Hrs.	Costs
46.3	7,509	\$256,290	3,277	\$111,830	1,207	\$42,250	11,993	\$410,370

Table VII-2 Mine Operators' Annual Burden Hours and Costs								
Prov.	Mines (1-5)		Mines (6-19)		Mines ( $\geq$ 20)		Totals	
	Hrs.	Costs	Hrs.	Costs	Hrs.	Costs	Hrs.	Costs
46.5	41,007	\$1,476,248	21,458	\$772,492	4,860	\$174,970	67,325	\$2,423,710
46.6	7,898	\$284,341	4,240	\$152,627	978	\$35,192	13,116	\$472,159
46.7	5,599	\$201,579	7,980	\$287,297	7,111	\$256,008	20,691	\$744,884
46.8	34,551	\$1,243,839	15,433	\$555,582	5,461	\$196,582	55,445	\$1,996,003
46.9	2,765	\$73,267	5,876	\$155,725	5,704	\$151,164	14,346	\$380,156
46.11	25,208	\$579,773	22,005	\$506,115	8,550	\$196,650	55,763	\$1,282,538
Total	117,028	\$3,859,047	76,992	\$2,429,837	32,664	\$1,010,565	226,685	\$7,299,449

Table VII-3 Miners and Miners' Representatives One-Time Burden Hours and Costs								
Prov.	Mines (1-5)		Mines (6-19)		Mines ( $\geq$ 20)		Totals	
	Hrs.	Costs	Hrs.	Costs	Hrs.	Costs	Hrs.	Costs
46.3	336	\$7,728	146	\$3,358	28	\$644	510	\$11,730



**Proposed § 46.3(a)** Under this provision each affected mine operator must develop a written training plan. The affected NM mines in each size category that must write a plan are: 3,361 mines that employ 5 or fewer workers; 1,467 mines that employ between 6 and 19 workers; and 285 mines that employ 20 or more workers. MSHA estimates that writing the training plan will take 2 hours for mines that employ fewer than 20 workers, and 4 hours for mines that employ 20 or more workers. For all affected mines, a mine supervisor earning \$36 per hour will write the plan. The one-time costs are annualized using an annualization factor of 0.07.

**Proposed § 46.3(a) One-Time Burden Hours**

(a) Mine Size	(b) Mines	(c) Hrs. to Write Plan	(d) Total Hours
(1-5)	3,361	2	6,722
(6-19)	1,467	2	2,934
(≥20)	285	4	1,140
	5,113		10,796

**Total Hours = Col.(b) x Col.(c)**

**Proposed § 46.3(a) One-Time Burden Annualized Costs**

(a) Mine Size	(b) Total Hours	(c) Superv. Wage (per hr.)	(d) Total One-Time Costs	(e) Total Annualized Costs
(1-5)	6,722	\$36	\$241,992	\$16,939
(6-19)	2,934	\$36	\$105,624	\$7,394
(≥20)	1,140	\$36	\$41,040	\$2,873
			\$388,656	\$27,206

**Total Costs = Col.(b) x Col.(c)**

**Total Annualized costs = Col.(d) x 0.07**

**Proposed § 46.3(c)** A plan that does not include the minimum information specified in proposed 46.3(b) must be approved by MSHA. For each size category, MSHA estimates that 20 percent of mine operators will choose to write a plan and send it to MSHA for approval. Thus, the NM mines affected by this provision in each size category are: 672 mines that employ 5 or fewer workers; 293 mines that employ between 6 and 19 workers; and 57 mines that employ 20 or more workers. MSHA estimates that a clerical worker, earning \$17 per hour, will require about 0.1 hours per mine to photocopy and mail the training plan. The one-time costs are annualized using an annualization factor of 0.07.

**Proposed § 46.3(c) One-Time Burden Hours**

(a) Mine Size	(b) Mines	(c) Clerical Time (per mine)	(d) Total Hours
(1-5)	672	0.1	67.20
(6-19)	293	0.1	29.30
(≥20)	57	0.1	5.70
	1,022		102.20

**Total Hours = Col.(b) x Col.(c)**

**Proposed § 46.3(c) One-Time Burden Annualized Costs**

(a) Mine Size	(b) Total Hours	(c) Clerical Wage (per hr.)	(d) Total One-Time Costs	(e) Total Annualized Costs
(1-5)	67.20	\$17	\$1,142	\$80
(6-19)	29.30	\$17	\$498	\$35
(≥20)	5.70	\$17	\$97	\$7
			\$1,737	\$122

**Total Costs = Col.(b) x Col.(c)**

**Total Annualized costs = Col.(d) x 0.07**

**Proposed § 46.3(d)** The mine operator must provide the miners' representative with a copy of the training plan. At mines where no miners' representative has been designated, a copy of the plan must be posted at the mine or a copy must be provided to each miner. The NM mines that are affected by this provision, in each size category, are: 3,361 mines that employ 5 or fewer workers; 1,467 mines that employ between 6 and 19 workers; and 285 mines that employ 20 or more workers. MSHA estimates that a clerical worker, earning \$17 per hour will require 0.1 hours to photocopy the plan and either deliver or post the plan. The one-time costs are annualized using an annualization factor of 0.07.

**Proposed § 46.3(d) One-Time Burden Hours**

(a)	(b)	(c)	(d)
Mine Size	Mines	Clerical Time (per mine)	Total Hours
(1-5)	3,361	0.1	336.10
(6-19)	1,467	0.1	146.70
(≥20)	285	0.1	28.50
	5,113		511.30

**Total Hours = Col.(b) x Col.(c)**

**Proposed § 46.3(d) One-Time Burden Annualized Costs**

(a)	(b)	(c)	(d)	(e)
Mine Size	Total Hours	Clerical Wage (per hr.)	Total One-Time Costs	Total Annualized Costs
(1-5)	336.10	\$17	\$5,714	\$400
(6-19)	146.70	\$17	\$2,494	\$175
(≥20)	28.50	\$17	\$485	\$34
			\$8,692	\$608

**Total Costs = Col.(b) x Col.(c)**

**Total Annualized costs = Col.(d) x 0.07**

**Proposed § 46.3(e)**

**Note: The burden hours and costs for this provision are not borne by the mine operator, but by miners or miners' representatives.**

Within 2 weeks following the receipt or posting of the training plan, miners or their representatives may submit written comments on the plan to the operator, or to MSHA. MSHA estimates that a miner or miner representative will submit written comments for 5 percent of the affected mines in each size category. Thus, the NM mines affected by this provision in each size category are: 168 mines that employ 5 or fewer workers; 73 mines that employ between 6 and 19 workers; and 14 mines that employ 20 or more workers. It is estimated that a miner or miners' representative, earning \$23 per hour, will require 2 hours per affected mine to prepare written comments. The one-time costs are annualized using an annualization factor of 0.07.

**Proposed § 46.3(e) One-Time Burden Hours**

(a) Mine Size	(b) Mines	(c) Miner Time (per hr.)	(d) Total Hours
(1-5)	168	2	336
(6-19)	73	2	146
(≥20)	14	2	28
	255		510

**Total Hours = Col.(b) x Col.(c)**

**Proposed § 46.3(e) One-Time Burden Annualized Costs**

(a) Mine Size	(b) Total Hours	(c) Miner Wage (per hr.)	(d) Total One-Time Costs	(e) Total Annualized Costs
(1-5)	336	\$23	\$7,728	\$541
(6-19)	146	\$23	\$3,358	\$235
(≥20)	28	\$23	\$644	\$45
			\$11,730	\$821

**Total Costs = Col.(b) x Col.(c)**

**Total Annualized costs = Col.(d) x 0.07<sup>104</sup>**

**Proposed § 46.3(g)** A mine operator may appeal an MSHA decision concerning the approval status of its training plan. The NM mines affected by this provision in each size category are: 13 mines that employ 5 or fewer workers; 6 mines that employ between 6 and 19 workers; and 1 mine that employs 20 or more workers.

MSHA assumes that, for 90% of the mines affected by this provision, the appeal will be written by a mine supervisor. MSHA estimates that a mine supervisor, earning \$36 per hour, will require 4 hours to write the appeal. The one-time costs are annualized using an annualization factor of 0.07.

**Proposed § 46.3(g) One-Time Burden Hours**

(a)	(b)	(c)	(d)
Mine Size	Mines	Miner Time (per hr.)	Total Hours
(1-5)	12	4	48
(6-19)	5	4	20
(≥20)	1	4	4
	18		72

Col.(b) = affected mines x 0.90  
 Total Hours = Col.(b) x Col.(c)

**Proposed § 46.3(g) One-Time Burden Annualized Costs**

(a)	(b)	(c)	(d)	(e)
Mine Size	Total Hours	Superv. Wage (per hr.)	Total One-Time Costs	Total Annualized Costs
(1-5)	48	\$36	\$1,728	\$121
(6-19)	20	\$36	\$720	\$50
(≥20)	4	\$36	\$144	\$10
			\$2,592	\$181

Total Costs = Col.(b) x Col.(c)  
 Total Annualized costs = Col.(d) x 0.07

**Proposed § 46.3(g) Continued** In the remaining 10 percent of mines that appeal their approval status, the appeal process is expected to be handled by an outside party. There are no mine operator burden hours in this case, because the mine operator will pay the third party for its services. The mines affected in each size category are: 1 mine that employs 1 to 5 workers, and 1 mine that employs between 6 and 19 workers. The outside party's fee to handle an appeal process is estimated to be \$2,000 per appeal, and this cost is annualized using an annualization factor of 0.07.

**Proposed § 46.3(g) One-Time Burden Annualized Costs**

(a) Mine Size	(b) Mines	(c) Lawyers Fee (per mine)	(d) Total One- Time Costs	(e) Total Annualized Costs
(1-5)	1	\$2,000	\$2,000	\$140
(6-19)	1	\$2,000	\$2,000	\$140
(≥20)				
	2			\$280

**Total Costs = Col.(b) x Col.(c)**

**Total Annualized Costs = Col.(d) x 0.07**

**Proposed § 46.3(h)** The mine operator must make available a copy of the current training plan for inspection by MSHA and for examination by miners and their representatives. The mines affected by this provision for each size category are: 3,361 mines that employ 5 or fewer workers; 1,467 mines that employ between 6 and 19 workers; and 285 mines that employ 20 or more workers. Compliance with this provision will require the mine operator to photocopy and file the training plan, a task which MSHA estimates will take a clerical worker, earning \$17 per hour, 0.1 hours to perform. The one-time costs are annualized using an annualization factor of 0.07.

**Proposed § 46.3(h) One-Time Burden Hours**

(a)	(b)	(c)	(d)
Mine Size	Mines	Clerical Time (per hr.)	Total Hours
(1-5)	3,361	0.1	336.10
(6-19)	1,467	0.1	146.70
(≥20)	285	0.1	28.50
	5,113		511.30

**Total Hours = Col.(b) x Col.(c)**

**Proposed § 46.3(h) One-Time Burden Annualized Costs**

(a)	(b)	(c)	(d)	(e)
Mine Size	Total Hours	Clerical Wage (per hr.)	Total One-Time Costs	Total Annualized Costs
(1-5)	336.10	\$17	\$5,714	\$400
(6-19)	146.70	\$17	\$2,494	\$175
(≥20)	28.50	\$17	\$485	\$34
			\$8,692	\$608

**Total Costs = Col.(b) x Col.(c)**

**Total Annualized costs = Col.(d) x 0.07**

**Proposed § 46.5(a)** Each operator must provide each newly-hired miner lacking mining experience with new miner training. When the new-miner training is given by the mine supervisor, there is a paperwork burden imposed on mine operators associated with the preparation time the mine supervisor requires to provide training.

The mines affected by this provision for each size category are: 3,361 mines that employ 5 or fewer workers; 1,467 mines that employ between 6 and 19 workers; and 285 mines that employ 20 or more workers. Annually, MSHA estimates that, for each mine, a mine supervisor, earning \$36 per hour, will require 6 hours to prepare for the new miner training.

**Proposed § 46.5(a) Annual Burden Hours  
Supervisor Preparation for New Miner Training**

(a) Mine Size	(b) Mines	(c) Superv. Time (per hr.)	(d) Total Hours
(1-5)	3,361	6	20,166
(6-19)	1,467	6	8,802
(≥20)	285	6	1,710
	5,113		30,678

**Total Hours = Col.(b) x Col.(c)**

**Proposed § 46.5(a) Annual Burden Costs  
Supervisor Preparation for New Miner Training**

(a) Mine Size	(b) Total Hours	(c) Superv. Wage (per hr.)	(d) Total Annual Costs
(1-5)	20,166	\$36	\$725,976
(6-19)	8,802	\$36	\$316,872
(≥20)	1,710	\$36	\$61,560
			\$1,104,408

**Total Costs = Col.(b) x Col.(c)**



**Proposed § 46.5(a) Continued** In addition to the supervisor's preparation for new miner training, there is also a paperwork burden attributable to the time it takes the mine supervisor to provide the training.

With respect to each size category, the average number of training sessions that the mine supervisor will provide annually per mine will be: 0.46 sessions for mines that employ 5 or fewer workers; 0.64 sessions for mines that employ between 6 and 19 workers; and 0.82 sessions for mines that employ 20 or more workers. On average, each training session is estimated to last 13.48 hours. A mine supervisor earns \$36 per hour.

**Proposed § 46.5(a) Annual Burden Hours  
Supervisor Training Time for New Miner Training**

(a) Mine Size	(b) Mines	(c) # of Mine Sessions (per mine)	(d) Superv. Time (per hr.)	(e) Total Hours
(1-5)	3,361	0.46	13.48	20,840.89
(6-19)	1,467	0.64	13.48	12,656.10
(≥20)	285	0.82	13.48	3,150.28
	5,113			36,647.27

Total Hours = Col.(b) x Col.(c) x Col.(d)

**Proposed § 46.5(a) Annual Burden Costs  
Supervisor Training Time for New Miner Training**

(a) Mine Size	(b) Total Hours	(c) Superv. Wage (per hr.)	(d)
(1-5)	20,840.89	\$36	\$750,272
(6-19)	12,656.10	\$36	\$455,620
(≥20)	3,150.28	\$36	\$113,410
			\$1,319,302

Total Costs = Col.(b) x Col.(c)

**Proposed § 46.5(a) Continued** In addition, part of new miner training will be provided off-site by a third party. The mine operator will pay the third party for providing this part of the new miner training; thus the mine operator will incur burden costs but no burden hours.

The number of miners receiving off-site training in each category are: 1,537 miners in mines that employ 5 or fewer workers; 1,877 miners in mines that employ between 6 and 19 workers; and 940 miners in mines that employ 20 or more workers.

On average, the annual costs for off-site training are \$130 per miner. This consists of the following: a \$35 training fee, \$30 for transportation to off-site training, \$30 per diem for meals, and \$35 for overnight lodgings (MSHA assumes that half of the miners receiving off-site training will require overnight lodgings for one night at \$70 per night, or 0.5 x \$70).

**Proposed § 46.5(a) Annual Burden Costs  
Off Site New Miner Training**

(a)	(b)	(c)	(d)
Mine Size	Miners	Off Site Training Costs (per miner)	Total Annual Costs
(1-5)	1,537	\$130	\$199,810
(6-19)	1,877	\$130	\$244,010
(≥20)	940	\$130	\$122,200
	4,354		\$566,020

**Total Costs = Col.(b) x Col.(c)**

**Proposed § 46.6** Each mine operator must provide training to newly-hired experienced miners. The burden borne by mine operators is for the time the mine supervisor requires to prepare for the experienced miner training.

The mines affected by this provision for each size category are: 3,361 mines that employ 5 or fewer workers; 1,467 mines that employ between 6 and 19 workers; and 285 mines that employ 20 or more workers. Annually, MSHA estimates that, for each mine, a mine supervisor, earning \$36 per hour, will require 1 hour to prepare to give the experienced miner training.

**Proposed § 46.6 Annual Burden Hours  
Supervisor Preparation For Newly-Hired Experienced Miner Training**

(a) Mine Size	(b) Mines	(c) Superv. Time (per hr.)	(d) Total Hours
(1-5)	3,361	1	3,361
(6-19)	1,467	1	1,467
(≥20)	285	1	285
	5,113		5,113

Total Hours = Col.(b) x Col.(c)

**Proposed § 46.6 Annual Burden Costs  
Supervisor Preparation For Newly-Hired Experienced Miner Training**

(a) Mine Size	(b) Total Hours	(c) Superv. Wage (per hr.)	(d) Total Annual Costs
(1-5)	3,361	\$36	\$120,996
(6-19)	1,467	\$36	\$52,812
(≥20)	285	\$36	\$10,260
			\$184,068

Total Costs = Col.(b) x Col.(c)

**Proposed § 46.6 Continued** In addition to preparing for newly-hired experienced miner training, there is also a paperwork burden attributable to the time it takes the mine supervisor to give the training.

With respect to each size category, the average number of training sessions that the mine supervisor will give annually per mine will be: 0.45 sessions for mines that employ 5 or fewer workers; 0.63 sessions for mines that employ between 6 and 19 workers; and 0.81 sessions for mines that employ 20 or more workers. On average, each training session is estimated to last 3 hours. A mine supervisor earns \$36 per hour.

**Proposed § 46.6 Annual Burden Hours  
Supervisor Training Time for Newly-Hired Experienced Miner Training**

(a) Mine Size	(b) Mines	(c) # of Mine Sessions (per mine)	(d) Superv. Time (per hr.)	(e) Total Hours
(1-5)	3,361	0.45	3	4,537.35
(6-19)	1,467	0.63	3	2,772.63
(≥20)	285	0.81	3	692.55
	5,113			8,002.53

Total Hours = Col.(b) x Col.(c) x Col.(d)

**Proposed § 46.6 Annual Burden Costs  
Supervisor Training Time for Newly-Hired Experienced Miner Training**

(a) Mine Size	(b) Total Hours	(c) Superv. Wage (per hr.)	(d) Total Annual Costs
(1-5)	4,537.35	\$36	\$163,345
(6-19)	2,772.63	\$36	\$99,815
(≥20)	692.55	\$36	\$24,932
			\$288,091

Total Costs = Col.(b) x Col.(c)

**Proposed § 46.7** Before a miner performs a task for which the miner has no previous experience, the mine operator must train the miner about safety and health aspects and safe work procedures specific to that task. The burden imposed on mine operators is for the time the mine supervisor needs to prepare for the training.

The mines affected by this provision for each size category are: 3,361 mines that employ 5 or fewer workers; 1,467 mines that employ between 6 and 19 workers; and 285 mines that employ 20 or more workers. Annually, MSHA estimates that, for each mine, a mine supervisor, earning \$36 per hour, will require 0.25 hours to prepare for the task training.

**Proposed § 46.7 Annual Burden Hours  
Supervisor Preparation For Task Training**

(a) Mine Size	(b) Mines	(c) Superv. Time (per hr.)	(d) Total Hours
(1-5)	3,361	0.6	2,017
(6-19)	1,467	0.6	880
(≥20)	285	0.6	171
	5,113		3,068

Total Hours = Col.(b) x Col.(c)

**Proposed § 46.7 Annual Burden Costs  
Supervisor Preparation For Task Training**

(a) Mine Size	(b) Total Hours	(c) Superv. Wage (per hr.)	(d) Total Annual Costs
(1-5)	2,017	\$36	\$72,598
(6-19)	880	\$36	\$31,687
(≥20)	171	\$36	\$6,156
			\$110,441

Total Costs = Col.(b) x Col.(c)

**Proposed § 46.7 Continued** In addition to preparing for task training, there is also a paperwork burden attributable to the time it takes the mine supervisor to provide the training.

With respect to each size category, the average number of (composite) training sessions that the mine supervisor will give annually per mine will be: 2.36 sessions for mines that employ 5 or fewer workers; 8.65 sessions for mines that employ between 6 and 19 workers; and 41.17 sessions for mines that employ 20 or more workers. On average, each training session is estimated to last 0.6 hours. A mine supervisor earns \$36 per hour.

**Proposed § 46.7 Annual Burden Hours  
Supervisor Training Time for Task Training**

(a) Mine Size	(b) Mines	(c) #of Mine Sessions (per mine)	(d) Superv. Time (per hr.)	(e) Total Hours
(1-5)	3,361	2.36	0.6	4,759.18
(6-19)	1,467	8.65	0.6	7,613.73
(≥20)	285	41.17	0.6	7,040.07
	5,113			19,412.98

Total Hours = Col.(b) x Col.(c) x Col.(d)

**Proposed § 46.7 Annual Burden Costs  
Supervisor Training Time for Task Training**

(a) Mine Size	(b) Total Hours	(c) Superv. Wage (per hr.)	(d) Total Annual Costs
(1-5)	4,759.18	\$36	\$171,330
(6-19)	7,613.73	\$36	\$274,094
(≥20)	7,040.07	\$36	\$253,443
			\$698,867

Total Costs = Col.(b) x Col.(c)

**Proposed § 46.8** At least once every 12 months, each mine operator must provide each miner with annual refresher training. The burden imposed on mine operators is for the time the mine supervisor requires to prepare for the training.

The mines affected by this provision for each size category are: 3,361 mines that employ 5 or fewer workers; 1,467 mines that employ between 6 and 19 workers; and 285 mines that employ 20 or more workers. Annually, MSHA estimates that, for each mine, a mine supervisor, earning \$36 per hour, will require 3 hours to prepare for the annual refresher training.

**Proposed § 46.8 Annual Burden Hours  
Supervisor Preparation For Annual Refresher Training**

(a) Mine Size	(b) Mines	(c) Superv. Time (per hr.)	(d) Total Hours
(1-5)	3,361	3	10,083
(6-19)	1,467	3	4,401
(≥20)	285	3	855
	5,113		15,339

Total Hours = Col.(b) x Col.(c)

**Proposed § 46.8 Annual Burden Costs  
Supervisor Preparation for Annual Refresher Training**

(a) Mine Size	(b) Total Hours	(c) Superv. Wage (per hr.)	(d) Total Annual Costs
(1-5)	10,083	\$36	\$362,988
(6-19)	4,401	\$36	\$158,436
(≥20)	855	\$36	\$30,780
			\$552,204

Total Costs = Col.(b) x Col.(c)

**Proposed § 46.8 Continued** In addition to preparing for annual refresher training, there is also a paperwork burden attributable to the time it takes the mine supervisor to provide the training.

With respect to each size category, the average number of training sessions that the mine supervisor will give annually per mine will be: 0.91 sessions for mines that employ 5 or fewer workers; 0.94 sessions for mines that employ between 6 and 19 workers; and 2.02 sessions for mines that employ 20 or more workers. On average, each training session is estimated to last 8 hours. A mine supervisor earns \$36 per hour.

**Proposed § 46.8 Annual Burden Hours  
Supervisor Training Time for Annual Refresher Training**

(a) Mine Size	(b) Mines	(c) # of Mine Sessions (per mine)	(d) Superv. Time (per hr.)	(e) Total Hours
(1-5)	3,361	0.91	8	24,468.08
(6-19)	1,467	0.94	8	11,031.84
(≥20)	285	2.02	8	4,605.60
	5,113			40,105.52

Total Hours = Col.(b) x Col.(c) x Col.(d)

**Proposed § 46.8 Annual Burden Costs  
Supervisor Training Time for Annual Refresher Training**

(a) Mine Size	(b) Total Hours	(c) Superv. Wage (per hr.)	(d) Total Annual Costs
(1-5)	24,468.08	\$36	\$880,851
(6-19)	11,031.84	\$36	\$397,146
(≥20)	4,605.60	\$36	\$165,802
			\$1,443,799

Total Costs = Col.(b) x Col.(c)



**Proposed § 46.9** Records have to be maintained for training required by the rule under §§ 46.5(a), 46.6, 46.7, and 46.8. Under paragraph (a), a mine supervisor is required to record and certify the record. For all records, MSHA estimates that it will take a mine supervisor, earning \$36 per hour, 0.05 hours to record and certify each miner's training record. MSHA estimates, in addition, that it will take a clerical worker, earning \$17 per hour, 0.05 hours to prepare, copy, and distribute the certificate. The paperwork burden hours and costs for recordkeeping concerning the aforementioned provisions appear below.

**Proposed § 46.9 Annual Burden Hours  
Records for 46.5(a) New Miner Training**

(a)	(b)	(c)	(d)	(e)	(f)	(e)
Mine Size	No. of Training Programs	Superv. Time (per hr.)	Total Hrs. for Superv. Duties	Clerical Time (per hr.)	Total Hrs. for Clerical Duties	Total Hrs. (d+f)
(1-5)	1,537	0.05	76.85	0.05	76.85	153.70
(6-19)	1,877	0.05	93.85	0.05	93.85	187.70
(≥20)	940	0.05	47.00	0.05	47	94.00
	4,354		217.70		217.7	435.40

Total Hrs. for Superv. Duties = Col.(b) x Col.(c)

Total Hrs. for Clerical Duties = Col.(b) x Col.(e)

**Proposed § 46.9 Annual Burden Costs  
Records for 46.5(a) New Miner Training**

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
Mine Size	Total Hrs. for Superv. Duties	Superv. Wage (per hr.)	Costs for Superv. Duties	Total Hrs. for Clerical Duties	Clerical Wage (per hr.)	Costs for Clerical Duties	Total Hours	Total Annual Costs
(1-5)	76.85	\$36	\$2,767	76.85	\$17	\$1,306	153.70	\$4,073
(6-19)	93.85	\$36	\$3,379	93.85	\$17	\$1,595	187.70	\$4,974
(≥20)	47.00	\$36	\$1,692	47.00	\$17	\$799	94.00	\$2,491
			\$7,837			\$3,701	435.40	\$11,538

Total Costs for Superv. Duties = Col.(b) x Col.(c)

Total Costs for Clerical Duties = Col.(e) x Col.(f)

Total Hours = Col.(b) x Col.(e)

Total Annual Costs = Col.(d) x Col.(g)

Proposed § 46.9 Continued

**Proposed § 46.9 Annual Burden Hours  
Records for 46.6 Newly-Hired Experienced Miner Training**

(a)	(b)	(c)	(d)	(e)	(f)	(e)
Mine Size	No. of Training Programs	Superv. Time (per hr.)	Total Hrs. for Superv. Duties	Clerical Time (per hr.)	Total Hrs. for Clerical Duties	Total Hrs. (d+f)
(1-5)	1,516	0.05	75.80	0.05	75.8	151.60
(6-19)	1,856	0.05	92.80	0.05	92.8	185.60
(≥20)	930	0.05	46.50	0.05	46.5	93.00
	4,302		215.10		215.1	430.20

Total Hrs. for Superv. Duties = Col.(b) x Col.(c)

Total Hrs. for Clerical Duties = Col.(b) x Col.(e)

**Proposed § 46.9 Annual Burden Costs  
Records for 46.6 Newly-Hired Experienced Miner Training**

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
Mine Size	Total Hrs. for Superv. Duties	Superv. Wage (per hr.)	Costs for Superv. Duties	Total Hrs. for Clerical Duties	Clerical Wage (per hr.)	Costs for Clerical Duties	Total Hours	Total Annual Costs
(1-5)	75.80	\$36	\$2,729	75.80	\$17	\$1,289	151.60	\$4,017
(6-19)	92.80	\$36	\$3,341	92.80	\$17	\$1,578	185.60	\$4,918
(≥20)	46.50	\$36	\$1,674	46.50	\$17	\$791	93.00	\$2,465
			\$7,744			\$3,657	430.20	\$11,400

Total Costs for Superv. Duties = Col.(b) x Col.(c)

Total Costs for Clerical Duties = Col.(e) x Col.(f)

Total Hours = Col.(b) x Col.(e)

Total Annual Costs = Col.(d) x Col.(g)

**Proposed § 46.9 Continued**

**Proposed § 46.9 Annual Burden Hours  
Records for 46.7 Task Training**

(a)	(b)	(c)	(d)	(e)	(f)	(e)
Mine Size	No. of Training Programs	Superv. Time (per hr.)	Total Hrs. for Superv. Duties	Clerical Time (per hr.)	Total Hrs. for Clerical Duties	Total Hrs. (d+f)
(1-5)	18,446	0.05	922.30	0.05	922.30	1844.60
(6-19)	41,273	0.05	2063.65	0.05	2,063.65	4127.30
(>20)	41,380	0.05	2069.00	0.05	2,069.00	4138.00
	101,099		5054.95		5,054.95	10,109.90

Total Hrs. for Superv. Duties = Col.(b) x Col.(c)

Total Hrs. for Clerical Duties = Col.(b) x Col.(e)

**Proposed § 46.9 Annual Burden Costs  
Records for 46.7 Task Training**

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
Mine Size	Total Hrs. for Superv. Duties	Superv. Wage (per hr.)	Costs for Superv. Duties	Total Hrs. for Clerical Duties	Clerical Wage (per hr.)	Costs for Clerical Duties	Total Hours	Total Annual Costs
(1-5)	922.30	\$36	\$33,203	922.30	\$17	\$15,679	1,844.60	\$48,882
(6-19)	2,063.65	\$36	\$74,291	2,063.65	\$17	\$35,082	4,127.30	\$109,373
(>20)	2,069.00	\$36	\$74,484	2,069.00	\$17	\$35,173	4,138.00	\$109,657
			\$181,978			\$85,934	10,109.90	\$267,912

Total Costs for Superv. Duties = Col.(b) x Col.(c)

Total Costs for Clerical Duties = Col.(e) x Col.(f)

Total Hours = Col.(b) x Col.(e)

Total Annual Costs = Col.(d) x Col.(g)

Proposed § 46.9 Continued

**Proposed § 46.9 Annual Burden Hours  
Records for 46.8 Annual Refresher Miner Training**

(a)	(b)	(c)	(d)	(e)	(f)	(g)
Mine Size	No. of Training Programs	Superv. Time (per hr.)	Total Hrs. for Superv. Duties	Clerical Time (per hr.)	Total Hrs. for Clerical Duties	Total Hrs. (d+f)
(1-5)	6,149	0.05	307.45	0.05	307.45	614.90
(6-19)	13,758	0.05	687.90	0.05	687.90	1375.80
(≥20)	13,793	0.05	689.65	0.05	689.65	1379.30
	33,700		1685.00		1,685.00	3,370.00

Total Hrs. for Superv. Duties = Col.(b) x Col.(c)

Total Hrs. for Clerical Duties = Col.(b) x Col.(e)

**Proposed § 46.9 Annual Burden Costs  
Records for 46.8 Annual Refresher Miner Training**

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
Mine Size	Total Hrs. for Superv. Duties	Superv. Wage (per hr.)	Costs for Superv. Duties	Total Hrs. for Clerical Duties	Clerical Wage (per hr.)	Costs for Clerical Duties	Total Hours	Total Annual Costs
(1-5)	307.45	\$36	\$11,068	307.45	\$17	\$5,227	614.90	\$16,295
(6-19)	687.90	\$36	\$24,764	687.90	\$17	\$11,694	1,375.80	\$36,459
(≥20)	689.65	\$36	\$24,827	689.65	\$17	\$11,724	1,379.30	\$36,551
			\$60,660			\$28,645	3,370.00	\$89,305

Total Costs for Superv. Duties = Col.(b) x Col.(c)

Total Costs for Clerical Duties = Col.(e) x Col.(f)

Total Hours = Col.(b) x Col.(e)

Total Annual Costs = Col.(d) x Col.(g)

**Proposed § 46.11** Each mine operator must provide site-specific hazard training to any worker who is not a miner. A miner, earning \$23 per hour, will require 0.15 hours, on average, to provide the hazard training. The annual number of non-miners to be trained in each mine size category are: 50 non-miners in each of the 3,361 mines that employ 5 or fewer workers; 100 non-miners in each of the 1,467 mines that employ between 6 and 19 workers; and 200 non-miners in each of the 285 mines that employ 20 or more workers. No record is required for this type of training.

**Proposed § 46.11 Annual Burden Hours  
Miner Training Time for Hazard Training**

(a) Mine Size	(b) Mines	(c) non-Miners Trained (per mine)	(d) Miner Time (per hr.)	(e) Total Hours
(1-5)	3,361	50	0.15	25,207.50
(6-19)	1,467	100	0.15	22,005.00
(≥20)	285	200	0.15	8,550.00
	5,113			55,762.50

Total Hours = Col.(b) x Col.(c) x Col.(d)

**Proposed § 46.11 Annual Burden Costs  
Miner Training Time for Hazard Training**

(a) Mine Size	(b) Total Hours	(c) Miner Wage (per hr.)	(d) Total Annual Costs
(1-5)	25,207.50	\$23	\$579,773
(6-19)	22,005.00	\$23	\$506,115
(≥20)	8,550.00	\$23	\$196,650
			\$1,282,538

Total Costs = Col.(b) x Col.(c)

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