

PRELIMINARY REGULATORY ECONOMIC ANALYSIS

AND

PRELIMINARY REGULATORY FLEXIBILITY ANALYSIS

EMERGENCY TEMPORARY STANDARD ON 30 CFR PARTS 48 AND 75

EMERGENCY EVACUATIONS

RIN: 1219-AB33

Office of Standards, Regulations, and Variances
Mine Safety and Health Administration
U.S. Department of Labor

November 2002

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I. EXECUTIVE SUMMARY

INTRODUCTION

The Mine Safety and Health Administration (MSHA) is issuing an emergency temporary standard (ETS) in response to recent fatalities during mine emergencies which required an evacuation of the mine. The emergency temporary standard requires operators of underground coal mines to designate a responsible person in attendance at the mine to take charge during mine emergencies involving a fire, explosion, or gas or water inundation, and initiate and conduct a mine-wide evacuation when the mine emergency presents an imminent danger to miners. Only properly trained and equipped persons essential to respond to the mine emergency may remain underground. Operators must instruct all miners about these new requirements and the identity of the responsible person. The emergency temporary standard also broadens the program of instruction for firefighting and evacuation to address other mine-wide emergencies. Mine operators are to adopt corresponding revisions into their existing firefighting and evacuation plan. Finally, revisions have been made to part 48 training requirements to insure that annual refresher training addresses mine emergency evacuations.

Executive Order 12866 requires that regulatory agencies assess both the costs and benefits of intended standards and regulations. We have fulfilled this requirement for this emergency temporary standard and determined that it would not have an annual effect of \$100 million or more on the economy. Therefore, we do not consider this emergency temporary standard to be economically significant under §3(f)(1) of Executive Order 12866.

BENEFITS SUMMARY

The emergency temporary standard ensures that operators and miners have a clear understanding of actions and procedures to be followed in the event of mine emergencies involving a fire, explosion, or gas or water inundation. MSHA estimates that this emergency temporary standard would prevent an average of 1.1 mine fatalities every year. The actual number of mine fatalities prevented could be much larger.

COMPLIANCE COST SUMMARY

The emergency temporary standard would cost underground coal mine operators approximately \$0.26 million annually. The largest cost component of the emergency temporary standard would be to inform miners about changes in the identity of the responsible person on each shift.

REGULATORY FLEXIBILITY CERTIFICATION AND ANALYSIS

In accordance with section 605 of the Regulatory Flexibility Act, we certify that the emergency temporary standard would 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, we must include

in the emergency temporary standard a factual basis for this certification. The Agency must also publish the regulatory flexibility certification statement in the Federal Register, along with the factual basis, followed by an opportunity for the public to comment on the requirements of the emergency temporary standard. The analysis that provides the factual basis for this certification is discussed in Chapter V of this Preliminary Regulatory Economic Analysis (PREA) and will be included in the preamble to the emergency temporary standard for publication in the Federal Register. We have consulted with the Small Business Administration's (SBA's) Office of Advocacy and believe that the analysis provides a reasonable basis for this certification.

II. INDUSTRY PROFILE

INTRODUCTION

This chapter provides information concerning the structure and economic characteristics of the coal mining industry. We will focus on the underground coal mining sector wherever such data are available since the emergency temporary standard would affect only underground coal mines.

The industry profile captures data on the number of mines, mine size, and mine employment. A detailed economic picture of the coal mining industry is difficult to develop because most mines are either privately held corporations, sole proprietorships, or subsidiaries of publicly owned companies. Privately held corporations and sole proprietorships are not required to make their financial data available to the public. Further, parent companies are not required to separate financial data for subsidiaries in their reports to the Securities and Exchange Commission. As a result, financial data are available for only a few coal and metal/nonmetal (M/NM) companies. Such data are not representative of the entire mining community.

THE STRUCTURE OF THE COAL MINING INDUSTRY

MSHA divides the mining industry into two major sectors, which are coal mines and M/NM mines. The value of the U.S. mining industry for both coal and M/NM production in 2000 was estimated at about \$57.9 billion, or 0.6 percent of 2000 Gross Domestic Product (GDP). Coal mining contributed about \$17.7 billion to the GDP.¹ The M/NM mining sector contributed about \$40.2 billion. These two sectors are further divided by operation type (i.e., underground mines or surface mines). The Agency maintains its own database on the number of mines, mine type, size, and employment. Also, MSHA collects data on the number of independent contractors and contractor employees by major industry sector.

MSHA categorizes mines by size based on employment. For the past 20 years, for rulemaking purposes, the Agency has consistently defined a small mine to be one employing fewer than 20 employees and a large mine to be one employing 20 or more employees. However, to comply with the requirements of the Small Business Regulatory Enforcement Fairness Act (SBREFA) amendments to the Regulatory Flexibility Act (RFA), MSHA must use the Small Business Administration's (SBA's) criteria for a small entity when determining a rule's economic impact. For the mining industry, SBA defines a small entity as one employing 500 or fewer employees.

¹U.S. Department of Labor, Mine Safety and Health Administration, Office of Program Evaluation and Information Resources, 2000 data. GDP estimates obtained from U.S. Department of the Interior, U.S. Geological Survey, Mineral Commodity Summaries 2001, January 2001, p. 4. Average U.S. coal price estimates obtained from the Department of Energy, Energy Information Administration, Coal Industry Annual 2000, June 2002, Table 80, p.206.

Table II-1 presents the number of small and large underground and surface coal mines and their employment, excluding contractor firms and contractor workers. These mines reported production during some portion of the calendar year 2000. Table II-1 uses three mine size categories based on employment: (1) fewer than 20 employees (MSHA's traditional small mine definition); (2) 20 to 500 employees; and (3) more than 500 employees. Table II-1 shows that, of all coal mines, about 35 percent are underground and employ about 53 percent of miners, while 65 percent are surface and employ about 47 percent of miners.

**Table II-1: Distribution of Coal Operations and Employment
(Excluding Contractor Firms and Contractor Workers) by Mine Type and Size, 2000**

Mine Type	Size of Coal Mines *									All Coal Mines		
	< 20 Employees			20 to 500 Employees			> 500 Employees					
	Mines	Miners	Office Emp.	Mines	Miners	Office Emp.	Mines	Miners	Office Emp.	Mines	Miners	Office Emp.
Underg.	268	2,586	95	393	31,896	895	3	1,651	59	664	36,133	1,049
Surface	835	5,191	432	398	25,375	1,833	3	1,661	71	1,236	32,227	2,336
Total	1,103	7,777	527	791	57,271	2,728	6	3,312	130	1,900	68,360	3,385

*Based on MSHA's traditional definition, small mines are those in the <20 employees category. Based on SBA's definition, small mines are those in the <20 employees and 20 to 500 employees categories.

Source: U.S. Department of Labor Mine Safety and Health Administration, Office of Program Evaluation and Information Resources, calendar year 2000 data.

Agency data in Table II-1 indicate that there were 664 underground coal mines that reported production during some portion of calendar year 2000. When applying MSHA's small mine definition (fewer than 20 workers), 268 (about 40 percent) were small mines and 396 (about 60 percent) were large mines. Using SBA's small mine definition, 3 mines (0.5 percent) were large mines and the rest were small mines.

Underground coal mine employment in 2000 was 37,182, of which 36,133 were miners and 1,049 were office workers. Based on MSHA's small mine definition, 2,586 coal miners (7 percent of underground coal miners) worked at small mines and 33,547 miners (93 percent of underground coal miners) worked at large mines. Using SBA's small mine definition, 34,482 coal miners (95 percent of underground coal miners) worked at small mines and 1,651 coal miners (5 percent of underground coal miners) worked at large mines. Based on the Agency's small mine definition, on average, each small underground coal mine employed 10 miners and each large coal mine employed 85 miners. Using SBA's small mine definition, on average, each small coal mine employed 52 miners and each large coal mine employed 550 miners.

Table II-2 presents corresponding data on the number of independent coal contractors and their employment for calendar year 2000. Table II-2 shows that there were 875 underground coal contractors. Using MSHA's definition of a small mine, 771

(88 percent) were small and 102 (12 percent) were large. When applying SBA's definition, all of the underground coal contractors were small.

Table II-2: Distribution of Coal Contractor Firms and Contractor Employment by Size of Operation, 2000

Contr. Type	Size of Coal Contractor *									All Coal Contractors		
	< 20 Employees			20 to 500 Employees			> 500 Employees			Firms	Emp.	Office Emp.
	Firms	Emp.	Office Emp.	Firms	Emp.	Office Emp.	Firms	Emp.	Office Emp.			
Underg.	771	3,183	243	102	5,220	357	0	0	0	875	8,531	652
Surface	1,715	7,443	568	247	12,707	870	2	1,025	221	1,962	21,047	1,607
Total	2,486	10,626	811	349	17,927	1,227	2	1,025	221	2,837	29,578	2,259

* Based on MSHA's traditional definition, small contractors are those in the <20 employees category. Based on SBA's definition, small contractors are those in the <20 employees and 20 to 500 employees categories.

Source: U.S. Department of Labor Mine Safety and Health Administration, Office of Program Evaluation and Information Resources, 2000 data, and U.S. Department of Labor, Mine Safety and Health Administration, 2000 Final Data, CT441 Report, cycle 2000/207.

Table II-2 shows that there were 875 underground coal contractor firms employing a total of 9,183 contractor workers, of which 8,531 worked in underground coal mining operations and another 652 worked in offices. Using MSHA's small mine definition, 3,183 (37 percent) of contractor workers, excluding office workers, worked for small contractors while 5,220 (73 percent), excluding office workers, worked for large contractors. When applying SBA's definition of a small entity, all 8,531 contractors (100 percent) worked for small contractors.

ECONOMIC CHARACTERISTICS OF THE COAL MINING INDUSTRY

Coal mining in the U.S. can be classified into two major commodity groups: bituminous and anthracite. About 91 percent of total coal production is bituminous. The remaining 9 percent of production is lignite and anthracite.²

Mines east of the Mississippi River accounted for about 47 percent of coal production in 2000. For the period 1949 through 2000, coal production east of the Mississippi River ranged, from a low of 395 million tons in 1954 to a high of 630 million tons in 1990; 2000 production was estimated at 509 million tons. During this same period, however, coal production west of the Mississippi increased each year from a low of 20 million tons in 1959 to a record high of 571 million tons in 1999; production in 2000 was estimated at 566 million tons.³ Growth in western coal mines is due, in part, to environmental concerns that increase demand for low-sulfur coal, which is in abundance

² U.S. Department of Energy, Energy Information Administration, Annual Energy Review 2000, August 2001, Table 7.2, p. 201.

³ U.S. Department of Energy, Energy Information Administration, Annual Energy Review 2000, August 2001, Table 7.2, p. 201.

in the West. In addition, surface mining, with its higher average productivity, is much more prevalent in the West.

The U.S. coal sector produced approximately 1.05 billion short tons of coal in 2000. At an average price of \$16.78 per ton, the total value of U.S. coal production in 2000 was estimated at \$17.7 billion.⁴ Underground coal mines accounted for \$6.0 billion, while surface coal mines accounted for \$11.7 billion. Based on MSHA's definition, small mines produced about 34.9 million tons, or about 3 percent of domestic coal production valued at \$586 million, and large mines produced about 1.02 billion tons, or about 97 percent of domestic coal production valued at \$17.08 billion. Based on SBA's definition of small mines, they produced 0.9 billion tons, or about 85 percent of domestic coal production valued at \$15.1 billion.⁵

Average domestic coal prices (nominal and real prices) for the period 1950-1999 are presented in Table II-3. The nominal price is the price not adjusted for inflation. The real price is the price of coal after it has been adjusted for inflation by using constant dollars from a particular year (in Table II-3, the real price is in terms of 1996 dollars). During this period the inflation-adjusted, or real, price of coal has generally declined. The one exception was a spike in coal prices during the OPEC petroleum price increases in the 1970s. The real price of coal in 1999 was approximately 46 percent lower than in 1950.⁶ The real price of coal per Btu was approximately 38 percent lower in 2000 than in 1950, which has caused coal to become the least expensive of the major fossil fuels in terms of dollars per Btu.⁷

⁴ U.S. Department of Labor Mine Safety and Health Administration, Office of Program Evaluation and Information Resources, 2000 data. Average U.S. coal price from Department of Energy, Energy Information Administration, Coal Industry Annual 2000, June 2002, Table 80, p. 206.

⁵ *Ibid.*

⁶ US Department of Energy, Energy Information Administration, Annual Energy Review 2000, August 2001, Table 7.8, p. 213.

⁷ US Department of Energy, Energy Information Administration, Annual Energy Review 2000, August 2001, Table 3.1, p. 67. Coal energy (per Btu) was more expensive than natural gas energy in 1950, but was less expensive in 1999. Both coal and gas energy were less expensive than crude oil energy in 1950 and 1999.

**Table II-3: Coal Prices 1950-1998
(Dollars per Short Ton)**

Year	Nominal Price (\$ per Short Ton)	Real Price (1996 \$ per Short Ton)	Nominal Price (\$ per Million BTU)	Real Price (1996 \$ per Million Btu)
1950	5.19	29.74	0.21	1.19
1955	4.69	23.71	0.19	0.94
1960	4.83	21.77	0.19	0.87
1965	4.55	19.13	0.18	0.77
1970	6.34	21.82	0.27	0.92
1975	19.35	48.34	0.84	2.11
1980	24.65	43.22	1.10	1.93
1985	25.20	34.20	1.15	1.56
1990	21.76	25.15	1.00	1.15
1991	21.49	23.97	0.99	1.10
1992	21.03	22.90	0.97	1.06
1993	19.85	21.11	0.93	0.99
1994	19.41	20.22	0.91	0.94
1995	18.83	19.19	0.88	0.90
1996	18.50	18.50	0.87	0.87
1997	18.14	17.79	0.85	0.84
1998	17.67	17.12	0.82	0.80
1999*	16.63	15.87	0.80	0.76
2000*	16.78	15.69	0.80	0.74

Source: US Department of Energy, Energy Information Administration, Annual Energy Review 2000, August 2001, p. 213, Table 7.8; p. 67, Table 3.1.

* Prices per short ton come from US Department of Energy, Energy Information Administration, Coal Industry Annual 2000, January 2002, Table 80 and Table 81, pp. 206-207.

MINING INDUSTRY OUTLOOK

The U.S. coal industry enjoys a fairly constant domestic demand. About 92 percent of U.S. coal demand was accounted for by electric power producers in 2000.⁸ Domestic coal demand is projected to increase because of growth in coal use for electricity generation. Coal consumption for electricity generation is projected to increase as the utilization of existing coal-fired generation capacity increases and as new capacity is added. The average utilization rate is projected to increase from 72 percent in 2000 to 84 percent in 2020. The amount of U.S coal exported in 1999 was 58 million tons (about 5 percent of production). These exports are projected to remain relatively stable in the future, until settling at 56 million tons by 2020.⁹

⁸ U.S. Department of Energy, Energy Information Administration, Annual Energy Review 2000, August 2001, Table 7.3, p. 203.

⁹ U.S. Department of Energy, Energy Information Administration, Annual Energy Outlook 2002, December 2001, p. 95.

III. BENEFITS

BACKGROUND

During the past three years, at least 14 miners have died in two accidents as a result of faulty mine evacuations.

Willow Creek Mine

In the first of the two accidents, a series of four explosions occurred at the Willow Creek mine, beginning on July 31, 2000. The initial explosion and subsequent fire occurred approximately seven minutes before the later explosions, which killed two miners. Although firefighting activities began almost immediately after the first explosion, evacuation procedures did not begin immediately and conditions worsened before all miners were successfully evacuated.

After careful review of the accident, MSHA has determined that had the decision to evacuate been made sooner, after it became evident that the fire was not controllable, the fatalities might not have occurred. Some miners at the mine were equipped with personal emergency devices (PEDs), which are capable of carrying text messages to underground personnel. These devices alerted other miners to evacuate the mine, but the decision to evacuate was not made until after the third of four explosions occurred.

Jim Walter No. 5 Mine

In the second of the two accidents, explosions at the Jim Walter Resources, Inc. No. 5 Mine killed 13 miners on September 23, 2001. An initial roof fall and explosion occurred at 5:20 p.m., injuring four miners. One of the four miners was too severely injured to be moved. Miners from other parts of the mine attempted to rescue the injured miner, but the rescue efforts were uncoordinated.

In addition, the CO Room operator (monitoring the carbon monoxide monitoring system at the mine) after being notified about the explosion, attempted to locate the afternoon shift haulage foreman who he believed was working at the mine. This foreman was not working that shift. There was also some confusion about where the first explosion occurred. While it is uncertain whether the miner immobilized by the first explosion died as a result of the first or second explosion, twelve miners died as a result of proceeding toward the injured miner when the second explosion occurred.¹⁰

MSHA concluded that the operator had failed to conduct regular fire and emergency drills at the mine, as required under the Mine Act. Furthermore, MSHA's accident investigation report determined that, in addition to not following proper evacuation procedures after the initial explosion, there was never a mine-wide evacuation initiated at the mine, even after an explosion had damaged critical ventilation controls. MSHA's accident investigation team found that gas detection equipment was not found

¹⁰ By the time of the second explosion, at 6:15 p.m., nine additional miners heading inby had reached the end of the track in 4 Section, and three other had reached the mouth of 4 Section. Mine management had also directed seven additional miners to join the 13 already in 4 Section. The 6:15 p.m. explosion occurred before they arrived in the area affected by the second explosion.

on any of the miners or in the affected section. Gas detection equipment is essential to determine the composition of the mine atmosphere and secure the safety of those entering unknown atmospheres, especially when ventilation controls are damaged. MSHA concluded that the lack of training and the failure to conduct fire and emergency drills relative to proper evacuation procedures "affected the miners' response" to the emergency situation.

After careful review of this accident, MSHA has determined that had a designated responsible person, knowledgeable about the mine safety systems, taken charge of the evacuation and rescue effort, fewer miners might have been permitted to remain underground or to re-enter the affected mine area during the mine emergency.

BENEFITS OF THE PROPOSED RULE

This emergency temporary standard, which assures that operators and miners have a clear understanding of actions and procedures to be followed in the event of a mine emergency, has been developed to prevent the loss of life such as occurred at the Willow Creek Mine and the Jim Walter No. 5 Mine.

New §75.1501 of Subpart P establishes that a responsible person is to be designated by the mine operator to take charge in the event of a mine emergencies involving a fire, explosion, or gas or water inundation, and provides for the training for miners in the requirements of this section and assures that the miners know the identity of the designated person. New §75.1502 broadens the application of existing §75.1101-23 to include the specified mine emergencies, requires revisions to the existing firefighting and evacuation plans to address these emergencies, and requires that mine operators train miners in the revisions to the plan.

Had this emergency temporary standard been enforced at the time of Willow Creek Mine accident, the decision to evacuate would probably have been made sooner, and the lives of two miners might have been saved.

Had this emergency temporary standard been enforced at the time of Jim Walter No. 5 Mine accident, a designated responsible person knowledgeable about the mine safety systems might have taken charge to direct any rescue effort and might have sharply limited the number of miners involved. It is likely that a designated responsible person would have determined that it was appropriate to limit the rescue group to two to three miners, or in the alternative, to wait for a mine rescue team to conduct the rescue attempt. In addition, the designated person would have assured that the miners responding would have been equipped with the proper gas detection equipment. Miners themselves would have understood that, under the conditions present (i.e., conditions following an explosion), that an evacuation was required. In addition, miners would clearly have understood that they were not to enter emergency areas without the appropriate safety equipment, such as gas detection equipment.

MSHA has concluded that both of the fatalities at the Willow Creek Mine and 9 of the 13 fatalities at the Jim Walter No. 5 Mine could have been prevented had this emergency temporary standard been in place. The Agency has reviewed its coal accident investigation database and has not identified any other fatalities during the past ten years

that might have been prevented by this emergency temporary standard. In summary, based on its experience over the past ten years, MSHA believes it is reasonable to estimate that this emergency temporary standard could prevent 11 miners' lives from being lost every ten years, or an average benefit of the emergency temporary standard of 1.1 miners' lives saved every year. Certainly the potential exists for further loss of life every day that this emergency temporary standard is not in effect.

SUMMARY

In conclusion, MSHA estimates that this emergency temporary standard would result in an average of 1.1 miners' lives being saved every year. The actual number of miners' lives saved could be much larger.

IV. COST OF COMPLIANCE

INTRODUCTION

In this chapter, we estimate the total costs that underground coal mine operators would incur to comply with the emergency temporary standard on emergency evacuations. We conclude that the emergency temporary standard, covered by 30 CFR parts 48 and 75, would impose costs of approximately \$0.26 million yearly. This estimate reflects first year compliance costs of about \$0.9 million and compliance costs of about \$0.2 million the second year and each succeeding year.

For the purposes of the cost analysis, we used our traditional definition of a small mine as one employing fewer than 20 workers, and a large mine as one employing 20 or more workers. Based on 2000 data, the emergency temporary standard would cover about 664 underground coal mines. Of this total, about 268 (or 40%) employ fewer than 20 workers. The estimated yearly cost of complying with the emergency temporary standard would be approximately \$0.03 million for small coal mine operators. For large mines, yearly costs would be about \$0.24 million. Table IV-1 summarizes the estimated yearly compliance cost of the proposed rule by mine size and by provision.

Table IV-1: Summary of Yearly Compliance Costs of ETS*

Provision	Mine Size			TOTAL
	<20	20-500	>500	
Existing Mines to Designate Responsible Person(s)	\$1,461	\$8,572	\$98	\$10,132
Delayed Production Related to False Evacuations	\$3,232	\$35,339	\$0	\$38,571
Existing Mines to Instruct Miners about Section 75.1501	\$1,568	\$8,750	\$369	\$10,686
New Mines to Instruct Miners about Section 75.1501	\$4,479	\$11,250	\$0	\$15,729
Existing Mines to Instruct New Miners about Section 75.1501	\$3,315	\$21,328	\$949	\$25,592
Inform Miners about Change in Identity of Responsible Person on Shift	\$5,122	\$113,990	\$4,519	\$123,631
Revise and Submit Written Evacuation Plan	\$2,324	\$4,991	\$50	\$7,365
Instruct Workers about Emergency Evacuation Procedures	\$4,303	\$23,188	\$937	\$28,428
Re-Instruct Workers about Emergency Evacuation Procedures	\$91	\$475	\$19	\$585
Revise and Submit Part 48 Training Plan	\$761	\$1,535	\$15	\$2,310
TOTAL	\$26,656	\$229,418	\$6,955	\$263,029

*Source: Tables IV-2 through IV-11.

All cost estimates in this chapter are presented in 2000 dollars. The total cost savings 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 emergency temporary standard, we estimated the following, as appropriate: (1) one-time costs; (2) annualized costs (one-time costs amortized over a specified number of years); and (3) annual costs. One-time costs are those that are incurred once and do not recur. For example, the cost to develop a written procedural program occurs only once. For the purposes of this PREA, one-time costs have been annualized using an annual (real) discount rate of 7%, as required by the U.S. Office of Management and Budget (OMB), using the formula:

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

where

a = the annualization factor,

i = the annual discount rate, and

n = the economic life of the investment.

As “n” becomes large, the value of “a” approaches the discount rate. Therefore, for one-time investments with an infinite life, we have applied an annualization factor equal to the discount rate of 7 percent. This means that the annualized cost is equal to 7 percent of the one-time cost.

Converting one-time costs to annualized costs allows 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. Examples of annual costs are (annual) maintenance costs and operating expenses.

We used an hourly compensation rate of \$54.53 for a coal supervisor; \$27.56 for a coal miner; and \$20.18 for a clerical worker.¹¹ These figures include benefits such as social security, unemployment insurance, and workers’ compensation, but they do not reflect shift differentials or overtime pay. For convenience, we will refer to miner “compensation” in this PREA as “wages,” where that term is understood to include

¹¹ Schumacher, Otto L., ed. Western Mine Engineering, Mine Cost Service. Spokane, Washington: Western Mine Engineering, 2001.

benefits. We assume that contractor workers receive the same wage as their fellow coal miners.

SCOPE

This emergency temporary standard would apply to all underground coal mines. Table II-1, previously introduced, contains the number of underground coal mines and miners, excluding independent contractors, by mine size. Table II-2, previously introduced, contains the number of independent contractors and contractor workers by mine size.

SECTION-BY-SECTION DISCUSSION

Below we estimate the costs of the emergency temporary standard by section. The cost of human and material resources needed for the average underground coal mine in each size category to comply with the provisions of this emergency temporary standard were estimated by technical staff from MSHA's Offices of Standards, Regulations, and Variances; Coal Mine Safety and Health; and Educational Policy and Development. These staff have considerable rulemaking and field experience and knowledge in estimating the resources required to comply with program development and training requirements of provisions similar to those in this emergency temporary standard.

§75.1501 Emergency evacuations

Paragraph (a) of this section provides that the mine operator shall designate a responsible person in attendance at the mine to take charge during mine emergencies involving fire, explosion, or gas or water inundation for each shift that miners work underground.

We estimate that a mine operator would need about 0.1 hours (6 minutes) to designate a responsible person. We further estimate that the mine operator would designate new or additional responsible parties once a year at a mine with fewer than 20 workers, 4 times a year at a mine with 20 to 500 workers, and 6 times a year at a mine with more than 500 workers.

Table IV-2 provides our estimate of the total yearly cost for all underground coal mine operators to designate responsible persons.

Table IV-2: Annual Cost for Mine Operators to Designate Responsible Person(s)

Mine Size by No. of Employees	Total No. of Mines ^a	Annual Cost per Mine to Designate ^b	Annual Cost
<20	268	\$5.45	\$1,461
20-500	393	\$21.81	\$8,572
>500	3	\$32.72	\$98
Total	664		\$10,132

^a Source: Table II-1.

^b Annual cost to designate responsible person(s) = 0.1 x W x F, where 0.1 is the number of hours needed to select responsible person(s); W is the hourly wage rate for a coal mine supervisor, and W = \$54.53; and F is the frequency with which operator would designate new or additional responsible persons, and F = 1 for a mine with <20 miners; F=4 for a mine with 20-500 miners, and F= 6 for a mine with >500 miners.

Paragraph (b) of §75.1501 requires the responsible person to initiate and conduct an immediate mine evacuation when there is a mine emergency which presents an imminent danger to miners due to a fire, an explosion or a gas or water inundation.

MSHA anticipates that, in most cases, this requirement would not cause additional mine evacuations, but rather would lead to more organized and effective evacuations. In a handful of cases, however, this requirement could result in a “false” evacuation, which would not have occurred in the absence of the emergency temporary standard. MSHA estimates that there would be 10 false evacuations a year in underground coal mines due to this requirement, 5 in mines with fewer than 20 workers and 5 in mines with 20-500

workers. MSHA assumes that a false evacuation would last, on average, 2 hours in mines with fewer than 20 workers and 3 hours in mines with 20-500 workers.

The revenue per hour of mine production is simply the revenue per employee-hour multiplied by the number of miners per shift in the mine, where the number of miners per shift is 10 for mines with fewer than 20 workers and 41 for mines with 20-500 workers, and the revenue per employee-hour is \$52.05 for mines with fewer than 20 workers and \$77.84 for mines with 20-500 workers (based on data from MSHA's Office of Program Evaluation and Information Resources (PEIR) and the Department of Energy). Based on this information, the revenue per hour of production at a mine would be \$502 for mines with fewer than 20 workers and \$3,159 for mines with 20-500 workers.

When a mine stops production due to a mine evacuation, the production is not lost; it is just delayed. The delayed coal production would be made up at the end of the mine's life. Therefore, the cost of the false evacuations in terms of delayed production revenues would be equal to the production revenues initially lost minus the present value of the delayed production revenues.¹² In addition, delayed production would impose additional variable costs (labor, rent equipment, energy costs, etc.) on the mine operator. MSHA's Office of Coal Safety and Health estimates that an underground coal mine's variable costs would be equal to about 50 percent of revenues. Since these variable costs would not be incurred until the delayed production takes place, they must be discounted.¹³

Table IV-3 provides our estimate of the annual cost to underground coal mine operators of false evacuations arising from the requirements of paragraph (b) of §75.1501.

¹² The cost of delayed production revenues = $V \times (1 - (1/1.07)^n)$, where V is the revenues initially lost, 1.07 is the annual discount rate, and n is the expected remaining life of the mine. MSHA estimate that n = 5 for mines with fewer than 20 workers, and n = 10 for mines with 20-500 workers.

¹³ The cost of delayed production = $(0.5 \times V) \times (1/1.07)^n$, where (0.5 x V) is variable costs, 1.07 is the annual discount rate, and n is the expected remaining life of the mine.

Table IV-3: Annual Cost to Mine Operators of False Evacuations Arising from Section 75.1801(b)

Mine Size by No. of Employees	Revenues per Employee-Hour ^a	Number of Miners per Shift per Mine ^b	Cost per Evacuation Hour ^c	Cost of Delayed Production per Evacuation Hour ^d	Cost per Evacuation ^e	Cost per year for false evacuations ^f
(<20)	\$52	10	\$502	\$323	\$646	\$3,232
(20 to 500)	\$78	41	\$3,159	\$2,356	\$7,068	\$35,339
(>500)	\$78	183	\$14,363	\$11,760	\$47,041	\$0
Total						\$38,571

^a Revenues per employee-hour = (T/N) x P, where T is the total tons produced in underground coal mines in that size class (from 2000 PEIR data); N is the total of employee hours in that size class (from 2000 PEIR data); and P is the price per ton of coal (P = \$16.78).

^b Number of miners per shift per mine = (M/S), where M is the average number of miners per underground coal mine in that size class; and S is the number of work shifts in a day (S = 1 for a mine with <20 miners, S = 2 for a mine with 20-500 miners, and S = 3 for a mine with >500 miners).

^c Cost per evacuation hour = (revenues per employee-hour x number of miners per shift per mine).

^d Cost of delayed production per evacuation hour = {[E x (1-D)] + (0.5 x E x D)}, where E is the cost per evacuation hour; D is the annualization factor (D = (1/1.07)ⁿ, where n is the number of expected remaining years of a mine (n = 5 for a mine with <20 miners, n = 10 for a mine with 20-500 miners, and n = 15 for a mine with >500 miners); and 0.5 is variable costs as a proportion of mine revenues.

^e Cost per evacuation = (cost of delayed evacuation per hour x H), where H is the number of hours needed to evacuate a mine (H = 2 for a mine with <20 miners, H = 3 for a mine with 20-500 miners, and H = 4 for a mine with >500 miners).

^f Cost per year for false evacuations = (cost per evacuation x A), where A is the estimated number of false evacuations per year (A = 5 for a mine with <20 miners, A = 5 for a mine with 20-500 miners, and A = 0 for a mine with >500 miners).

Paragraph (c) of §75.1501 requires the operator to instruct all miners about the requirements of this section and the identity of the responsible person designated by the operator for their workshift within 7 days of publication of this emergency temporary standard.

We estimate that a mine supervisor would need about 0.25 hours (15 minutes) to prepare for the instruction required under this paragraph. We assume that the instruction given to each miner would last 0.1 hours (6 minutes) and that one supervisor per mine will provide the instruction once for each shift. We estimate that, on average, mines with fewer than 20 workers operate 1 shift a day; mines with 20-500 workers operate 2 shifts a day; and mines with more than 500 workers operate 3 shifts a day. Finally, we assume that the instruction would be given to all underground employees, both supervisors and miners, and that 1/7 of the underground employees are supervisors.

Table IV-4 provides our estimate of the total cost for all underground coal mine operators to instruct all miners about the requirements of this section and the identity of the responsible person. This one-time, first-year cost has been annualized using an annualization factor of 7 percent.

**Table IV-4: Cost for Mine Operators to Instruct Miners
About the Contents of Section 75.1501**

Mine Size by No. of Employees	Total No. of Mines ^a	Cost per Mine to Prepare and Give Instruction ^b	Total No. of Workers Instructed ^c	Cost per Worker Receiving Instruction ^d	Total Cost ^e	Total Annualized Cost ^f
<20	268	\$19.09	5,501	\$3.14	\$22,395	\$1,568
20-500	393	\$24.54	36,723	\$3.14	\$125,001	\$8,750
>500	3	\$29.99	1,648	\$3.14	\$5,267	\$369
Total	664		43,872		\$152,663	\$10,686

^a Source: Table II-1.

^b Cost per mine for to prepare and give instruction = $(0.25 + (0.1 \times S)) \times W$, where 0.25 is the number of hours needed for supervisor to prepare instruction; 0.1 is the number of hours of instruction; S is the number of shifts, and S = 1 for a mine with <20 miners; S = 2 for a mine with 20-500 miners, and S = 3 for a mine with >500 miners; and W is the hourly wage rate for a mine supervisor, and W = \$54.53.

^c Total no. of workers instructed = total number of workers (from Table II-1 and Table II-2) - $(1 \times M)$, where 1 refers to one supervisor per mine and M is the number of mines (from Column 2).

^d Cost per worker receiving instruction = $0.1 \times ((1/7 \times \$54.53) + (6/7 \times \$27.56))$, where 0.1 is the number of hours of instruction; 1/7 is the proportion of miners that are supervisors; \$54.53 is the hourly wage rate for a coal mine supervisor; 6/7 is the proportion of miners that are not supervisors; and \$27.56 is the hourly wage rate for a coal miner.

^e Total cost = (Column 2 x Column 3) + (Column 4 x Column 5)

^f Total annualized cost = total cost * 0.07, where 0.07 is the annualization factor.

Paragraph (c) of §75.1501, which requires the operator to instruct all miners about the requirements of this section and the identity of the responsible person designated by the operator for their workshift, also applies to new mines.

Based on a special data run conducted by MSHA's Office of Program Evaluation and Information Resources (PEIR), the proportion of all underground coal mines that are new each year is about 20 percent for those with less than 20 workers, about 9 percent for those with 20-500 workers, and 0 percent for those with more than 500 workers. We assume that the time needed to prepare for and conduct the instruction required under this paragraph would be the same for new mines as for existing mines.

Table IV-5 provides our estimate of the yearly cost for new underground coal mine operators to instruct all miners about the requirements of this section and the identity of the responsible person.

**Table IV-5: Cost for New Mines to Instruct Miners
About the Contents of Section 75.1501**

Mine Size by No. of Employees	No. of New Mines Annually ^a	Cost per New Mine to Prepare and Give Instruction ^b	No. of Workers Instructed at New Mines Annually ^c	Cost per Worker Receiving Instruction ^d	Annual Cost ^e
<20	54	\$19.09	1,100	\$3.14	\$4,479
20-500	35	\$24.54	3,305	\$3.14	\$11,250
>500	0	\$29.99	0	\$3.14	\$0
Total	89		4,405		\$15,729

^a Number of new mines annually = $M \times P$, where M is the number of underground coal mines (from Table II-1) and P is the proportion of all underground coal mines that are new (from special PEIR data run), and $P = 0.20$ for a mine with <20 miners; $P = 0.09$ for a mine with 20-500 miners, and $P = 0.00$ for a mine with >500 miners.

^b Cost per new mine to prepare and give instruction = $(0.25 + (0.1 \times S)) \times W$, where 0.25 is the number of hours needed for supervisor to prepare instruction; 0.1 is the number of hours of instruction; S is the number of shifts, and $S = 1$ for a mine with <20 miners; $S = 2$ for a mine with 20-500 miners, and $S = 3$ for a mine with >500 miners; and W is the hourly wage for a mine supervisor, and $W = \$54.53$.

^c Number of workers instructed at new mines annually = $(N \times P) - (1 \times M \times P)$, where N is the number of workers at underground coal mines (from Table II-1 and Table II-2); P is the proportion of all underground coal mines that are new (from special PEIR data run), and $P = 0.20$ for a mine with <20 miners; $P = 0.09$ for a mine with 20-500 miners, and $P = 0.00$ for a mine with >500 miners; 1 refers to one supervisor per mine; and M is the number of underground coal mines.

^d Cost per worker receiving instruction = $0.1 \times ((1/7 \times \$54.53) + (6/7 \times \$27.56))$, where 0.1 is the number of hours of instruction; 1/7 is the proportion of miners that are supervisors; \$54.53 is the hourly wage for a coal mine supervisor; 6/7 is the proportion of miners that are not supervisors; and \$27.56 is the hourly wage for a coal miner.

^e Annual cost = (Column 2 x Column 3) + (Column 4 x Column 5).

Paragraph (c) of §75.1501 also requires the operator to instruct all new miners about the requirements of this section and the identity of the responsible person designated by the operator for their workshift.

Based on industry experience during the past five years, we estimate that the annual miner turnover rate is 7 percent for underground coal mines. We assume that a supervisor would not require additional preparation to instruct new miners as required under this paragraph. However, we assume that supervisors would provide this instruction to new miners one-on-one.

Table IV-6 provides our estimate of the yearly cost for underground coal mine operators to instruct new miners about the requirements of this section and the identity of the responsible person.

Table IV-6: Cost for Mine Operators to Instruct New Miners About the Contents of Section 75.1501

Mine Size by No. of Employees	No. of New Workers Instructed ^a	Cost per New Worker for Instruction ^b	Annual Cost ^c
<20	404	\$8.21	\$3,315
20-500	2,598	\$8.21	\$21,328
>500	116	\$8.21	\$949
Total	3,118		\$25,592

^a No. of new workers instructed = 0.07 x N, where 0.07 is the annual turnover rate for coal miners, and N is the number of underground coal miners (from Table II-1 and Table II-2).

^b Cost per worker for instruction = 0.1 x (\$54.53 + \$27.56), where 0.1 is the number of hours of instruction; \$54.53 is the hourly wage rate for a coal mine supervisor; and \$27.56 is the hourly wage for a coal miner.

^c Annual cost = (Column 2 x Column 3).

Paragraph (c) of §75.1501 also requires the operator to inform all miners of any change in the identity of the responsible person designated by the operator for their workshift.

This paragraph is flexible in allowing operators to choose whatever method they prefer to inform miners of the responsible person. For example, the information could be conveyed orally or in writing. For purposes of this PREA, we assume that a supervisor on each shift would write down the information on a board (or chalkboard) accessible for miners and contractor workers to read before the shift. We estimate that the supervisor would require about 15 seconds to write down a change in the identify of the responsible person for that shift and that each miner would require about 3 seconds to read the information. We further estimate that the frequency of changes in the identity of the responsible person on a workshift would be 25 times annually for mines with fewer than 20 workers and 100 times annually, per shift, for mines with 20 or more workers (where mines with 20-500 workers are assumed to operate two shifts a day and mines with more than 500 workers are assumed to operate three shifts a day).

Table IV-7 provides our estimate of the yearly cost for underground coal mine operators to inform all miners about any change in the identity of the responsible person for their workshift.

**Table IV-7: Cost for Mine Operators to Inform Miners about a Change
In the Identity of the Responsible Person on a Shift**

Mine Size by No. of Employees	Total No. of Mines ^a	Annual Cost per Mine to Provide Information ^b	Total Number of Workers Instructed ^c	Annual Cost per Worker to Receive Information ^d	Total Annual Cost ^e
<20	268	\$5.68	5,501	\$0.65	\$5,122
20-500	393	\$45.44	36,723	\$2.62	\$113,990
>500	3	\$68.16	1,648	\$2.62	\$4,519
Total	664		43,872		\$123,631

^a Source: Table II-1.

^b Annual cost per mine to provide information = $(15/3600) \times W \times F \times S$, where 15/3600 is the number of hours (equal to 15 seconds) for a supervisor to provide information about a change in the identity of the responsible person on a shift; W is the hourly wage rate for a mine supervisor, and W = \$54.53; F is the annual frequency of changes per shift in the identity of the responsible party on the shift, and F = 25 for a mine with <20 miners, F = 100 for a mine with 20 or more miners, and S is the number of shifts; and S = 1 for a mine with <20 miners; S = 2 for a mine with 20-500 miners, and S = 3 for a mine with >500 miners.

^c Total no. of workers instructed = total number of workers (from Table II-1 and Table II-2) - $(1 \times M)$, where 1 refers to one supervisor per mine and M is the number of mines (from Column 2).

^d Annual cost per worker to receive information = $(3/3600) \times ((1/7 \times \$54.53) + (6/7 \times \$27.56)) \times F$, where 3/3600 is the number of hours (equal to 3 seconds) for a miner to acquire information about a change in the identity of the responsible party on a shift; 1/7 is the proportion of miners that are supervisors; \$54.53 is the hourly wage rate for a coal mine supervisor; 6/7 is the proportion of miners that are not supervisors; \$27.56 is the hourly wage rate for a coal miner; and F is the annual frequency of changes per shift in the identity of the responsible party on the shift, and F = 25 for a mine with <20 miners and F = 100 for a mine with 20 or more miners.

^e Total annual cost = (Column 2 x Column 3) + (Column 4 x Column 5) - $((3/3600) \times \$54.53 \times \text{Column 2})$, where the components subtracted reflect the fact that one supervisor per mine, the one providing the information about a change in the identity of the responsible party on a shift, would not also be receiving the information.

§75.1502 Mine Emergency Evacuation and Firefighting Program of Instruction

Paragraph (a) of this section requires that each operator of an underground coal mine adopt a mine emergency evacuation and firefighting program (which expands the existing program of instruction to include mine emergencies involving fire, explosion, or gas or water inundation, and retains the requirements of existing §75.1101-23(a) that the program of instruction include procedures to be followed regarding the location and use of firefighting equipment, location of escapeways, exits, and routes of travel to the surface). This paragraph also requires the operator to submit the program of instruction to MSHA for approval within 30 days after the emergency temporary standard takes effect.

We estimate that a supervisor would require 2 hours to prepare the program of instruction for a mine with fewer than 20 workers; 3 hours for a mine with 20-500 workers; and 4 hours for a mine with more than 500 workers. We estimate that a clerical worker would take 0.5 hours (regardless of mine size) to type (in the rare instance), edit, print out, photocopy, and mail the program of instruction to MSHA for approval. We assume that cost per page of a photocopy is \$0.15 and that the program of instruction would be 4 pages long for a mine with fewer than 20 workers; 8 pages long for a mine with 20-500 workers; and 12 pages for a mine with more than 500 workers. We estimate that the cost for envelope and postage to mail the program of instruction to MSHA for approval would be \$1 for a mine with fewer than 20 workers; \$2 for a mine with 20-500 workers; and \$3 for a mine with more than 500 workers.

We estimate that 5 percent of operators would have their program of instruction rejected by MSHA. For these mines, we estimate that a supervisor would take 1 hour to revise the program of instruction for a mine with fewer than 20 workers; 1.5 hours for a mine with 20-500 workers; and 2 hours for a mine with more than 500 workers. We estimate that a clerical worker would take 0.3 hours (regardless of mine size) to type (in the rare instance), edit, print out, photocopy, and mail the revised program of instruction to MSHA for approval. We assume that the other costs of submitting the revised program of instruction to MSHA would be the same as those for submitting the original program of instruction required by this paragraph.

Table IV-8 provides our estimate of the total cost for underground coal mine operators to develop a program of instruction and submit it to MSHA for approval, as required by the paragraph. This one-time, first-year cost has been annualized using an annualization factor of 7 percent.

**Table IV-8: Cost for Mine Operators to Revise and Submit
Written Evacuation Plan**

Mine Size by No. of Employees	Total No. of Mines ^a	Cost Per Mine to Revise and Submit Plan ^b	No. of Mines with Rejected Plan ^c	Cost per Mine to Re-revise and Resubmit Plan ^d	Total Cost ^e	Total Annualized Cost ^f
<20	268	\$120.75	13	\$62.18	\$33,194	\$2,324
20-500	393	\$176.88	20	\$91.05	\$71,303	\$4,991
>500	3	\$233.01	0.2	\$119.91	\$717	\$50
Total	664				\$105,214	\$7,365

^a Source: Table II-1.

^b Cost per mine to revise and submit plan = $(H \times S) + (0.5 \times C) + (Z \times 0.15) + J$, where H is the number for hours for a supervisor to revise the evacuation plan, and H = 2 for a mine with <20 miners, H = 3 for a mine with 20-500 miners, and H = 4 for a mine with >500 miners; S is the hourly wage rate for a supervisor, and S = \$54.53; 0.5 is the number of hours for a clerical worker to edit, print out, photocopy, and mail revised plan; C is the hourly wage rate for a clerical worker, and C = \$20.18; Z is the number of pages of the revised evacuation plan, and Z = 4 for a mine with <20 miners, Z = 8 for a mine with 20-500 miners, and Z = 12 for a mine with >500 miners; \$0.15 is the cost per page of a photocopy; and J is the cost for postage and envelope, and J = \$1 for a mine with <20 miners, J = \$2 for a mine with 20-500 miners, and J = \$3 for a mine with >500 miners.

^c No. of mines with rejected plan = $(0.05 \times \text{total no. of mines})$, where 0.05 is the share of mines whose evacuation plan has been rejected by MSHA.

^d Cost per mine to re-revise and resubmit plan = $(H \times S) + (0.3 \times C) + (Z \times 0.15) + J$, where H is the number for hours for a supervisor to re-revise the evacuation plan, and H = 1 for a mine with <20 miners; H = 1.5 for a mine with 20-500 miners, and H = 2 for a mine with >500 miners; S is the hourly wage rate for a supervisor, and S = \$54.53; 0.3 is the number of hours for a clerical worker to edit, print out, photocopy, and mail re-revised plan; C is the hourly wage rate for a clerical worker, and C = \$20.18; Z is the number of pages of the re-revised evacuation plan, and Z = 4 for a mine with <20 miners, Z = 8 for a mine with 20-500 miners, and Z = 12 for a mine with >500 miners; \$0.15 is the cost per page of a photocopy; and J is the cost for postage and envelope, and J = \$1 for a mine with <20 miners, J = \$2 for a mine with 20-500 miners, and J = \$3 for a mine with >500 miners.

^e Total cost = Column 2 x Column 3.

^f Total annualized cost = $((\text{total cost} \times 0.07))$, where 0.07 is the annualization factor.

Paragraph (a) of § 75.1502 also requires that operators train all miners and contractor workers in the procedures developed and described in the program of instruction.

We estimate that a supervisor would take 1 hour to prepare for the training for a mine with fewer than 20 workers; 1.5 hours for a mine with 20-500 workers; and 2 hours for a mine with more than 500 workers. We assume that the training given to each miner and contractor worker would last 0.25 hours (15 minutes) and that one supervisor per mine will provide the instruction once for each shift. Finally, we assume that the instruction would be given to all underground employees, both supervisors and miners (including contractor workers), and that 1/7 of the underground employees are supervisors.

Table IV-9 provides our estimate of the total cost for all underground coal mine operators to train all miners and contractor workers the procedures developed and described in the program of instruction. This one-time, first-year cost has been annualized using an annualization factor of 7 percent.

Table IV-9: Cost for Mine Operators to Instruct Workers about Emergency Evacuation Procedures

Mine Size by No. of Employees	Total No. of Mines ^a	Cost per Mine to Prepare and Give Instruction ^b	Total No. of Workers Instructed ^c	Cost per Worker Receiving Instruction ^d	Total Cost ^e	Total Annualized Cost ^f
<20	268	\$68.16	5,501	\$7.85	\$61,468	\$4,303
20-500	393	\$109.06	36,723	\$7.85	\$331,254	\$23,188
>500	3	\$149.96	1,648	\$7.85	\$13,392	\$937
Total	664		43,872		\$406,114	\$28,428

^a Source: Table II-1.

^b Cost per mine to prepare and give instruction = $(H + (0.25 \times S)) \times W$, where H is the number of hours needed for supervisor to prepare instruction, and H = 1 for a mine with <20 miners, H = 1.5 for a mine with 20-500 miners, and H = 2 for a mine with >500 miners; 0.25 is the number of hours of instruction; S is the number of shifts, and S = 1 for a mine with <20 miners, S = 2 for a mine with 20-500 miners, and S = 3 for a mine with >500 miners; and W is the hourly wage rate for a mine supervisor, and W = \$54.53.

^c Total number of workers instructed = total number of workers (from Table II-1 and Table II-2) - $(1 \times M)$, where 1 refers to one supervisor per mine and M is the number of mines (from Column 2).

^d Cost per worker receiving instruction = $0.25 \times ((1/7 \times \$54.53) + (6/7 \times \$27.56))$, where 0.25 is the number of hours of instruction; 1/7 is the proportion of miners that are supervisors; \$54.53 is the hourly wage rate for a coal mine supervisor; 6/7 is the proportion of miners that are not supervisors; and \$27.56 is the hourly wage for a coal miner.

^e Total cost = (Column 2 x Column 3) + (Column 4 x Column 5).

^f Total annualized cost = (total cost * 0.07), where 0.07 is the annualization factor.

We previously estimated that 5 percent of operators would have their program of instruction rejected by MSHA and indicated that these operators would need to revise and resubmit their program of instruction. Paragraph (a) of § 75.1502 also requires that these operators instruct all persons affected by the revisions to the program of instruction in its provisions.

For these mines, we estimate that a supervisor would require 0.5 hours to prepare for the instruction for a mine with fewer than 20 workers; 0.75 hours to prepare for a mine with 20-500 workers, and 1 hour to prepare for a mine with more than 500 workers. We assume that the instruction will be given to all miners and contractor workers in these mines, that the instruction will last 0.1 hours (6 minutes), and that one supervisor per mine will provide the instruction once for each shift.

Table IV-10 provides our estimate of the total cost for underground coal mine operators with programs of instruction rejected by MSHA to retrain their miners and contractor workers about the procedures described in the revised program of instruction. This one-time, first-year cost has been annualized using an annualization factor of 7 percent.

Table IV-10: Cost for Mine Operators to Re-Instruct Workers about Emergency Evacuation Procedures

Mine Size by No. of Employees	No. of Mines with Rejected Plan ^a	Cost per Mine to Re-Prepare and Re-Give Instruction ^b	No. of Workers to Be Re-Instructed ^c	Cost per Worker Receiving Re-Instruction ^d	Total Cost ^e	Total Annualized Cost ^f
<20	13	\$32.72	275	\$3.14	\$1,302	\$91
20-500	20	\$51.80	1,836	\$3.14	\$6,786	\$475
>500	0.2	\$70.89	82	\$3.14	\$269	\$19
Total	33		2,194		\$8,358	\$585

^a No. of mines with rejected plan = (0.05 x total no. of mines), where 0.05 is the share of mines whose evacuation plan has been rejected by MSHA.

^b Cost per mine to prepare and give instruction = (H + (0.1 x S)) x W, where H is the number of hours needed for supervisor to prepare instruction, and H = 0.5 for a mine with <20 miner, H = 0.75 for a mine with 20-500 miners, and H = 1 for a mine with >500 miners; 0.1 is the number of hours of instruction; S is the number of shifts, and S = 1 for a mine with <20 miners, S = 2 for a mine with 20-500 miners, and S = 3 for a mine with >500 miners; and W is the hourly wage rate for a mine supervisor, and W = \$54.53.

^c No. of workers to be re-instructed = (0.05 x no. of mines with rejected plan) - (1 x M), where 0.05 is the share of miners in mines whose evacuation plan has been rejected by MSHA; 1 refers to one supervisor per mine, and M is the number of mines (from Column 2).

^d Cost per worker receiving re-instruction = 0.1 x ((1/7 x \$54.53) + (6/7 x \$27.56)), where 0.1 is the number of hours of re-instruction; 1/7 is the proportion of miners that are supervisors; \$54.53 is the hourly wage rate for a coal mine supervisor; 6/7 is the proportion of miners that are not supervisors; and \$27.56 is the hourly wage rate for a coal miner.

^e Total cost = (Column 2 x Column 3) + (Column 4 x Column 5).

^f Total annualized cost = (total cost * 0.07), where 0.07 is the annualization factor.

§48.8 Annual Refresher Training of Miners; Minimum Courses of Instruction; Hours of Instruction

The emergency temporary standard revises this section to ensure that annual refresher retraining addresses the specified mine emergency evacuations.

We estimate that a supervisor would require 0.5 hours to revise the part 48 training plan for a mine with fewer than 20 workers; 0.75 hours for a mine with 20-500 workers; and 1 hour for a mine with more than 500 workers. We estimate that a clerical worker would take 0.3 hours (regardless of mine size) to type (in the rare instance), edit, print out, photocopy, and mail the revised part 48 training plan to MSHA. We assume that cost per page of a photocopy is \$0.15 and that the revised part 48 training plan would be 8 pages long for a mine with fewer than 20 workers; 12 pages long for a mine with 20-500 workers; and 16 pages for a mine with more than 500 workers. We estimate that the cost for envelope and postage to mail the revised part 48 training plan to MSHA would be \$2 for a mine with fewer than 20 workers; \$3 for a mine with 20-500 workers; and \$4 for a mine with more than 500 workers.

We assume that the training on mine emergency evacuations will be incorporated into the part 48 training plan so as to maintain (i.e., not increase) the total training provided under part 48. Therefore, we expect that the training itself under part 48, as required by the emergency temporary standard would not impose any additional costs on underground coal mine operators.

Table IV-11 provides our estimate of the total cost for underground coal mine operators revise and submit their part 48 training plan as required under this section. This one-time, first-year cost has been annualized using an annualization factor of 7 percent.

Table IV-11: Cost for Mine Operators to Revise and Submit Part 48 Training Plans

Mine Size by No. of Employees	Total No. of Mines ^a	Cost Per Mine to Revise and Submit Part 46 Plan ^b	Total Cost ^c	Total Annualized Cost ^d
<20	268	\$40.56	\$10,869	\$761
20-500	393	\$55.79	\$21,924	\$1,535
>500	3	\$71.02	\$213	\$15
Total	664		\$33,006	\$2,310

^a Source: Table II-1.

^b Cost per mine to revise and submit part 46 plan = $(H \times S) + (0.5 \times C) + (Z \times 0.15) + J$, where H is the number of hours for a supervisor to revise the part 46 plan, and H = 0.5 for a mine with <20 miners; H = 0.75 for a mine with 20-500 miners, and H = 1 for a mine with >500 miners; S is the hourly wage rate for a supervisor, and S = \$54.53; 0.3 is the number of hours for a clerical worker to edit, print out, photocopy, and mail revised part 46 plan; C is the hourly wage rate for a clerical worker, and C = \$20.18; Z is the number of pages of the revised part 46 plan, and Z = 8 for a mine with <20 miners, Z = 12 for a mine with 20-500 miners, and Z = 16 for a mine with >500 miners; \$0.15 is the cost per page of a photocopy; and J is the cost for postage and envelope, and J = \$2 for a mine with <20 miners, J = \$3 for a mine with 20-500 miners, and J = \$4 for a mine with >500 miners.

^c Total cost = Column 2 x Column 3.

^d Total annualized cost = (total cost * 0.07), where 0.07 is the annualization factor.

FEASIBILITY

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

Technological Feasibility

This emergency temporary standard addresses revisions of mine emergency evacuation plans and associated training. This emergency temporary standard neither requires underground coal mines to procure any additional equipment nor use any new technology. This is not a technology-forcing standard and does not involve activities on the frontiers of science. We conclude, therefore, that this emergency temporary standard is technological feasible.

Economic Feasibility

As previously estimated in this chapter, underground coal mines would incur costs of approximately \$0.26 million yearly to comply with this emergency temporary standard. That these compliance costs represent well under 1 percent of (about 0.004 percent) of

annual revenues is sufficient evidence, we believe, to conclude that this emergency temporary standard is economically feasible for underground coal mines.

V. REGULATORY FLEXIBILITY CERTIFICATION AND INITIAL REGULATORY FLEXIBILITY ANALYSIS

INTRODUCTION

In accordance with §605 of the Regulatory Flexibility Act (RFA), the Mine Safety and Health Administration certifies that this emergency temporary standard would 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 (RFA), MSHA must include in the emergency temporary standard a factual basis for this certification. If the emergency temporary standard 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 SMALL MINE

Under the RFA, in analyzing the impact of a emergency temporary standard 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). Most of the underground coal 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.

MSHA is concerned, however, that looking only at the impacts of the emergency temporary standard on all these mines does not provide the Agency with a complete picture on which to make decisions. Traditionally, the Agency has also looked at the impacts of its standards and regulations 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 large mines operate.

This analysis complies with the legal requirements of the RFA for an analysis of the impacts on “small entities” while continuing our traditional look at “small mines.” MSHA concludes that it can certify that the emergency temporary standard would not have a significant economic impact on a substantial number of small entities that are covered by this rulemaking. The Agency has determined that this is the case both for mines with fewer than 20 employees and for those with 500 or fewer employees.

FACTUAL BASIS FOR CERTIFICATION

General Approach: The Agency’s analysis of impacts on “small entities” and “small mines” begins with a “screening” analysis. The screening analysis compares the estimated compliance costs of the emergency temporary standard for small entities in the affected sector to the estimated revenues for that sector. When estimated compliance costs for small entities in the affected sector are less than 1 percent of estimated revenues, or are negative, the Agency believes it is generally appropriate to conclude that there is not a 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 emergency temporary standard, because only underground coal mines are covered, the Agency decided to focus its attention on the relationship between costs and revenues for these mines.

In determining revenues for underground coal mines, we multiplied mine production data (in tons) by the estimated price per ton of the commodity (\$16.78 per ton in 2000).¹⁴ The production data were obtained from MSHA’s CM441 reports.¹⁵

Results of the Screening Analysis: Table V-1 shows compliance cost as a percentage of revenue for underground coal mines using our traditional definition of a small mine. The yearly cost of the emergency temporary standard would be approximately 0.01 percent of annual revenues for small mine operators as defined by MSHA.

TABLE V-1: The Impact of Emergency Temporary Standard on the Underground Coal Mining Sector by MSHA Size Categories*

Mine Type	Estimated Cost	Estimated Revenue	Estimated Cost per Mine	Costs as % of Revenue
Small (< 20)	\$ 26,656	\$ 201,700,466	\$ 99	0.01%
Large (≥ 20)	\$ 236,373	\$ 5,745,346,385	\$ 597	0.00%

*Source: U.S. Department of Labor Mine Safety and Health Administration, Office of Program Evaluation and Information Resources, 2000 data. Average U.S. coal price from Department of Energy, Energy Information Administration, *Coal Industry Annual 2000*, January 2002, Table 80, p.206.

¹⁴ Average U.S. coal price from Department of Energy, Energy Information Administration, *Coal Industry Annual 2000*, January 2002, Table 80, p.206.

¹⁵ Mine Safety and Health Administration’s 2000 final CM441 Report, cycle 2000/207.

The Agency used a similar approach to analyze the impact of the emergency temporary standard on small mines as defined by SBA. Table V-2 shows yearly compliance cost to be less than 0.01 percent of estimated annual revenues for small mine operators as defined by SBA.

TABLE V-2: The Impact of Emergency Temporary Standard on the Underground Coal Mining Sector by SBA Size Categories*

Mine Type	Estimated Cost	Estimated Revenue	Estimated Cost per Mine	Costs as % of Revenue
Small (≤ 500)	\$ 256,073	\$ 5,644,194,984	\$ 387	0.00%
Large (> 500)	\$ 6,955	\$ 302,851,867	\$ 2,318	0.00%

*Source: U.S. Department of Labor Mine Safety and Health Administration, Office of Program Evaluation and Information Resources, 2000 data. Average U.S. coal price from Department of Energy, Energy Information Administration, Coal Industry Annual 2000, January 2002, Table 80, p.206.

Based on the information in Chapter IV of the PREA, the total cost of the emergency temporary standard for all coal underground mines with fewer than 20 employees would be \$0.03 million yearly; the average cost of the emergency temporary standard for a small underground coal mine with fewer than 20 employees would be about \$99 per year. The total cost of the emergency temporary standard for all underground coal mines with 500 or fewer employees would be about \$0.26 million yearly; the average cost of the emergency temporary standard for a small coal mine with 500 or fewer employees would be about \$387 per year.

Using both our definition and SBA’s definition of a small mine, the yearly cost of complying with the final rule is no more than 0.01 percent of annual revenues, well below the level suggesting that the emergency temporary standard might have a significant economic impact on a substantial number of small entities. Accordingly, we conclude and certify that compliance with this emergency temporary standard would not have a significant economic impact on a substantial number of small entities.

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

Other Relevant Matters. In accordance with the Small Business Regulatory Enforcement Fairness Act (SBREFA), we are taking actions to minimize the compliance burden on small mines. We are committed to writing the emergency temporary standard in plain language, so that it can be easily understood by small mine operators.

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 emergency temporary standard 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 emergency temporary standard 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 Preliminary Regulatory Economic Analysis (PREA), compliance with this emergency temporary standard by coal mine operators and contractors covered by this rulemaking would result in a compliance cost of approximately \$0.26 million per year. Accordingly, there is no need for further analysis under §202 of the Unfunded Mandates Reform Act.

We have concluded that small governmental entities would not be significantly or uniquely impacted by the emergency temporary standard. The emergency temporary standard would cover 664 underground coal mining operations.

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

This emergency temporary standard is not subject to Executive Order 12630, Governmental Actions and Interference with Constitutionally Protected Property Rights, because it does not involve implementation of a policy with takings implications.

EXECUTIVE ORDER 12988: CIVIL JUSTICE REFORM

We have reviewed Executive Order 12988 and determined that this emergency temporary standard would not unduly burden the Federal court system. We drafted the emergency temporary standard to provide a clear legal standard for affected conduct. Under §101(b)(3) of the Mine Act, emergency temporary standard as published serves as a proposed rule. As a proposed rule, we have asked for public comment to eliminate ambiguities or drafting errors.

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

In accordance with Executive Order 13045, we have evaluated the environmental health and safety effects of the emergency temporary standard on children. The Agency has determined that the emergency temporary standard would have no adverse effect on children.

EXECUTIVE ORDER 13132: FEDERALISM.

We have reviewed this emergency temporary standard in accordance with Executive Order 13132 regarding federalism and have determined that it does not have “federalism implications.” This emergency temporary standard does not “have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.”

EXECUTIVE ORDER 13175: CONSULTATION AND COORDINATION WITH INDIAN TRIBAL GOVERNMENTS.

We certify that the emergency temporary standard would not impose substantial direct compliance costs on Indian tribal governments. Under §101 (b)(3) of the Mine Act, an emergency temporary standard as published serves as a proposed rule. As a proposed rule, we will provide the public, including Indian tribal governments which operate mines, the opportunity to comment on the requirements of the emergency temporary standard.

EXECUTIVE ORDER 13211: ACTIONS CONCERNING REGULATIONS THAT SIGNIFICANTLY AFFECT ENERGY SUPPLY, DISTRIBUTION, OR USE

In accordance with Executive Order 13211, we have reviewed the emergency temporary standard for its energy impacts. The emergency temporary standard would have no effect on the distribution or use of energy. The only impacts of the emergency temporary standard on the supply of energy would be through its effect on the price of coal or the production of coal.

The emergency temporary standard would have no direct effects on the production of coal. The emergency temporary standard would not prevent the mining of particular coal deposits; nor would the emergency temporary standard require coal deposits to be mined at a slower pace. The only impacts of the emergency temporary standard on coal mine production would be indirect, via the cost or price of coal.

The estimated yearly cost of the emergency temporary standard for the coal mining industry would be about \$0.26 million.¹⁶ The annual revenues of the coal mining industry in 2000 were approximately 17.7 billion.¹⁷ The cost of the emergency temporary standard for the coal mining industry would be 0.004% of revenues. Even if we were to suppose that the increased cost caused by the emergency temporary standard would be fully reflected in coal prices, the impact would be negligible.

Accordingly, we have determined that the emergency temporary standard would have no significant adverse effect on the supply, distribution, or use of energy.

EXECUTIVE ORDER 13272: PROPER CONSIDERATION OF SMALL ENTITIES IN AGENCY RULEMAKING

In accordance with Executive Order 13272, MSHA has thoroughly reviewed the emergency temporary standard to assess and take appropriate account of its potential impact on small businesses, small governmental jurisdictions, and small organizations. As discussed in Chapter V of the PREA, MSHA has determined that the emergency temporary standard would not have a significant economic impact on a substantial number of small entities.

¹⁶ Estimate obtained from Table IV-1 of the PREA.

¹⁷ Data for revenues derived from: U.S. Department of Labor, Mine Safety and Health Administration, Office of Standards, Regulations, and Variances, based on 2000 PEIR data and U.S. Department of Energy, Energy Information Administration, Coal Industry Annual 2000, January 2002, p. 206.

VII. THE PAPERWORK REDUCTION ACT OF 1995

INTRODUCTION

The purpose of this chapter is to show the burden hours and related costs which would be borne by underground and surface coal operators as a result of the emergency temporary standard. The costs in this chapter have already been derived in Chapter IV of this PREA. However, in this chapter, costs are estimated only in relation to the burden hours that the proposed rule imposes on operators. Therefore, not all costs derived in Chapter IV appear below. Those costs derived in Chapter IV which do not have burden hours associated with them are not included in this chapter.

The hourly wage rates used in this analysis are \$54.53 for a mine supervisor and \$20.18 for a clerical worker.

SUMMARY OF PAPERWORK BURDEN HOURS AND RELATED COSTS

In the First Year of the Rule

In the first year the rule is in effect, there would be an increase of 5,010 burden hours and related burden costs of \$250,041.

Table VII-1 shows that with respect to first year-only burden hours and costs, there would be an increase of 4,304 burden hours and related costs of \$211,565. Table VII-2 shows that with respect to annual costs, there would be an increase of 706 burden hours and related costs of \$38,476.

In the Second Year of the Rule and for Every Year Thereafter

After the first year of the rule, those burden hours and related costs occurring in the first year would no longer occur, and what remains are only the annual burden hours and related costs. Therefore, in the second year of the rule and for every year thereafter, there would be an increase of 706 burden hours and related costs of \$38,476.

Table VII-1: Summary of First Year Only Burden Hours and Costs

Chapter VII Table	<20 Emp.			20 to 500 Emp.			>500 Emp.			Total		
	First Year Burden Hours	First Year Burden Costs	First Year Burden Costs Annual- ized	First Year Burden Hours	First Year Burden Costs	First Year Burden Costs Annual- ized	First Year Burden Hours	First Year Burden Costs	First Year Burden Costs Annual- ized	First Year Burden Hours	First Year Burden Costs	First Year Burden Costs Annual- ized
VII-3	94	\$5,115	\$358	177	\$9,644	\$675	2	\$90	\$6	272	\$14,849	\$1,039
VII-7	670	\$31,932	\$2,235	1,376	\$68,256	\$4,778	14	\$685	\$48	2,059	\$100,873	\$7,061
VII-8	17	\$812	\$57	35	\$1,726	\$121	0	\$17	\$1	53	\$2,555	\$179
VII-9	335	\$18,268	\$1,279	786	\$42,861	\$3,000	8	\$450	\$31	1,129	\$61,578	\$4,310
VII-10	8	\$438	\$31	19	\$1,018	\$71	0	\$11	\$1	27	\$1,467	\$103
VII-11	268	\$10,011	\$701	491	\$20,038	\$1,403	5	\$194	\$14	764	\$30,243	\$2,117
Total	1,392	\$66,576	\$4,660	2,884	\$143,543	\$10,048	28	\$1,446	\$101	4,304	\$211,565	\$14,810

Table VII-2: Summary of Annual Burden Hours and Costs

Chapter VII Table	<20 Emp.		20 to 500 Emp.		>500 Emp.		Total	
	Annual Burden Hours	Annual Burden Costs	Annual Burden Hours	Annual Burden Costs	Annual Burden Hours	Annual Burden Costs	Annual Burden Hours	Annual Burden Costs
VII-4	19	\$1,023	16	\$868	0	\$0	35	\$1,891
VII-5	40	\$2,202	260	\$14,168	12	\$630	312	\$17,000
VII-6	28	\$1,522	328	\$17,859	4	\$204	359	\$19,585
Total	87	\$4,747	603	\$32,894	15	\$835	706	\$38,476

Proposed §75.1501(c) Burden Hours and Costs for Operators to Prepare and Give Instructions to Workers Concerning §75.1501 Requirements

Underground coal mine operators shall instruct all miners about the requirements of §75.1501 and the identity of the responsible person designated by the operator for their workshift. On average, MSHA estimates that a mine supervisor would need 0.25 hours (15 minutes) to prepare for giving the instructions required under §75.1501. In addition, on average, the mine supervisor is estimated to spend 0.1 hours (6 minutes) providing the instruction per shift. On average, the number of shifts where instruction would be given would be: 1 shift in mines employing fewer than 20 workers; 2 shifts in mines employing 20 to 500 workers; and 3 shifts in mines employing more than 500 workers. Since the instruction is only provided once (only being repeated for new workers), these first year costs were annualized using an annualization factor of 7 percent.

Table VII-3 shows underground coal operators’ first year burden hours and related costs to prepare and give instructions required by §75.1501.

Table VII-3: First Year Burden Hours and Costs to Prepare and Give Instructions Required by 75.1501

Mine Size by No. of Employees	Total No. of Mines ^a	Time to Prepare & Give Instruction (in hrs.) ^b	First Year Burden Hours	Superv. Wage Rate (per hr.)	First Year Burden Costs	First Year Burden Costs Annualized ^c
<20	268	0.35	94	54.53	\$5,115	\$358
20-500	393	0.45	177	54.53	\$9,644	\$675
>500	3	0.55	2	54.53	\$90	\$6
Total	664		272		\$14,849	\$1,039

^a Source: Table IV-4.

^b Time for mine supervisor to prepare and give instruction = (0.25 + (0.1 x S)), where 0.25 is the number of hours needed for a supervisor to prepare instruction, 0.1 is the number of hours the supervisor spends in instructing one shift, and S is the number of shifts to instruct, S=1 for mines employing fewer than 20 workers, S=2 for mines employing 20 to 500 workers, and S=3 for mines employing more than 500 workers.

^c First year burden costs annualized = first year burden costs x 0.07, where 0.07 is the annualization factor.

New underground coal mine operators would also need to instruct miners about the instruction required by §75.1501. On average, MSHA estimates that the number of new mines per year to be: 54 mines employing fewer than 20 workers; 35 mines employing 20 to 500 workers; and no new mines employing more than 500 workers.

Table VII-4 shows underground coal operators' annual burden hours and related costs to prepare and give instructions required by §75.1501 for new mines.

Table VII-4: Annual Burden Hours and Costs to Prepare and Give Instructions Required by 75.1501 for New Mines

Mine Size by No. of Employees	Total No. of New Mines ^a	Time to Prepare & Give Instruction (in hrs.) ^b	Annual Burden Hours	Superv. Wage Rate (per hr.)	Annual Burden Costs
<20	54	0.35	19	54.53	\$1,023
20-500	35	0.45	16	54.53	\$868
>500	0	0.55	0	54.53	\$0
Total	89		35		\$1,891

^a Source: Table IV-5.

^b Time for mine supervisor to prepare and give instruction = $(0.25 + (0.1 \times S))$, where 0.25 is the number of hours needed for a supervisor to prepare instruction, 0.1 is the number of hours the supervisor spends in instructing one shift, and S is the number of shifts to instruct, S=1 for mines employing fewer than 20 workers, S=2 for mines employing 20 to 500 workers, and S=3 for mines employing more than 500 workers.

Underground coal mine operators would also need to instruct new miners about the instruction required by §75.1501. MSHA assumes that a supervisor would instruct a new miner one-on-one. Therefore, MSHA estimates that it would take 0.1 hours (6 minutes) for a supervisor to instruct a new worker. On average, MSHA estimates that the number of new workers per year would be: 404 workers in mines employing fewer than 20 workers; 2,598 workers in mines employing 20 to 500 workers; and 116 workers in new mines employing more than 500 workers.

Table VII-5 shows underground coal operators' annual burden hours and related costs to prepare and give instructions required by §75.1501 to new workers.

**Table VII-5: Annual Burden Hours and Costs
to Give Instructions Required by 75.1501
for New Workers**

Mine Size by No. of Employees	Total No. of New Workers ^a	Time to Prepare & Give Instruction (in hrs.)	Annual Burden Hours	Superv. Wage Rate (per hr.)	Annual Burden Costs
<20	404	0.1	40	54.53	\$2,202
20-500	2,598	0.1	260	54.53	\$14,168
>500	116	0.1	12	54.53	\$630
Total	3,118		312		\$17,000

^a Source: Table IV-6.

At times throughout the year the person at the mine who is identified to be the responsible person will change. For purposes of this PREA, we assume that the mine supervisor would notify miners of the change by writing the name of the new responsible person on a chalkboard. On average, MSHA estimates that it would take 0.004 hours (15 seconds) to write the change on the mine chalkboard. On average, MSHA estimates that annually changes per shift would occur: 25 times in mines employing fewer than 20 workers, and 100 times in mines employing 20 or more workers. On average, the number of shifts per mine is estimated to be: 1 shift at mines employing fewer than 20 workers, 2 shifts at mines employing 20 to 500 workers, and 3 shifts at mines employing more than 500 workers.

Table VII-6 shows underground coal operators' annual burden hours and related costs to notify miners of changes in the person identified to be the responsible person at the mine.

**Table VII-6: Annual Burden Hours and Costs
to Notify Miners of Change of Responsible Person**

Mine Size by No. of Employees	Total No. of Mines ^a	Annual No. of Changes per Shift	No. of Shifts	Time to Make Change (in hrs.) ^b	Annual Burden Hours	Superv. Wage Rate (per hr.)	Annual Burden Costs
<20	268	25	1	0.004	28	54.53	\$1,522
20-500	393	100	2	0.004	328	54.53	\$17,859
>500	3	100	3	0.004	4	54.53	\$204
Total	664	225			359		\$19,585

^a Source: Table IV-7.

^b 0.004 hrs. = (15 seconds/3,600 seconds per hr.)

Proposed §75.1502(a) Burden Hours and Costs for Operators to Revise Mine Evacuation Plan

All underground coal operators would need to revise their evacuation plan to include a program for the instruction of all miners in the proper evacuation procedures to be followed in the event one of the specified mine emergencies occur, and the location and use of firefighting equipment, location of escapeways, exits, and routes of travel to the surface. On average, MSHA estimates that revising the mine evacuation plan would take a supervisor: 2 hours in a mine employing fewer than 20 workers, 3 hours in a mine employing 20 to 500 workers, and 4 hours in mines employing more than 20 workers. In addition, on average, a clerical worker would spend 0.5 hours (30 minutes) to edit, print out, photocopy, and send the revised plan. Since these costs only occur in the first year, they were annualized using an annualization rate of 0.07.

Table VII-7 shows underground coal operators’ first year burden hours and related costs to revise the evacuation plan in accordance with §75.1502(a).

Table VII-7: First Year Burden Hours and Costs to Revise Mine Evacuation Plan

Mine Size by No. of Employees	Total No. of Mines ^a	Time to Revise Plan (in hrs.) ^b	First Year Burden Hours	Wage Rate (per hr.) ^c	First Year Burden Costs	First Year Burden Costs Annualized ^d
<20	268	2.5	670	47.66	\$31,932	\$2,235
20-500	393	3.5	1,376	\$49.62	\$68,256	\$4,778
>500	3	4.5	14	\$50.71	\$685	\$48
Total	664		2,059		\$100,873	\$7,061

^a Source: Table IV-8.

^b Time to revise evacuation plan = (r + 0.5), where r is the number of hours for a mine supervisor to revise the evacuation plan, r=2 for mines employing fewer than 20 workers, r=3 for mines employing 20 to 500 workers, and r=4 for mines employing more than 500 workers. In addition, a clerical worker would take 0.5 hours to edit, print out, photocopy, and mail the revised plan.

^c Wage rate = ((r x s) + (t x u)) / (r + t), where r is the time for the supervisor to revise the plan (noted above in footnote b), s is the hourly wage rate for a supervisor, and s=\$54.53; t is the time for the clerical worker to edit, print out, photocopy, and mail the revised plan (noted above in footnote b); u is the hourly wage rate for a clerical worker, and u=\$20.18.

^d First year burden costs annualized = first year burden costs x 0.07, where 0.07 is the annualization factor.

After the underground coal operators have revised their evacuation plans to include a program in accordance with §75.1502, some operators would have their plans rejected by MSHA and therefore would need to re-revise their plan. On average, MSHA estimates that re-revising the mine evacuation plan would take a supervisor: 1 hour in a

mine employing fewer than 20 workers, 1.5 hours in a mine employing 20 to 500 workers, and 2 hours in mines employing more than 20 workers. In addition, on average, a clerical worker would spend 0.3 hours (18 minutes) to edit, print out, photocopy, and send the re-revised plan.

Table VII-8 shows underground coal operators' first year burden hours and related costs to re-revise the evacuation plan in accordance with §75.1502(a).

Table VII-8: First Year Burden Hours and Costs to Revise Rejected Mine Evacuation Plan

Mine Size by No. of Employees	Total No. of Mines ^a	Time to Revise Rejected Plan (in hrs.) ^b	First Year Burden Hours	Wage Rate (per hr.) ^c	First Year Burden Costs	First Year Burden Costs Annualized ^d
<20	13	1.3	17	\$46.60	\$812	\$57
20-500	20	1.8	35	\$48.81	\$1,726	\$121
>500	0.2	2.3	0	\$50.05	\$17	\$1
Total	33		53		\$2,555	\$179

^a Source: Table IV-8.

^b Time to revise rejected evacuation plan = $(r + 0.3)$, where r is the number of hours for a mine supervisor to revise a rejected evacuation plan, $r=1$ for mines employing fewer than 20 workers, $r=1.5$ for mines employing 20 to 500 workers, and $r=2$ for mines employing more than 500 workers. In addition, a clerical worker would take 0.3 hours to edit, print out, photocopy, and mail the revised plan.

^c Wage rate = $((r \times s) + (t \times u)) / (r + t)$, where r is the time for the supervisor to revise a rejected plan (noted above in footnote b), s is the hourly wage rate for a supervisor, and $s=\$54.53$; t is the time for the clerical worker to edit, print out, photocopy, and mail the revised plan (noted above in footnote b); u is the hourly wage rate for a clerical worker, and $u=\$20.18$.

^d First year burden costs annualized = first year burden costs x 0.07, where 0.07 is the annualization factor.

Furthermore, the operator must instruct all miners in the changes that were made to the evacuation plan. On average, MSHA estimates that to prepare the instruction a mine supervisor would take: 1 hour in mines employing fewer than 20 workers, 1.5 hours in mines employing 20 to 500 workers, and 2 hours in mines employing more than 500 workers. On average, the instruction would take 0.25 hours (15 minutes) per shift. The number of shifts is estimate to be: 1 shift in mines employing fewer than 20 workers, 2 shifts in mines employing 20 to 500 workers, and 3 shifts in mines employing more than 500 workers.

Table VII-9 shows underground coal operators first year burden hours and related costs to prepare and instruct miners concerning changes to the evacuation plan.

Table VII-9: First Year Burden Hours and Costs to Prepare and Give Instructions to Miners Concerning the Revised Evacuation Plan

Mine Size by No. of Employees	Total No. of Mines ^a	Time to Prepare & Give Instruction (in hrs.) ^b	First Year Burden Hours	Superv. Wage Rate (per hr.)	First Year Burden Costs	First Year Burden Costs Annualized ^c
<20	268	1.25	335	54.53	\$18,268	\$1,279
20-500	393	2.00	786	54.53	\$42,861	\$3,000
>500	3	2.75	8	54.53	\$450	\$31
Total	664		1,129		\$61,578	\$4,310

^a Source: Table IV-9.

^b Time for mine supervisor to prepare and give instruction = $(h + (0.25 \times s))$, where h is the number of hours to prepare the instruction, and $h=1$ for mines employing fewer than 20 workers, $h=1.5$ for mines employing 20 to 500 workers, and $h=2$ for mines employing more than 500 workers; 0.25 is the number of hours of instruction per shift; and s is the number of shifts, and $s=1$ for mines employing fewer than 20 workers, $s=2$ for mines employing 20 to 500 workers, and $s=3$ for mines employing more than 500 workers.

^c First year burden costs annualized = first year burden costs x 0.07, where 0.07 is the annualization factor.

Mine operators that have their evacuation plans rejected must re-instruct miners concerning such re-revised plans. On average, MSHA estimates that to prepare to re-instruct the mine supervisor would take: 0.5 hour in mines employing fewer than 20 workers, 0.75 hours in mines employing 20 to 500 workers, and 1 hour in mines employing more than 500 workers. On average, the re-instruction would take 0.1 hours (6 minutes) per shift. The number of shifts is estimate to be: 1 shift in mines employing fewer than 20 workers, 2 shifts in mines employing 20 to 500 workers, and 3 shifts in mines employing more than 500 workers.

Table VII-10 shows underground coal operators' first year burden hours and related costs to re-prepare and re-instruct miners concerning changes to the evacuation plan.

Table VII-10: First Year Burden Hours and Costs to Re-prepare and Re-give Instructions to Miners Concerning the Revised Evacuation Plan

Mine Size by No. of Employees	No. of Mines With Rejected Plans ^a	Time to Re-prepare & Re-give Instruction (in hrs.) ^b	First Year Burden Hours	Superv. Wage Rate (per hr.)	First Year Burden Costs	First Year Burden Costs Annualized ^c
<20	13	0.6	8	54.53	\$438	\$31
20-500	20	1.0	19	54.53	\$1,018	\$71
>500	0	1.3	0	54.53	\$11	\$1
Total	33		27		\$1,467	\$103

^a Source: Table IV-10.

^b Time for mine supervisor to prepare and give instruction = $(h + (0.1 \times s))$, where r is the number of hours to prepare the instruction, and $h=0.5$ for mines employing fewer than 20 workers, $h=0.75$ for mines employing 20 to 500 workers, and $h=1$ for mines employing more than 500 workers; 0.25 is the number of hours of instruction per shift; and s is the number of shifts, and $s=1$ for mines employing fewer than 20 workers, $s=2$ for mines employing 20 to 500 workers, and $s=3$ for mines employing more than 500 workers.

^c First year burden costs annualized = first year burden costs x 0.07, where 0.07 is the annualization factor.

Proposed §48.8(b)(4) Burden Hours and Costs to Revise Part 48 Training Plans

The annual refresher training program for all miners under §48.8 shall be revised to include the review of the procedures for maintaining and controlling ventilation, and review of the roof or ground controls plans and emergency evacuation and firefighting plans in effect at the mine. On average, MSHA estimates that to revise a part 48 plan would take a mine supervisor: 0.5 hours (30 minutes) in mines employing fewer than 20 workers; 0.75 hours (45 minutes) in mines employing 20 to 500 workers, and 1 hour in mines employing more than 500 workers. In addition, on average, it would take a clerical worker 0.5 hours (30 minutes) to edit, printout, photocopy, and mail the revised part 48 plan

Table VII-11 shows underground coal operators' first year burden hours and related costs to revise part 48 training plans.

Table VII-11: First Year Burden Hours and Costs to Revise Part 48 Training Plans

Mine Size by No. of Employees	Total No. of Mines ^a	Time to Revise Part 48 Plan (in hrs.) ^b	First Year Burden Hours	Superv. Wage Rate (per hr.)	First Year Burden Costs	First Year Burden Costs Annualized ^c
<20	268	1	268	\$37.36	\$10,011	\$701
20-500	393	1.25	491	\$40.79	\$20,038	\$1,403
>500	3	1.5	5	\$43.08	\$194	\$14
Total	664		764		\$30,243	\$2,117

^a Source: Table IV-11.

^b Time for mine supervisor to revise part 48 training plan = (h + 0.5), where h is the number of hours to revise the part 48 training plan, and h=0.5 for mines employing fewer than 20 workers, h=0.75 for mines employing 20 to 500 workers, and h=1 for mines employing more than 500 workers; and 0.5 is the number of hours for a clerical worker to edit, print out, photocopy, and mail revised part 48 plan.

^c First year burden costs annualized = first year burden costs x 0.07, where 0.07 is the annualization factor.

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