REGULATORY ECONOMIC ANALYSIS

AND

REGULATORY FLEXIBILITY ANALYSIS

FINAL RULE UNDER 30 CFR
REVISED PART 57.5066(b)(1), (b)(2) AND
REVISED PART 57.5067

FINAL STANDARDS AND REGULATIONS

DIESEL PARTICULATE MATTER EXPOSURE

OF UNDERGROUND METAL AND NONMETAL MINERS

RIN: 1219-AB28

Office of Standards, Regulations, and Variances

Mine Safety and Health Administration

United States Department of Labor

October 2001

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I. EXECUTIVE SUMMARY

INTRODUCTION

This final rule revises two provisions of MSHA's final rule addressing "Diesel Particulate Matter Exposure of Underground Metal and Nonmetal Miners," published in the Federal Register on January 19, 2001 and hereafter referred to as the "January 19, 2001 final rule."[1] The first provision, § 57.5066, concerns the tagging of diesel powered equipment. The second provision, § 57.5067, concerns the meaning of the word "introduced" as it pertains to diesel engines being introduced into an underground area of a metal or nonmetal (M/NM) mine.

The January 19, 2001 final rule establishes new health standards for underground mine operators that use diesel powered equipment. The rule will reduce exposures of miners in underground MNM mines to diesel particulate matter (DPM). Of all groups in the U.S. work force and population at large, underground miners have by far the highest levels of DPM exposure. MSHA field studies indicate that median DPM concentrations observed for underground miners range up to 200 times as high as average environmental exposures in the most heavily polluted urban areas and up to 10 times as high as median exposures estimated for the most heavily exposed workers in other occupational groups. The January 19, 2001 final rule is designed to reduce DPM exposures in underground M/NM mines to levels similar to the highest exposure levels found in other occupational groups. These reduced DPM exposure levels will result in reductions in significant health risks of illness and premature death for underground miners.

Section 101 of the Federal Mine Safety and Health Act of 1977 provides the authority for this rulemaking. Executive Order 12866 requires that regulatory agencies complete a Regulatory Economic Analysis (REA) for any rule having major economic consequences for the national economy, an individual industry, a geographic region, or a level of government. The Regulatory Flexibility Act (RFA) similarly requires regulatory agencies to consider the impact of the rule on small entities. This Regulatory Economic Analysis (REA) has been prepared to fulfill the requirements of Executive Order 12866 and the RFA concerning revised § 57.5066(b)(1) and (b)(2), and revised § 57.5067 to add paragraph (b)(3).

SCOPE: MINING SECTORS AFFECTED BY THE RULE

Similar to the January 19, 2001 final rule, this DPM final rule applies only to underground M/NM mines that use diesel powered equipment. Thus, the rule applies only to a portion of all M/NM mines. MSHA data indicate that there are 196 mines affected by this rule, or 74 percent of all underground M/NM mines. Underground M/NM mines account for 2.3 percent of all M/NM mines and 8.7 percent of all M/NM miners. Of the mines affected by the rule, 7 are large by SBA's definition (more than 500 employees), 77 are small by MSHA's

[1] On March 15, 2001 (66 FR 15033) the effective date of the final rule was extended to May 21, 2001. On May 21, 2001, the effective date was further extended until July 5, 2001 (66 FR 27863). On July 5, 2001, the effective date of § 57.5066(b) was delayed (66FR 35518).

definition (fewer than 20 employees), and the other 112 are small by SBA's definition and large by MSHA's definition. Further discussion of mining sectors affected by this final rule is provided in Chapter II of this Regulatory Economic Analysis (REA).

BENEFITS

In Chapter III of the Regulatory Economic Analysis (REA) in support of the January 19, 2001 final rule, the Agency demonstrated that the rule will reduce a significant health risk to miners working in underground M/NM mines. This risk included the potential for illnesses and premature death, as well as the attendant costs of the risk to the miners' families, to the miners' employers, and to society at large.

Benefits of the January 19, 2001 final rule included reductions in lung cancers. In the long run, as the mining population turns over, MSHA estimated that a minimum of 8.5 lung cancer deaths will be avoided per year as a result of the rule. MSHA noted that this estimate was a lower bound figure that could significantly underestimate the magnitude of the health benefits. For example the estimate based on the mean value of all the studies examined in the January 19, 2001 final rule was 49 lung cancer deaths avoided per year.

Other benefits noted in the REA in support of the January 19, 2001 final rule were reductions in the risk of death from cardiovascular, cardiopulmonary, or respiratory causes and reductions in the risk of sensory irritation and respiratory symptoms. However, MSHA did not include these health benefits in its estimates because the Agency could not make reliable or precise quantitative estimates of them. Nevertheless, the Agency noted that the expected reductions in the risk of death from cardiovascular, cardiopulmonary, or respiratory causes and the expected reductions in the risk of sensory irritation and respiratory symptoms are likely to be substantial.

The revised provisions in this final rule will assist mine operators to comply with the January 19, 2001 final rule. By improving compliance with the January 19, 2001 final rule, this final rule will contribute to the realization of the benefits mentioned above.

COMPLIANCE COSTS

The costs in this REA, which are shown in Chapter IV, were taken directly from the REA in support of the January 19, 2001 final rule. They are repeated in this REA in order to give a detailed account of the revised provisions as they were discussed in the REA in support of the January 19, 2001 final rule. Since the costs in this REA have already been accounted for in the REA supporting the January 19, 2001 final rule, this REA introduces no new or additional costs. Therefore, there are no costs associated with the revised provisions.

EXECUTIVE ORDER 12866 AND THE REGULATORY FLEXIBILITY ACT

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

The Regulatory Flexibility Act (RFA) requires regulatory agencies to consider a rule's economic impact on small entities. Under the RFA, MSHA must use the Small Business Administration's (SBA's) criterion for a small entity in determining a rule's economic impact unless, after consultation with the SBA Office of Advocacy, MSHA establishes an alternative definition for a small mine and publishes that definition in the Federal Register for notice and comment. For the mining industry, SBA defines "small" as a mine with 500 or fewer workers. MSHA traditionally has considered small mines to be those with fewer than 20 workers. To ensure that the final rule conforms with the RFA, MSHA has analyzed the economic impact of the final rule on mines with 500 or fewer workers (as well as on those with fewer than 20 workers). The economic impact of this rule's revised provisions on small entities has already been accounted for in the REA supporting the January 19, 2001 final rule; this REA introduces no additional burdens. Therefore, in accordance with section 605 of the RFA, MSHA certifies that this final rule does not have a significant economic impact on a substantial number of small entities.

II. INDUSTRY PROFILE

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

THE STRUCTURE OF THE METAL/NONMETAL MINING INDUSTRY

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

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

Table II-1 presents the total number of small and large mines and the corresponding number of miners, excluding contractors, for the M/NM mining segment. The M/NM mining segment consists of metal mines (copper, iron ore, gold, silver, etc.) and nonmetal mines (stone including granite, limestone, dolomite, sandstone, slate, and marble; sand and gravel; and others such as clays, potash, soda ash, salt, talc, and pyrophyllite). As Table II-1 indicates, 98 percent of all M/NM mines are surface mines, and these mines employ some 90 percent of all M/NM miners, excluding office workers. Table II-2 presents corresponding data on the number of independent contractors and their employees working in the M/NM mining segment.

TABLE II-1: Distribution of M/NM Mine Operations and Employment (Excluding Contractors) by Mine Type and Size[a]

Size of M/NM Mine[b]		Mine Type			
		Underground	Surface	Office Workers	Total M/NM
Fewer Than 20 Employees	Mines	134	9,635	-	9,769
	Employees	1,054	54,356	9,160	64,570
20 to 500 Employees	Mines	124	1,419	-	1,543
	Employees	11,299	79,675	15,040	106,014
Over 500 Employees	Mines	7	18	-	25
	Employees	4,594	16,836	3,543	24,973
All M/NM Mines	Mines	265	11,072	-	11,337
	Employees	16,947	150,867	27,743	195,557

[a] Source: U.S. Department of Labor, Mine Safety and Health Administration, Office of Standards, Regulations, and Variances based on 1998 MS data, CM441/CM935LA cycle 1998/198. Data for total office workers from Mine Injury and Worktime Quarterly (1997 Closeout Edition) Table 2, p. 6.

[b] Based on MSHA's traditional definition, large mines include all mines with 20 or more employees. Based on SBA's definition, as required by SBREFA, large mines include only mines with over 500 employees.

TABLE II-2: Distribution of M/NM Contractors and Contractor Employment by Size of Operation[a]

Size of Contractor[b]		Contractors			
		Underground	Surface	Office Workers	Total
Fewer Than 20 Employees	Mines	399	2,783	-	3,182
	Employees	1,717	14,155	649	16,521
20 to 500 Employees	Mines	36	349	-	384
	Employees	1,639	17,979	802	20,420
Over 500 Employees	Mines	-	3	-	3
	Employees	-	2,560	105	2,665
Total Contractors	Mines	434	3 135	-	3,569
	Employees	3,356	34,694	1,556	39,606

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

[b] Based on MSHA's traditional definition, large mines include all mines with 20 or more employees. Based on SBA's definition, as required by SBREFA, large mines include only mines with over 500 employees.

The M/NM mining sector consists of about 80 different commodities including industrial minerals. There were 11,337 M/NM mines in the U.S. in 1998, of which 9,769 (86%) were small mines and 1,568 (14%) were large mines, using MSHA's traditional definition of small and large mines. Based on SBA's definition, however, only 25 M/NM mines (0.2%) were large mines.[2]

[2] U.S. Department of Labor, MSHA, 1998 Final MIS data CM441 cycle 1998/198.

The data in Table II-1 indicate that employment at M/NM mines in 1998 was 195,557, of which 64,570 workers (33%) were employed by small mines and 130,987 miners (67%) were employed by large mines, using MSHA's definition. Based on SBA's definition, however, 170,584 workers (87%) were employed by small mines and 24,973 workers (13%) were employed by large mines. Using MSHA's definition, the average employment is 7 workers at a small M/NM mine and 84 workers at a large M/NM mine.[3] Using SBA's definition, there are an average of 15 workers in each small M/NM mine and 888 workers in each large M/NM mine.

Metal Mining

There are about 24 metal commodities mined in the U.S. Underground metal mines use a few basic mining methods, such as room and pillar and block caving. The larger mines rely more heavily on hydraulic drills and track-mounted haulage, and the smaller underground metal mines rely more heavily on hand-held pneumatic drills.

Surface metal mines normally include drilling, blasting, and hauling; such processes are typical in all surface mines, irrespective of commodity types. Surface metal mines in the U.S. rank among some of the largest mines in the world.

Metal mines constitute 3 percent of all M/NM mines and employ 23 percent of all M/NM miners. Under MSHA's traditional definition of a small mine, 45 percent of metal mines are small, and these mines employ 2 percent of all miners working in metal mines. Using SBA's definition, 94 percent of metal mines are small, and they employ 53 percent of all miners working in metal mines.[4]

Stone Mining

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

Stone mines constitute 33 percent of all M/NM mines, and they employ 41 percent of all M/NM miners. Using MSHA's definition of a small mine, 71 percent of stone mines are small, and these mines employ 29 percent of all miners working in stone mines. Using SBA's definition, 99.9 percent of stone mines are small, and they employ 99 percent of all miners working in stone mines.[5]

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[3] U.S. Department of Labor, MSHA, 1998 Final MIS data CM441 cycle 1998/198.

[4] U.S. Department of Labor, Mine Safety and Health Administration, Office of Program Policy Evaluation, Mine Employment Size-Average Employment 1998.

[5] U.S. Department of Labor, Mine Safety and Health Administration, Office of Program Policy Evaluation, Mine Employment Size-Average Employment 1998.

Sand & Gravel Mining

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

The sand and gravel subsector represents the single largest commodity group in the U.S. mining industry when the number of mining operations is being considered. Sand and gravel mines comprise 57 percent of all M/NM mines, and they employ 22 percent of all M/NM miners. Using MSHA's definition of a small mine, 95 percent of sand and gravel mines are small, and these mines employ 76 percent of all miners working in sand and gravel mines. Using SBA's definition, almost 100 percent of sand and gravel mines are small, and they employ approximately 42,800 miners.[6]

Other Nonmetal Mining

For enforcement and statistical purposes, MSHA separates stone and sand and gravel mining from other nonmetal mining. There are about 35 other nonmetal commodities, not including stone, and sand and gravel. Nonmetal mining uses a wide variety of underground mining methods such as continuous mining (similar to coal mining), in-situ retorting, block caving, and room and pillar. The mining method is dependent on the geologic characteristics of the ore and host rock. Some nonmetal operations use kilns and dryers in ore processing. Ore crushing and milling are processes common to both nonmetal and metal mining.

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

"Other" nonmetal mines comprise 7 percent of all M/NM mines, and they employ 14 percent of all M/NM miners. Using MSHA's definition of a small mine, 66 percent of other nonmetal mines are small, and they employ 12 percent of all miners working in these nonmetal mines. Using SBA's definition, 99 percent of other nonmetal mines are small, and they employ 92 percent of all miners working in these nonmetal mines.[7]

[6] U.S. Department of Labor, Mine Safety and Health Administration, Office of Program Policy Evaluation, Mine Employment Size-Average Employment 1998.

[7] U.S. Department of Labor, Mine Safety and Health Administration, Office of Program Policy Evaluation, Mine Employment Size-Average Employment 1998.

ECONOMIC CHARACTERISTICS OF THE METAL/NONMETAL MINING INDUSTRY

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

The end uses of M/NM mining output are diverse. For example, iron and aluminum are used to produce vehicles and other heavy duty equipment, as well as consumer goods such as household equipment and soft drink cans. Other metals, such as uranium and titanium, have more limited uses. Nonmetals, like cement, are used in construction while salt is used as a food additive and for road deicing in the winter. Soda ash, phosphate rock, and potash also have a wide variety of commercial uses. Stone and sand and gravel are used in numerous industries and extensively in the construction industry.

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

UNDERGROUND METAL/NONMETAL MINES THAT USE DIESEL POWERED EQUIPMENT

This Metal/Nonmetal Mine DPM Rule applies only to underground M/NM mines that use diesel powered equipment. Because most M/NM mines do not have the risk of explosion due to methane gas that is present in coal mines, the adoption of diesel power for equipment has been unimpeded. Thus the rule covers most underground M/NM mines. Most of the exceptions are small mines with fewer than 20 employees.

MSHA conducted a census of underground metal/non-metal mines to identify the number of diesel powered machines used in these mines. MSHA inspectors collected data from a total of 203 mines. They reported a total of 4,081 pieces of diesel equipment and 18,922 employees.

A few of the mines in the data base were designated as non-producing. In developing this industry profile, therefore MSHA consulted the district offices to determine which mines were not operating. MSHA then removed these mines from the data base. This adjustment reduced the number of underground M/NM mines to 196. These mines reported 3,998 pieces of diesel equipment and 18,702 employees.

[8] U.S. Department of Energy, Energy Information Administration, Annual Energy Review 1998, July 1999, pp. 3, 6, 142, 144, 158, and 160.

The adjusted data from this census, which are the basis for the analysis of this rule, are shown in Table II-3. Of the 196 mines, seven are large by SBA's definition (500 or more employees), and 77 are small by MSHA's definition (fewer than 20 employees). Overall, about 74 percent[9] of underground M/NM mines use diesel equipment, but the proportion declines as mine size decreases. Of mines with 20 to 499 employees, 90 percent use diesel equipment, but only 57 percent of mines with fewer than 20 employees do.

TABLE II-3: Underground Metal/Nonmetal Mines and Miners Using Diesel Powered Equipment, by Mine Size Class

	Size of Mine					
	Fewer Than 20 Miners		20 to 500 Miners		More Than 500 Miners	
	Mines	Miners	Mines	Miners	Mines	Miners
Number	77	811	112	11,360	7	6,531
Percentage of All Underground M/NM Mines and Miners[b] in Size Class	57%	77%	90%	[a]	100%	[a]
Percentage of All Underground M/NM Mines and Miners With Diesel Equipment	39%	4%	57%	61%	4%	35%

[a] MSHA's census data indicate more mines and miners in this size class than does MSHA's industry database.

[b] Data on all underground M/NM mines taken from Table II-1.

Table II-4 shows the number and size distribution of underground M/NM mines for different commodity groups.[10] These groupings differ according to the way the commodity lies

[9] Since the data for all underground M/NM mines and underground M/NM mines using diesel equipment came from different sources, these percentages may not be completely accurate. Nevertheless the differences in data sources should make little difference for comparisons between mine size classes.

[10] These groups closely approximate those suggested by Head in his comments on the 1998 DPM proposed rule. (See H. John Head, "Review of Economic and Technical Feasibility of Compliance Issues Related to: Department of Labor – MSHA 30 CFR Part 57 – 1998 Proposed Rule for Diesel Particulate Matter Exposure of Underground Metal and Nonmetal Miners," report prepared under contract with the National Mining Association, July 21, 1999.)

in the ground and in the mining techniques used. The size distribution of mines reflects these underlying differences:

- Stone mines[11] have a broad size distribution, although a majority of underground stone mines (56 percent) have fewer than 20 employees.

- Precious metals mines[12] also have a broad size distribution, but fewer (only one third) have fewer than 20 employees.

- Other metals mines[13] tend to be relatively large. Only about one in eight underground base metal mines has fewer than 20 employees.

- Evaporates mines[14] as a class are the largest of all. None of this group has fewer than 20 employees.

- Other mines[15] are extremely small; all but one have fewer than 20 employees.

[11] This group includes granite, lime, limestone, marble, and sandstone mines.

[12] This group includes gold, platinum, and silver.

[13] This group includes copper, iron ore, lead/zinc, molybdenum, uranium, and zinc.

[14] This group includes gypsum, potash, salt, and trona.

[15] This group includes borate, calcite, clay, gemstones, perlite, sand (industrial), shale, and talc.

TABLE II-4: Underground Metal/Non-Metal Mines Using Diesel Powered Equipment by Commodity Group and Size Class

Commodity Group	Size of Mine			Total
	Fewer Than 20 Miners	20 to 499 Miners	500 or More Miners	
Stone[a]	54	42	1	97
Precious Metals[b]	10	19	2	31
Other Metals[c]	4	25	2	31
Evaporates[d]	-	25	2	27
Other[e]	9	1	-	10
TOTAL	77	112	7	196

[a] Includes Granite (1), Lime (4), Limestone (84), Marble (7), and Sandstone (1).

[b] Includes Gold (28),Platinum (1), and Silver (2).

[c] Includes Copper (8), Iron Ore (1), Lead/Zinc (8), Molybdenum (2), Uranium (2), and Zinc (10).

[d] Includes Gypsum (6), Potash (3), Salt (12), and Trona (6).

[e] Includes Borate (1), Calcite (1), Clay (1), Gemstones (1), Perlite (1), Sand-Industrial (1), Shale (3), and Talc (1).

INVENTORY OF DIESEL POWERED EQUIPMENT

MSHA Census Data

For purposes of analysis of costs, diesel powered equipment in underground metal/non-metal mines is classified into two principal types:

- **Production Equipment.** Production equipment is characterized by relatively continuously operation under heavy engine load. Haul trucks, loaders, and jumbo drills are examples of production equipment. Production equipment uses diesel engines with a wide range of horsepower. Accordingly, for DPM control and costing purposes, MSHA has divided production engines into two size classes:
  - Greater than 150 horsepower, and
  - 150 horsepower or less.

- **Support Equipment.** Support equipment is characterized by intermittent (and typically infrequent) operation, usually under relatively light engine load. Types of support equipment include roof bolters, anfo trucks, water trucks, personnel transport, and maintenance vehicles.

Table II-5 summarizes diesel powered equipment by type of equipment category, mine size class, and commodity being mined.

TABLE II-5: Number of Diesel Engines in Underground M/NM Mines by Mine Size Class, Commodity Group, and Equipment Type

Commodity Group	Type/hp of Equipment	Size of Mine			Total
		< 20 Miners	20-499 Miners	≥ 500 Miners	
Stone	Product. >150 hp	234	358	16	608
	Product. ≤150 hp	26	40	1	67
	Support	237	321	23	581
	TOTAL	497	719	40	1,256
Gold	Product. >150 hp	4	125	48	177
	Product. ≤150 hp	12	110	51	173
	Support	8	223	161	392
	TOTAL	24	458	260	742
Base Metal	Product. >150 hp	14	257	30	301
	Product. ≤150 hp	4	71	49	124
	Support	25	416	138	579
	TOTAL	43	744	217	1,004
Evaporates	Product. >150 hp	-	130	3	133
	Product. ≤150 hp	-	114	23	137
	Support	-	528	160	688
	TOTAL	-	772	186	958
Other	Product. >150 hp	11	-	-	11
	Product. ≤150 hp	7	15	-	22
	Support	2	-	-	2
	TOTAL	20	15	-	35
TOTAL	Product. >150 hp	263	870	97	1,230
	Product. ≤150 hp	49	350	124	523
	Support	272	1,491	482	2,245
	TOTAL	584	2,711	703	3,998

Production equipment with large diesel engines (over 150 hp) makes up 31 percent of diesel powered equipment in underground M/NM mines. Production equipment with large diesel engines is a larger proportion (45 percent of all diesel equipment) in mines with fewer than 20 employees and a smaller proportion (14 percent) in mines with over 500 employees. By commodity group, the largest proportions of diesel engines in large-engine production equipment are in stone (48 percent), and the smallest proportions are in evaporates (14 percent).

Production equipment with small diesel engines (150 hp or less) makes up 13 percent of diesel powered equipment in underground M/NM mines. The proportion of all diesel engines represented by these engines is smaller (8 percent) in mines with fewer than 20 employees and larger (18 percent) in mines with over 500 employees. By commodity group, production equipment with small diesel engines is the highest proportion of all diesel engines in other mines (63 percent) and gold mines (22 percent); they make up the smallest proportion in stone (5 percent).

Support equipment makes up a majority (56 percent) of all diesel powered equipment in underground M/NM mines. Support equipment is a smaller proportion (47 percent) of all diesel equipment in mines with fewer than 20 employees and a larger proportion (69 percent) in mines with over 500 employees. By commodity group, support equipment makes up the highest proportion of diesel equipment for evaporates (72 percent) and the smallest proportion for "other" (6 percent) and stone (46 percent).

Data from Comments on 1998 Proposed DPM Rule for M/NM Mines

Comments from the DPM rulemaking record included results from a survey of M/NM mines.[16] The results include an extrapolated industry estimate of 6,666 pieces of diesel powered equipment—two thirds more machines than found in MSHA's census. MSHA has reviewed Head's survey instrument and results and has concluded that the apparent discrepancy stems from differences in the questions asked and thus in the extent of coverage in the equipment. In particular:

- MSHA asked explicitly about the number of pieces equipment actually in use.
- Head asked a broader question that encompassed all of the diesel powered equipment in a mine.

Mines do not use all the diesel powered equipment that they possess on any given day. The difference between the equipment actually used to operate a mine and the total amount of equipment in a mine is accounted for by two classes of back-up equipment:

[16] H. John Head, "Review of Economic and Technical Feasibility of Compliance Issues Related to: Department of Labor – MSHA 30 CFR Part 57 – 1998 Proposed Rule for Diesel Particulate Matter Exposure of Underground Metal and Nonmetal Miners," report prepared under contract with the National Mining Association, July 21, 1999.

- Spare equipment represents a reserve that may be used if the front-line equipment breaks down or is out of service for planned major maintenance. Such equipment may be older and/or less productive than regularly used equipment, or it may be similar but simply not needed on any given production day. Spare equipment requires DPM emission controls only to the extent that it is actually used, and costs can be minimized by appropriate fleet management.

- Disused equipment is older equipment that will not be used in production. It may be used as collateral for loans, it may be a source of spare parts, or it may remain in a mine simply because nobody has bothered to remove it. Mine operators will not bother to put controls on disused equipment.

In order to estimate the proportion of spares that a mine is likely to need, MSHA reviewed and analyzed the ventilation plans of a sample of M/NM mines. This analysis suggested that a factor of about one third was a reasonable allowance for spares and that additional equipment was likely to be disused. Similar numbers are also obtained by a rough rule of thumb—splitting the difference between MSHA's count and Head's estimate. Thus MSHA's analysis of costs for the January 19, 2001 DPM final rule adopted the assumption that an additional 1,333 pieces of diesel equipment were operated as spares in underground M/NM mines, and that this spare equipment needed to be appropriately equipped with DPM controls.

III. BENEFITS

In Chapter III of the Regulatory Economic Analysis (REA) in support of the January 19, 2001 final rule, the Agency demonstrated that the DPM final rule for M/NM mines will reduce a significant health risk to underground miners. This risk included the potential for illnesses and premature death, as well as the attendant costs of the risk to the miners' families, to the miners' employers, and to society at large.

Benefits of the January 19, 2001 final rule included reductions in lung cancers. In the long run, as the mining population turns over, MSHA estimated that a minimum of 8.5 lung cancer deaths will be avoided per year. MSHA noted that this estimate was a lower bound figure that could significantly underestimate the magnitude of the health benefits. For example the estimate based on the mean value of all the studies examined in the January 19, 2001 final rule was 49 lung cancer deaths avoided per year.

Other benefits noted in the REA supporting the January 19, 2001 final rule were reductions in the risk of death from cardiovascular, cardiopulmonary, or respiratory causes and reductions in the risk of sensory irritation and respiratory symptoms. However, MSHA did not include these health benefits in its estimates because the Agency could not make reliable or precise quantitative estimates of them. Nevertheless, the Agency noted that the expected reductions in the risk of death from cardiovascular, cardiopulmonary, or respiratory causes and the expected reductions in the risk of sensory irritation and respiratory symptoms are likely to be substantial.

The clarifications of the provisions in this final rule will assist mine operators to comply with the January 19, 2001 final rule. By improving compliance with the January 19, 2001 final rule, this final rule will contribute to the realization of the benefits mentioned above.

IV. COMPLIANCE COSTS

This chapter estimates the cost to underground metal/non-metal mines of complying with this final rule. The costs in this chapter were taken directly from the REA in support of the January 19, 2001 final rule. They are repeated in this chapter in order to give a detailed account of these provisions as they were discussed in the REA supporting the January 19, 2001 final rule. Since the costs in this REA have already been accounted for in the REA in support of the January 19, 2001 final rule, this REA imposes no new or additional costs. Thus, there are no costs associated with this final rule.

REVISED 57.5067 - NEWLY INTRODUCED ENGINES

Section 57.5067 is revised to add paragraph (b)(3) which states that "the term 'introduced' does not include the transfer of engines or equipment from the inventory of one underground mine to another underground mine operated by the same mine operator."

Section 57.5067 is revised to clarify the January 19, 2001 final rule concerning Diesel Particulate Matter Exposure of Underground Metal and Nonmetal Miners (66 FR 5706). In the final Regulatory Economic Analysis in support of the January 19, 2001 final rule, MSHA's estimated compliance costs for § 57.5067 did not include a cost for a company to transfer equipment between mines. This is because § 57.5067 of the January 19, 2001 final rule states that the term "introduced" means any engine added to the underground inventory of engines of the mine in question… Mines that are sharing equipment would already have the shared equipment in their diesel powered equipment inventory. In the REA in support of the January 19, 2001 final rule the assumption was also made that mines would add any necessary diesel powered equipment from other mines to their inventory list before the January 19, 2001 final rule became effective (that is, within sixty days after the published date of that rule).

Section 57.5067 requires any diesel engine[17] that is introduced into an underground M/NM mine more than 60 days after publication of the rule to meet one of two requirements:

- It must be approved by MSHA pursuant to 30 CFR part 7, subpart E, or 30 CFR part 36; or
- It must meet or exceed the applicable EPA particulate emission requirements listed in the rule.[18]

[17] Following the precedent of MSHA's diesel equipment rule for coal mines, this rule excepts engines in ambulances and fire fighting equipment.

[18] These listed EPA standards include:

- Requirements of 40 CFR 86.094-8(a)(1)(i)(A)(2) for light duty on highway engines,
- Requirements of 40 CFR 86.094-11(a)(1)(iv)(B) for heavy duty on highway engines,
- Tier 1 requirements of 40 CFR 89.112(a) for nonroad engines, and

Factors Limiting Costs

The January 19, 2001 final rule represents a major change from the 1998 DPM proposed rule. The addition of a second option for complying with Section 57.5067 that was not in the proposed rule—meeting EPA standards listed in the rule—provides an important element of flexibility. Machines used in underground M/NM mines that are not specifically designed for mining are generally off-road machines designed for industries such as construction, or they are functional modifications of on-road vehicles. Thus virtually all new non-mine-specific diesel powered equipment and engines used in underground M/NM mines must already meet the listed EPA standards.

In addition, engine manufacturers are voluntarily seeking MSHA approval on an ongoing basis for engines used in M/NM mine equipment. They do so because an MSHA approved engine is perceived to have a competitive advantage in multiple markets. Coal mines and foreign sales are two examples where MSHA approval is required. Indeed, the mining equipment market is small enough that manufacturers that specialize in it have strong incentives to be able to sell to both coal and M/NM mines. To the extent that these MSHA approvals are voluntarily sought by engine manufacturers even without this rule, the costs are in the baseline—not impacts—of the January 19, 2001 final rule.

The January 19, 2001 final rule provides 60 days between publication and the effective date of the requirements of Section 57.5067. MSHA believes that this is sufficient time for mine operators to reallocate existing diesel powered equipment among mines if they choose to do so. Furthermore, since the listed EPA standards have been in effect since at least 1996, mine operators will be able to move most equipment with engines less than five years old from mine to mine without incurring regulatory costs. Accordingly, MSHA is not attributing any cost to engines in existing equipment that are "introduced" into an underground M/NM mine by being moved from another mine.

There is one temporary gap in the options available for meeting the requirements of Section 57.5067. The EPA Tier 2 standards for diesel engines in the 50 hp to 175 hp range will not be in effect until the year 2003. Thus for the first two years that Section 57.5067 is in effect, engines in new equipment will not be required to meet that standard. MSHA believes that most major engine manufacturers have already redesigned their engines to comply with the Tier 2 standard, as it has been known for several years. Although it is possible that there are some small manufacturers that have not already re-engineered for the EPA standards and have not had some of these engines approved by MSHA, any such manufacturers will be under enormous competitive pressure to bring their engines into compliance with at least one of these options.

MSHA reviewed the engines used in a sample of mine ventilation plans to assess the potential extent of costs. This review indicated that virtually all equipment had engines that were approved by MSHA, would have engines that met the listed EPA standards when a new version of the existing model was purchased, or were sufficiently generic that different equipment with

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- Tier 2 requirements in horsepower ranges where Tier 1 requirements are lacking.

engines that met one (or both) of these tests would be very good substitutes for the existing equipment. Only a very small handful of scalers and (possibly) drills might have engines that did not meet either test, MSHA concluded, and this situation would not continue past the effective date of the Tier 2 standards.

Unit Cost

There are two likely ways that equipment manufacturers could deal with engines in the horsepower range that does not have Tier 1 standards and for which Tier 2 standards are not yet in effect. They could get the engines approved by MSHA, or they could re-engineer the equipment to accommodate engines that are already MSHA approved. In the PREA for the January 19, 2001 final rule, MSHA assumed that manufacturers would obtain MSHA approval and pass the costs through to mine operators in the form of higher prices. MSHA estimated the cost for an MSHA approval to be $16,625, [19] and MSHA estimated the resulting price premium for a newly approved engine to be $2,500 per engine. In the REA for the Coal DPM rule, MSHA estimated a cost of $4,000[20] to reconfigure an equipment model to accommodate a different engine.

MSHA believes that the only plausible scenario under which a new scaler or drill would not have an engine that was MSHA approved or met the listed EPA standards would be a case where an individual mine operator—based on the circumstances of his mine—had a very strong preference for a new piece of equipment of the same model as existing equipment that did not have a compliant engine. Under such circumstances, it would be less expensive to modify the equipment than to obtain MSHA approval for the engine. If the re-engineering cost of $4,000 were spread over two machines, the cost to the mine operator would be similar to the $2,500 per machine estimate used in the PREA for the January 19, 2001 final rule. Accordingly, MSHA retains this per machine cost estimate.

Industry Costs

Because the circumstances where there would be any Section 57.5067 compliance costs to the mine operator are so unlikely and limited—although conceivable—MSHA estimates that not more than 5 equipment models would be reconfigured and the costs would be spread over 10 new engines/machines. Thus the total cost to mine operators of Section 57.5067 is estimated to be $25,000, all of which would occur as an initial cost. On an annualized basis (using a 7.0 percent annual discount rate over an infinite horizon), the estimated industry cost of Section 57.5067 is $1,750.[21]

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[19] This estimate for approval of a nonpermissible diesel engine was based on $14,000 for an independent testing laboratory to conduce a maximum fuel/air ratio test (required by existing Section 7.87), a gaseous ventilation test (required by existing Section 7.88), and a particulate index test (required by existing Section 7.89) plus 35 hours of engineer's time @ $75 per hour to prepare the application.

[20] This estimate was based on 80 hours of engineer's time @ $50 per hour for reconfiguration of the design.

[21] $1,750 = $25,000 x 0.07

REVISED 57.5066(b)(1) and (b)(2) – TAGGING AND EXAMINATION

Revised § 57.5066(b)(1) and (b)(2) are a clarification of those same provisions that are in the January 19, 2001 final rule concerning Diesel Particulate Matter Exposure of Underground Metal and Nonmetal Miners (66 FR 5706). In the final Regulatory Economic Analysis associated with that final rule, compliance costs were estimated for § 57.5066.

The compliance costs reported in this Regulatory Economic Analysis for § 57.5066 are the same as those estimated in the Regulatory Economic Analysis in support of the January 19, 2001 final rule. This final rule does not add any additional compliance costs for paragraphs (b)(1) and (b)(2) beyond that already imposed by the January 19, 2001 final rule and estimated in the supporting REA.

Section 57.5066(b) requires that operators of diesel powered equipment in underground M/NM mines affix a visible tag to the equipment at any time the miner notes any apparent emission-related defect in the equipment. The rule requires that a mechanic make a prompt examination of tagged equipment. Both the tagging and the subsequent examination must be recorded in a log. The miner must record the equipment tagged and the date it was tagged. The mechanic must record the date the tagged equipment was examined, by whom, and what actions were taken. Although not explicitly required by the rule, MSHA assumes for costing purposes that diesel powered equipment operators will be trained in identifying apparent emission-related defects in their equipment and in tagging and logging procedures.

Unit Cost

MSHA's estimate of costs of tagging of equipment, examination of equipment, and related operator training is based on the following assumptions:

- **Training.** Concerning training equipment operators for tagging:
  - Each mine will train one operator per machine per shift.[22]
  - Supervisors will conduct the operator training on location in the mine, utilizing a piece of diesel powered equipment for demonstration purposes.
  - MSHA assumes that (due to the hands-on nature of the training) no more than 12 operators will be trained in one session.
  - The training will take fifteen minutes.

[22] Based on the production hours per day cited above:

- Mines with fewer than 20 employees will train one operator per piece of diesel equipment;
- Mines with 20 to 500 employees will train two operators per piece of diesel equipment; and
- Mines with over 500 employees will train three operators per piece of diesel equipment.

- **Tagging of Equipment.** MSHA estimates that, for each incident of tagging a piece of diesel powered equipment, it will take the miner who operates the equipment:
  - Two minutes to tag the equipment, and
  - Two additional minutes to record the tagging.

- **Examination of Equipment.** MSHA estimates that, for each incident of tagging, it will take a mechanic:
  - Ten minutes to examine the equipment, and
  - Two additional minutes to record the examination.

- **Wage Rates.** Estimated hourly wage rates are:
  - $44.79 for a supervisor,
  - $19.42 for a miner, and
  - $25.00 for a mechanic.

These assumptions lead to the following estimates of unit costs of tagging diesel powered equipment:

- Costs of training operators on tagging will be:
  - $11.20 for a supervisor to conduct each training session, and
  - $4.86 for each miner/operator to take the training.

- Costs of tagging equipment, examining it, and recording it will be $6.29 per episode of tagging, consisting of:
  - $1.29 for the operator to tag the equipment and record the tagging, and
  - $5.00 for a mechanic to examine the equipment and record the examination.

Industry Costs

Training. Table IV-1 shows the distribution of underground M/NM mines of each size class (fewer than 20 employees, 20 to 500 employees, and over 500 employees) by the number of training sessions they will hold. Table IV-1 also shows the estimated number of miners operating diesel powered equipment to be trained. These estimates are derived from the distributions of pieces of diesel powered equipment in each mine and the number of shifts operated by the different sizes of mines. MSHA estimates that the underground M/NM mine industry will need to train 8,108 miners about tagging diesel powered equipment, and that this training will take 757 training sessions. Of these, 577 miners and 87 training sessions will be in mines that have fewer than 20 employees; 5,422 miners and 502 training sessions in mines that have 20 to 500 employees; and 2,109 miners and 168 training sessions in mines with over 500 employees.

Table IV-1 Numbers of Diesel Equipment Operator Trainees in M/NM Mines

Number of Training Sessions per Mine	Fewer Than 20 Employees		20 to 500 Employees		Over 500 Employees	
	Mines	Miners	Mines	Miners	Mines	Miners
1	67	420	6	50	-	-
2	10	157	18	382	-	-
3	-	-	31	936	-	-
4	-	-	19	784	-	-
5	-	-	11	584	-	-
6	-	-	6	414	-	-
7	-	-	8	626	-	-
8	-	-	3	272	-	-
9	-	-	1	98	-	-
10	-	-	1	112	2	240
11	-	-	2	254	-	-
12	-	-	3	410	-	-
13	-	-	2	292	-	-
17	-	-	1	198	-	-
23	-	-	-	-	1	276
24	-	-	-	-	1	282
32	-	-	-	-	1	381
34	-	-	-	-	1	399
45	-	-	-	-	1	531
TOTAL	77	577	112	5,422	7	2,109

Table IV-2 shows the estimated costs of training these miners. At the time of the training, these estimated costs are:

- $15,062 for 7 mines with over 500 employees;
- $39,509 for 112 mines with 20 to 500 employees; and

- $4,580 for 77 mines with fewer than 20 employees.

MSHA estimates that the formal training on tagging will need to be done only once. Thus the training is a one-time cost that needs to be annualized for comparability with other costs. The estimated yearly cost for the total industry for training about tagging is $4,142.

Table IV-2: Industry Costs of Equipment Tagging and Related Actions

Mine Size	Activity	Cost Element	Wage Rate	Hours	Number	Cost
Over 500	Training	Supervisor	$44.97	0.25	168	$ 1,881
		Miner	$19.42	0.25	2,109	$13,181
		Total	At Time of Training			$15,062
			Annualized Cost[a]			$ 1,054
	Tagging	Miner	$19.42	0.067	142	$ 184
		Mechanic	$25.00	0.2	142	$ 710
		Total				$ 894
	Total Yearly Cost					$ 1,948
20 to 500	Training	Supervisor	$44.97	0.25	502	$ 5,621
		Miner	$19.42	0.25	5,422	$33,888
		Total Cost	At Time of Training			$39,509
			Annualized Cost[a]			$ 2,766
	Tagging	Miner	$19.42	0.067	542	$ 702
		Mechanic	$25.00	0.2	542	$ 2,710
		Total				$ 3,412
	Total Yearly Cost					$ 6,178
Under 20	Training	Supervisor	$44.97	0.25	87	$ 974
		Miner	$19.42	0.25	577	$ 3,606
		Total Cost	At Time of Training			$ 4,580
			Annualized Cost[a]			$ 321
	Tagging	Miner	$19.42	0.067	230	$ 298
		Mechanic	$25.00	0.2	230	$ 1,150
		Total				$ 1,448
	Total Yearly Cost					$ 1,769
Total Industry Yearly Cost						$ 9,895

[a] The annualization factor is 0.07, which is equal to the annual discount rate.

Tagging. MSHA estimates that, on average, the annual number of taggings in underground M/NM mines with fewer than 20 employees will be the equivalent of 40 percent of diesel powered equipment in those mines. For larger mines, which generally have more extensive preventive maintenance programs, MSHA estimates that the average annual number of taggings will be the equivalent of 20 percent of diesel powered equipment in those mines. Thus the estimated annual number of taggings is 914, including:

- 142 in mines with over 500 employees;
- 542 in mines with 20 to 500 employees; and
- 230 in mines with fewer than 20 employees.

Table IV-20 also shows the estimated annual cost of tagging, which is estimated to be $5,754, including:

- $894 for tagging in mines with over 500 employees;
- $3,412 for tagging in mines with 20 to 500 employees; and
- $1,448 for tagging in mines with fewer than 20 employees.

Combining the annualized cost of training miners for tagging and the annual cost of tagging and examining equipment and recording these activities, MSHA's estimated total yearly industry cost of Section 57.5066(b) is $9,895.

TOTAL COSTS OF THE RULE

Table IV-3 shows the total estimated yearly compliance costs for M/NM mine operators which were developed in the REA in support of the January 19, 2001 final rule. As previously noted, however, since the costs in this chapter have already been accounted for in the REA supporting the January 19, 2001 final rule, this REA imposes no new or additional costs. Thus, there are no costs associated with this final rule.

TABLE IV-3: Total Yearly Compliance Costs for Mine Operators

Requirement	Total Yearly Industry Cost
Section 57.5067 (Newly Introduced Engines)[a]	$ 1,750
Section 57.5066(b) (Tagging and Examination)[b]	$ 9,895
TOTAL	$ 11,645

[a] Source: Footnote 21.

[b] Source: Table IV-2.

FEASIBILITY

In the REA that accompanied the January 19, 2001 final rule, the Agency considered the technological feasibility of the rule, including the revised provisions, for the segment of underground metal/nonmetal mines that use diesel-powered equipment. In that document, MSHA concluded that the requirements of the January 19, 2001 final rule were technologically feasible for underground metal/nonmetal mines that use diesel-powered equipment.

Since this final rule imposes no new or additional cost, the Agency concludes that the final rule is economically feasible for those underground metal/nonmetal mines covered by the final rule.

V. REGULATORY FLEXIBILITY CERTIFICATION

INTRODUCTION

In accordance with § 605 of the Regulatory Flexibility Act of 1980 as amended, MSHA has analyzed the impact of this final rule on small businesses. Further, MSHA has made a determination with respect to whether or not it can certify that the final rule will not have a significant economic impact on a substantial number of small entities that are affected by this rulemaking. Under the Small Business Regulatory Enforcement Fairness Act (SBREFA) amendments to the Regulatory Flexibility Act (RFA), MSHA must include a factual basis for this certification. If the final rule does have a significant economic impact on a substantial number of small entities, then the Agency must develop a proposed regulatory flexibility analysis.

DEFINITION OF A SMALL MINE

Under the RFA, in analyzing the impact of a rule on small entities, MSHA must use the Small Business Administration (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 in the mining industry as an establishment with 500 or fewer employees (13 CFR 121.201). Of the 196 underground M/NM mines that use diesel powered equipment and are therefore affected by this rulemaking, 189 (or all but 7) fall into this category and hence can be viewed as sharing the special regulatory concerns that the RFA was designed to address.

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

This analysis complies with the legal requirements of the RFA for an analysis of the impacts on "small entities" while continuing MSHA's traditional look at "small mines." MSHA concludes that the final rule would not have a significant economic impact on a substantial number of small entities, as defined by SBA.

SCREENING ANALYSIS

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

The compliance costs presented in this chapter were previously introduced in the REA in support of the January 19, 2001 final rule. As explained in Chapter IV of this REA, this final rule imposes no new or additional costs. Therefore, MSHA has concluded that this final rule will not have a significant economic impact on a substantial number of small entities that are covered by the rulemaking.

VI. OTHER REGULATORY CONSIDERATIONS

THE UNFUNDED MANDATES REFORM ACT

For purposes of the Unfunded Mandates Reform Act of 1995, the final rule does not include any Federal mandate that may result in increased expenditures by State, local, or tribal governments, or increased expenditures by the private sector of more than $100 million.

NATIONAL ENVIRONMENTAL POLICY ACT

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

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

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

EXECUTIVE ORDER 12988: CIVIL JUSTICE REFORM

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

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

In accordance with Executive Order 13045, MSHA has evaluated the environmental health and safety effects of the final rule on children. The Agency has determined that the rule will not have an adverse impact on children.

EXECUTIVE ORDER 13132: FEDERALISM

MSHA has reviewed the final rule in accordance with Executive Order 13132 regarding federalism and has determined that it does not have "federalism implications." The final rule does not "have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government."

EXECUTIVE ORDER 13175: CONSULTATION AND COORDINATION WITH INDIAN TRIBAL GOVERNMENTS

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

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

MSHA has reviewed the final rule in accordance with Executive Order 13211 and has determined that the two revised provisions do not significantly affect the supply, distribution, or use of energy.

VII. PAPERWORK REDUCTION ACT OF 1995

INTRODUCTION

The purpose of this chapter is to show the burden hours and related costs of the final rule that is borne by affected underground M/NM mine operators that use diesel powered equipment. The compliance costs derived in Chapter IV included paperwork and non-paperwork costs. However, this chapter shows only costs which relate to burden hours that are a result of the final rule.

All of the burden hours and related costs in this chapter were already included in Chapter VII of the REA in support of the January 19, 2001 final rule. This final rule would impose no new or additional burden hours or related costs. The burden hours and related costs associated with this final rule are repeated in this chapter in order to give a detailed account of the two provisions.

As explained in the REA in support of the January 19, 2001 final rule, there are no burden hours and related costs associated with revised § 57.5067. All burden hours and related costs in that REA are associated with revised § 57.5066.

DETAILS CONCERNING PAPERWORK BURDEN HOURS AND RELATED COSTS

For M/NM mine operators that use diesel powered equipment, most paperwork provisions concerns two types of burden hours. There are burden hours that will occur only in the first year the rule is in effect (hereafter known as first year burden hours). There are burden hours that will occur every year that the rule is in effect, starting with the first year, (hereafter known as annual burden hours).

Throughout this chapter the following hourly wage rates are used:

$44.79 for a mine supervisor;
$19.42 for a miner; and
$25 for a mine mechanic.

SUMMARY OF PAPERWORK BURDEN HOURS AND RELATED COSTS

With respect to § 57.5066, there are 189 first year burden hours, and $8,477 related first year burden costs. The annualized first year burden costs are $593. Annual burden hours for § 57.5066 total to 244 (61 + 183), and the related annual costs total to $5,753 ($1,183 + $4,570).

Section 57.5066(b)
Training of Miners by Mine Supervisor Regarding Tagging Procedures
First Year Burden Hours and Costs

Section 57.5066(b) requires that operators must tag diesel powered equipment at any time there is any apparent emission-related defect in the equipment. In order for machine operators to be able to tag the equipment, they will first need to receive training as to what problems will result in tagging the equipment. A mine supervisor will provide the training. It is estimated to take the mine supervisor 15 minutes (0.25 hours) for each training session. The number of estimated training sessions are: 87 in mines employing fewer than 20 workers, 502 in mines employing 20 to 500 workers, and 168 in mines employing more than 500 workers.

Table VII-1 shows first year burden hours and costs for the supervisor to hold training sessions related to tagging defected diesel powered equipment.

Table VII-1
57.5066 (b) Training of Miners by Mine Supervisor Regarding Tagging Procedure
First Year Burden Hours and Costs

Mine Size	Number of Training Sessions	Training (hours)	First Year Burden Hours	Superv. Wage (per hr.)	First Year Burden Cost	First Year Burden Cost Annualized[a]
X < 20	87	0.25	22	$44.79	$974	$68
20 ≤ X ≤ 500	502	0.25	126	$44.79	$5,621	$393
X > 500	168	0.25	42	$44.79	$1,881	$132
Total	757		189		$8,477	$593

[a] First Year Burden Cost x 0.07, where 0.07 is the annualization rate.

Section 57.5066(b)
Miner Tag Diesel Equipment and Record Tag
Annual Burden Hours and Costs

Each time there is an emission-related problem on a diesel powered machine the equipment must be tagged, and a record is made of the tag. Annually, MSHA estimates that, on average, in mines with fewer than 20 workers 40 percent of diesel powered equipment (230 machines) will be tagged. For larger mines, which generally have more extensive preventive maintenance programs, MSHA estimates that annually, on average, 20 percent of the diesel powered equipment will be tagged. Therefore, the number of diesel machines to be tagged annually will be 542 machines in mines employing 20 to 500 workers, and 142 machines in mines employing more than 500 workers. It is estimated to take 2 minutes to tag the machine and another 2 minutes to record the tagging, for a total of 4 minutes (0.067 hours).

Table VII-2 shows annual burden hours to tag diesel powered equipment concerning emission related problems.

Table VII-2
Section 57.5066 (b) Miners Tag Diesel Equipment and Record Tag
Annual Burden Hours and Costs

Mine Size Emp.	Number of Tags	Tag and Record (hrs.)[a]	Annual Burden Hours	Miner Wage (per hr.)	Annual Burden Cost
< 20	230	0.067	15	$19.42	$298
20 to 500	542	0.067	36	$19.42	$702
> 500	142	0.067	9	$19.42	$184
Total	914		61		$1,183

[a] 0.067 = 0.0333 (to tag the equipment) + 0.0333 (to record the tag)

Section 57.5066(b)
Examine Tagged Diesel Equipment and Record Examination
Annual Burden Hours and Costs

For each diesel machine that has been tagged an examination must be conducted concerning the tagged equipment, and a record must be made of the examination. As noted earlier, the number of machines to be tagged annually will be: 230 machines in mines employing fewer than 20 workers, 542 machines in mines employing 20 to 500 workers, and 142 machines in mines employing more than 500 workers. For each piece of equipment tagged, MSHA estimates that it will take 10 minutes to examine the machine and another 2 minutes to record the examination, for a total of 12 minutes (0.2 hours).

Table VII-3 shows annual burden hours and costs to examine tagged equipment and record the examination.

Table VII-3
Section 57.5066 (b) Examine Tagged Diesel Equipment and Record Examination Annual Burden Hours and Costs

Mine Size Emp.	Number of Tags	Examine and Record (hrs.)[a]	Annual Burden Hours	Mechanic Wage (per hr.)	Annual Burden Cost
< 20	230	0.20	46	$25.00	$1,150
20 to 500	542	0.20	108	$25.00	$2,710
> 500	142	0.20	28	$25.00	$710
Total	914		183		$4,570

[a] 0.20 = 0.167 (to examine the equipment) + 0.033 (to record the examination)

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