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Report to Congressional Requesters

September 2003

MINE SAFETY

MSHA Devotes Substantial Effort to Ensuring the Safety and Health of Coal Miners, but Its Programs Could Be Strengthened

GAO-03-945

September 2003

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Highlights

Highlights of GAO-03-945, a report to congressional requesters

MINE SAFETY

MSHA Devotes Substantial Effort to Ensuring the Safety and Health of Coal Miners, but Its Programs Could Be Strengthened

Why GAO Did This Study

Despite a drop in injury and fatality rates since the formation of the Department of Labor's Mine Safety and Health Administration (MSHA), mining is still a dangerous industry.

Focusing on underground coal mines, GAO assessed how well MSHA oversees its process for reviewing and approving critical types of mine plans and the extent to which MSHA's inspections and accident investigations processes help ensure the safety and health of underground coal miners.

What GAO Recommends

In order to provide better oversight over its operations, GAO recommends that the Assistant Secretary for Mine Safety and Health

- monitor the timeliness of technical inspections conducted as part of the 6-month review of certain mine plans,
- ensure that mine operators are correcting hazards identified during inspections in a timely manner,
- develop a plan for addressing anticipated shortages in the number of qualified inspectors due to upcoming retirements, and
- revise the systems used to collect information on accidents and investigations.

In its comments on the report, MSHA did not comment on our recommendations but disagreed with many of the findings on which the recommendations are based.

www.gao.gov/cgi-bin/getrpt?GAO-03-945.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Bob Robertson at (202) 512-9889, robertsonr@gao.gov.

What GAO Found

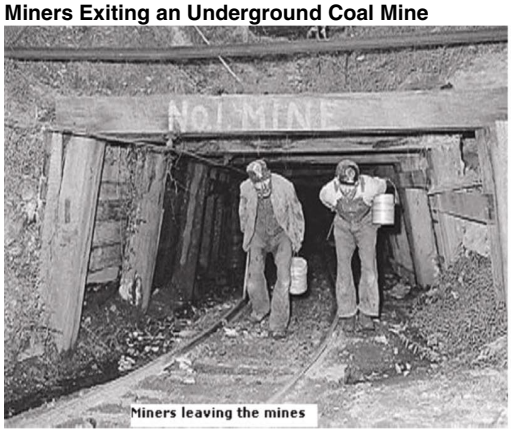
To help ensure the safety and health of underground coal miners, MSHA staff review and approve mine plans, conduct inspections, and investigate serious accidents. In these three areas, GAO found that MSHA has extensive procedures and qualified staff. However, MSHA can improve its oversight, guidance, and human capital planning efforts.

MSHA is not effectively monitoring a few key areas. MSHA headquarters does not ensure that 6-month technical inspections of ventilation and roof support plans are being completed in a timely fashion. This may lead to mines operating without up-to-date plans or mine operators not following all requirements of the plans. Additionally, MSHA officials do not always ensure that hazards found during inspections are corrected promptly. Gaps were found in the information that MSHA uses to monitor fatal and nonfatal injuries, limiting trend analysis and agency oversight. Specifically, the agency does not collect information on hours worked by independent contractor staff needed to compute fatality and nonfatal injury rates for specific mines, and it is difficult to link information on accidents at underground coal mines with MSHA's investigations.

Guidance provided by MSHA management to agency employees could be strengthened. Some inspection procedures are unclear and are contained in many sources, leading to differing interpretations by mine inspectors. The guidance on coordinating inspections conducted by specialists and regular inspectors is also unclear, resulting in some duplication of effort.

Finally, although about 44 percent of MSHA's underground coal mine inspectors will be eligible to retire in the next 5 years, the agency has no plan for replacing them or using other human capital flexibilities available to the agency to retain its highly qualified and trained inspectors. The potential shortage of inspectors may limit MSHA's ability to ensure the safety and health of underground coal miners.

Miners Exiting an Underground Coal Mine



Source: Mine Safety and Health 2000 calendar.

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Accountability * Integrity * Reliability

United States General Accounting Office
Washington, DC 20548

September 5, 2003

The Honorable Edward M. Kennedy
Ranking Minority Member
Committee on Health, Education, Labor,
and Pensions
United States Senate

The Honorable Arlen Specter
Chairman
The Honorable Tom Harkin
Ranking Minority Member
Subcommittee on Labor, Health and Human Services,
and Education
Committee on Appropriations
United States Senate

Last year at the Quecreek mine in Pennsylvania, a group of nine coal miners accidentally broke through to an abandoned mine not shown on their map and were trapped underground for 3 days. Although they were eventually rescued, this event and other more tragic mining accidents, including the explosion in 2001 at a mine in Alabama in which 13 miners were killed, serve as a reminder that the safety and health of the thousands of men and women who mine the coal in over 2,000 mines that is used to produce over half of the country's electricity must be protected. In passing the Federal Mine Safety and Health Act of 1977 (the "Mine Act"), Congress gave much of the responsibility for ensuring the safety and health of mine workers to the Department of Labor's Mine Safety and Health Administration (MSHA). Since that time, the nation's mines have become safer—in the past 25 years, both the number and the rate of deaths and nonfatal injuries have declined. However, despite these trends, mining remains a dangerous industry. Data collected by MSHA on serious injuries (those involving days away from work) indicate that mining, particularly underground coal mining, is one of the most dangerous industries in the United States.

Under the stringent requirements of the Mine Act, MSHA protects the health and safety of miners by inspecting each underground coal mine at least four times a year, citing mine operators for violations of the act or regulations, ensuring that hazards are quickly corrected, restricting operations or closing mines for serious violations, and investigating

serious mine accidents. In addition, MSHA must approve the initial plans that mine operators prepare for essential systems that protect mine workers—such as ventilation and roof support systems—and revisions to the plans. As part of its review of these plans, MSHA conducts technical inspections of the mines every 6 months to determine whether mine operators are following the plans and whether the plans have been updated. These technical inspections are conducted in addition to the comprehensive quarterly inspections[1] of each mine. MSHA's headquarters office is responsible for managing the operations of the agency and monitoring the activities of the 11 district offices responsible for protecting safety and health at coal mines nationwide. The district offices have day-to-day responsibility for reviewing and approving mine plans, conducting inspections, and investigating mine accidents. To carry out all of these responsibilities, MSHA received an appropriation for fiscal year 2003 of almost $273 million. This included funding for the approximately 350 inspectors who are responsible for inspecting underground and surface coal mines and investigating mine accidents and the 210 specialists who are responsible for reviewing and approving mine plans, conducting technical inspections of mine plans, and participating in investigations of mine accidents.

You asked us to provide you with information on MSHA's efforts by assessing (1) how well MSHA oversees its process for reviewing and approving three critical types of mine plans, (2) the extent to which MSHA's inspection process helps ensure the safety and health of mine workers, and (3) the extent to which MSHA uses its accident investigations process to improve the future safety and health of mine workers.

We reviewed MSHA's policies and procedures, interviewed agency officials, and analyzed data obtained from computer files and documents

[1]Although the Mine Act does not require MSHA to conduct these comprehensive inspections each quarter—it only requires four annual inspections—MSHA policy is to inspect each underground coal mine once each quarter, and many MSHA staff refer to them as quarterly inspections. MSHA also refers to these comprehensive inspections as "AAA" inspections because this is the code to which time spent on these inspections is charged.

at the agency's headquarters in Arlington, Virginia.[2] We also reviewed documents and interviewed officials at the National Mine Health and Safety Academy in Beckley, West Virginia (Mine Academy); the Pittsburgh Safety and Health Technology Center in Bruceton, Pennsylvania (Technology Center); and 5 of MSHA's 11 district offices. In order to include a review of the districts' accident investigations, we selected districts in which serious accidents had occurred in the past 5 years. We visited several underground coal mines and interviewed mine operators and workers at these mines. In addition, we obtained documents from and interviewed officials with industry associations, including the United Mine Workers of America and the National Mining Association. We conducted our work between November 2002 and July 2003 in accordance with generally accepted government auditing standards.

Results in Brief

Although MSHA devotes substantial effort to reviewing and approving mine plans, it does not provide adequate oversight of the plan approval process. MSHA has extensive procedures for approving mine plans and, for two of the three types of plans we reviewed—ventilation and roof support[3] plans—has assigned highly qualified staff to the review and approval process and approves plans submitted by mine operators on a timely basis. However, MSHA headquarters does not monitor completion of the 6-month technical inspections that district offices conduct in order to verify that mine operators are updating the plans as required and following all of the plans' requirements. As a result, some mines may be operating without adequate ventilation or roof support systems, which could directly affect the safety and health of mine workers. For example, data submitted by the district offices to MSHA headquarters indicate that 5 of the 11 districts had not completed technical inspections of the mines' ventilation plans during most quarters of the most recent 5-year period, including several quarters in which they had not completed over 50 percent of the inspections. MSHA headquarters also has not provided adequate oversight of district office operations by providing clear guidance on how to coordinate technical inspections with its quarterly

[2]Much of the data we analyzed was provided in a database assembled by MSHA at our request. MSHA provided information from several of its databases on the types of mines, the number of employees and hours worked, the number and types of accidents and injuries, and on the number and types of inspections, violations, and fines. Through interviews and electronic testing, we concluded that the database provided by MSHA was reliable for our work.

[3]MSHA refers to these plans as "roof control" plans.

inspections of mines. For example, in one of the district offices we visited, both the specialists who conduct technical inspections and regular inspectors spent several days inspecting ventilation systems in the district's mines during separate inspections. If they had coordinated these inspections, many hours of duplicate work could have been avoided. Finally, many of the plans for containing debris produced by mines are not approved on a timely basis because MSHA lacks qualified staff for reviewing and approving these complex plans. However, MSHA has recognized this problem and has developed a plan for hiring additional staff in order to eliminate delays.

MSHA has extensive procedures for conducting inspections of mines, highly trained and experienced staff, and conducts most annual mine inspections as required, but the extent to which the inspection process helps ensure the safety and health of mine workers is limited by several factors. First, although MSHA's procedures for inspecting underground coal mines are quite comprehensive, some of the procedures are unclear, resulting in inconsistent interpretations of the procedures by inspectors, and the procedures are dispersed throughout so many different sources that they are sometimes hard to find. For example, the definition of what constitutes a more serious safety and health violation—those classified as "significant and substantial"—is not clear, and inspectors often differ on which violations to categorize in this manner. Second, although MSHA conducts most quarterly inspections as required, MSHA headquarters does not provide adequate oversight to ensure that the district offices follow through on unsafe conditions identified during inspections, making sure that mine operators correct the conditions by the deadlines set by the inspectors. Using MSHA's inspections data, we found that, over the past 10 years, almost half of the violations for which MSHA inspectors issued citations, including almost half of the more serious violations, were not corrected by the required deadlines. Third, although MSHA has many well trained and experienced staff, it has no plan for addressing the fact that about 44 percent of its inspectors will be eligible to retire in the next 5 years. This is especially important because it takes at least 18 months of classroom and on-the-job training for new inspectors to meet the minimum requirements of the job. Finally, MSHA does not collect all of the information it needs to compute fatal and nonfatal injury rates in order to assess the effectiveness of its enforcement activities because the data it collects do not include information on contractor staff who work at each mine. Although the regulations require independent contractors to report injuries and the number of hours worked by their staff at specific mines, MSHA issued guidance in 1981 stating that the employment reporting requirement for certain independent contractors would be limited so that

they need only report information in the aggregate for all mines. Since that time, the percentage of contractor staff has increased from about 5 percent of all underground coal mine workers to about 18 percent, and the percentage of mine workers represented by contractor staff who incurred nonfatal injuries in underground coal mines increased steadily over the most recent 10-year period, 1993 to 2002.

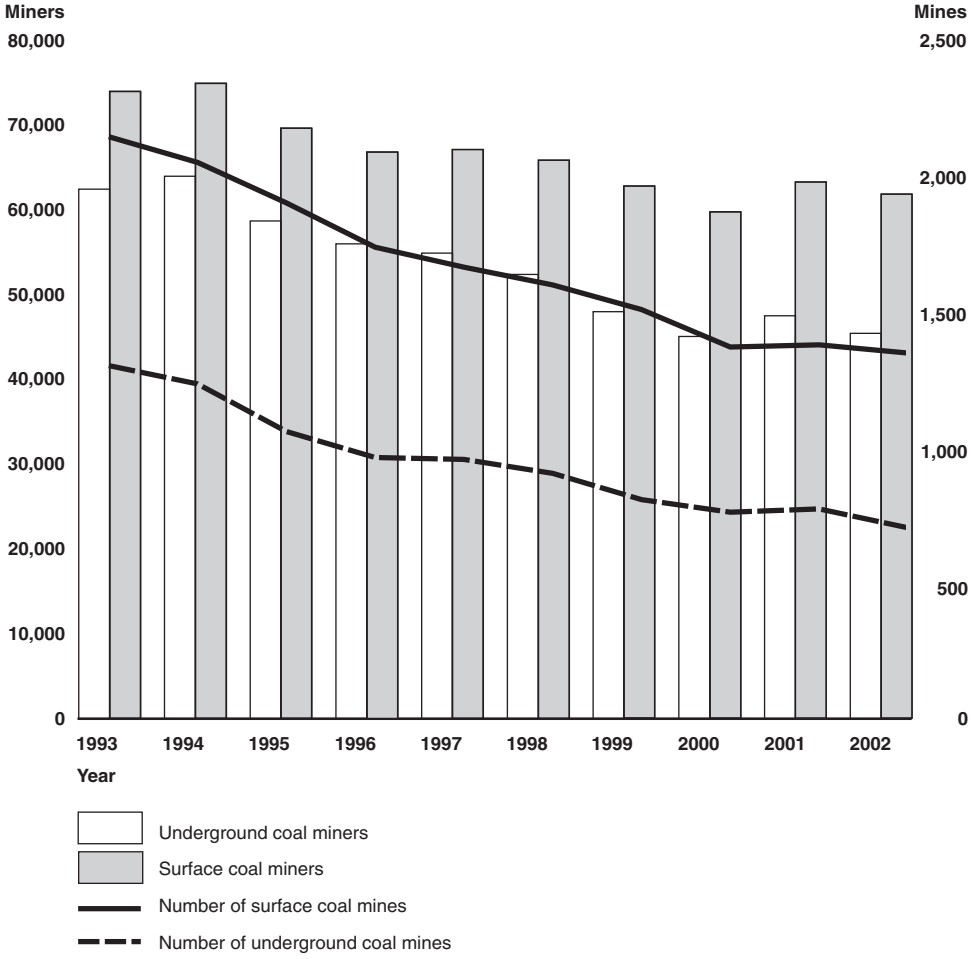
MSHA has a comprehensive process for conducting investigations of mine accidents, but it does not use the process to the fullest extent possible to improve the future safety and health of mine workers. MSHA has extensive procedures for conducting investigations, uses experienced and specially trained staff to conduct them, and monitors the quality of the investigations and resulting reports. However, weaknesses in the databases MSHA uses to track mine accidents and accident investigations limit its ability to monitor trends in mine hazards and ensure that all serious accidents are investigated. Specifically, it is difficult to associate injuries with specific accidents or investigations of these accidents, monitor trends in the types of hazards that cause injuries, or determine the extent to which districts are investigating accidents. For example, although MSHA can identify the total number of individuals who were injured by roof falls during a specific period, it cannot easily determine how many accidents were caused by roof falls during the period or how many of these roof falls were investigated, information that could help the agency in its efforts to prevent future accidents.

We are making recommendations to the Secretary of Labor to improve MSHA's ability to protect the safety and health of miners. These recommendations should help MSHA provide better oversight over its operations and use its resources more effectively by improving its mine plan review and approval, inspections, and accident investigation processes. In commenting on a draft of this report, MSHA officials did not comment on our recommendations but disagreed with the findings on which several of our recommendations are predicated. For example, MSHA disagreed with our findings regarding district offices' timely completion of technical inspections related to mine plans, the agency's lack of a plan for addressing the large number of inspectors eligible to retire in the next 5 years, and weaknesses in the databases used to track mine accidents and accident investigations. MSHA also provided a few technical comments and clarifications, which we incorporated in the report as appropriate. Our summary evaluation of the agency's comments is shown on pages 32 and 33. MSHA's comments and our detailed responses are provided in full in appendix III.

Background

As of the end of calendar year 2002, the United States had approximately 2,050 coal mines—about 700 underground coal mines and 1,350 surface mines. Over the past 10 years, the number of underground and surface coal mines in the United States has declined: from approximately 1,300 underground mines in 1993 to just over 700 mines in 2002, and from over 2,100 surface mines in 1993 to about 1,300 in 2002. Over that same period, the number of mine workers also decreased; from over 62,500 underground coal mine workers in 1993 to about 45,500 in 2002 and from over 74,000 surface coal miners in 1993 to about 62,000 in 2002. As shown in figure 1, the number of coal mines and mine workers declined from 1993 to 2002.

Figure 1: Number of Coal Mines and Mine Workers, 1993 to 2002



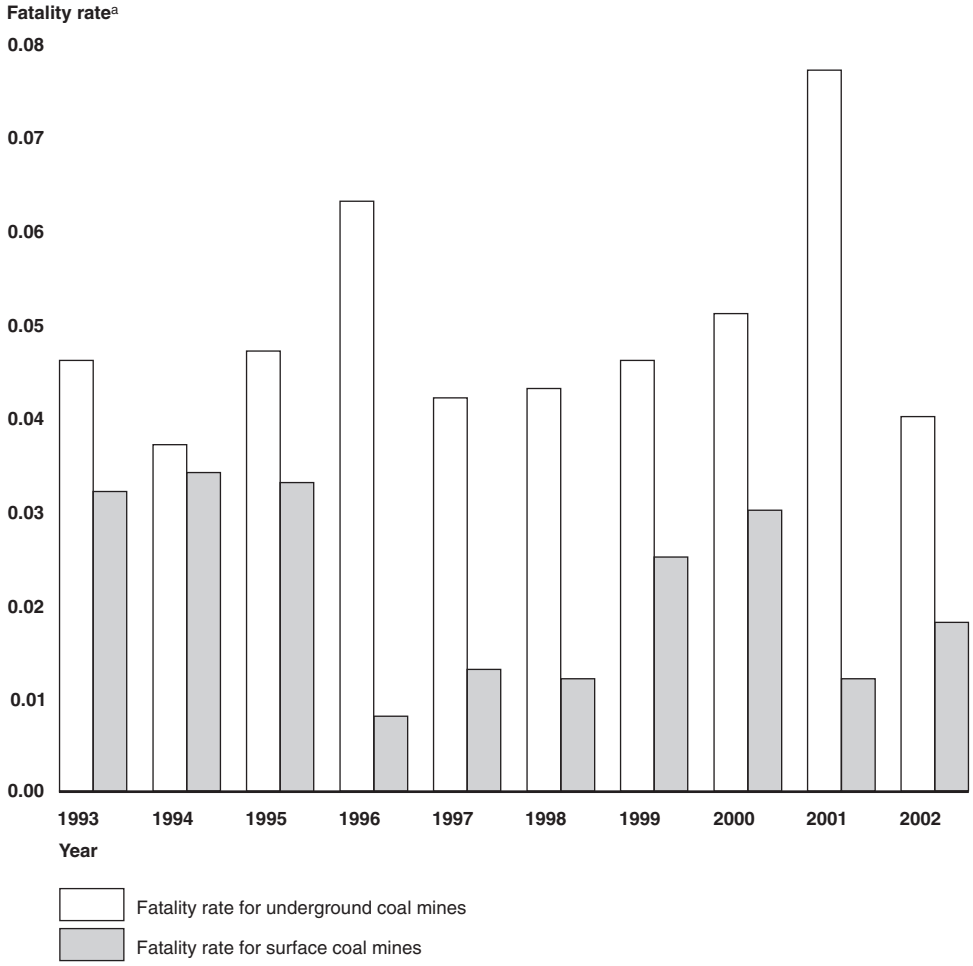
Source: GAO analysis of MSHA data.

These mines produced over 1 billion tons of coal in 2002, about one-third by underground mines. Despite the decrease in the number of mines and miners from 1993 to 2002, production has remained constant because of the increased use of mechanized mining equipment and more efficient mining techniques. In addition, over the past several decades, coal production has shifted from primarily underground mines to large surface mines, including mines in Wyoming and other areas west of the Mississippi that produce millions of tons of coal annually. The 20 largest coal companies account for 70 percent of all coal that is produced in the United States.

Some underground mines do not actively produce coal all year. Some mines are only operated seasonally because of local weather conditions, and mine operators often suspend operations at smaller, less cost-effective mines when the price of coal drops below a certain level. MSHA is required to inspect inactive mines as long as some miners are still working at the mine; however, these inspections generally take substantially less time than inspections of active mines.

Both the fatality rates and the nonfatal injury rates—the number of fatalities and injuries for every 200,000 hours worked—are higher for underground coal mines than surface mines. As shown in figure 2, our analysis of MSHA's data on fatalities for the 10-year period from 1993 to 2002 indicated that the fatality rates for underground coal mines were much higher than those for surface mines for this period.

Figure 2: Fatality Rates for Underground and Surface Coal Mines, 1993 to 2002

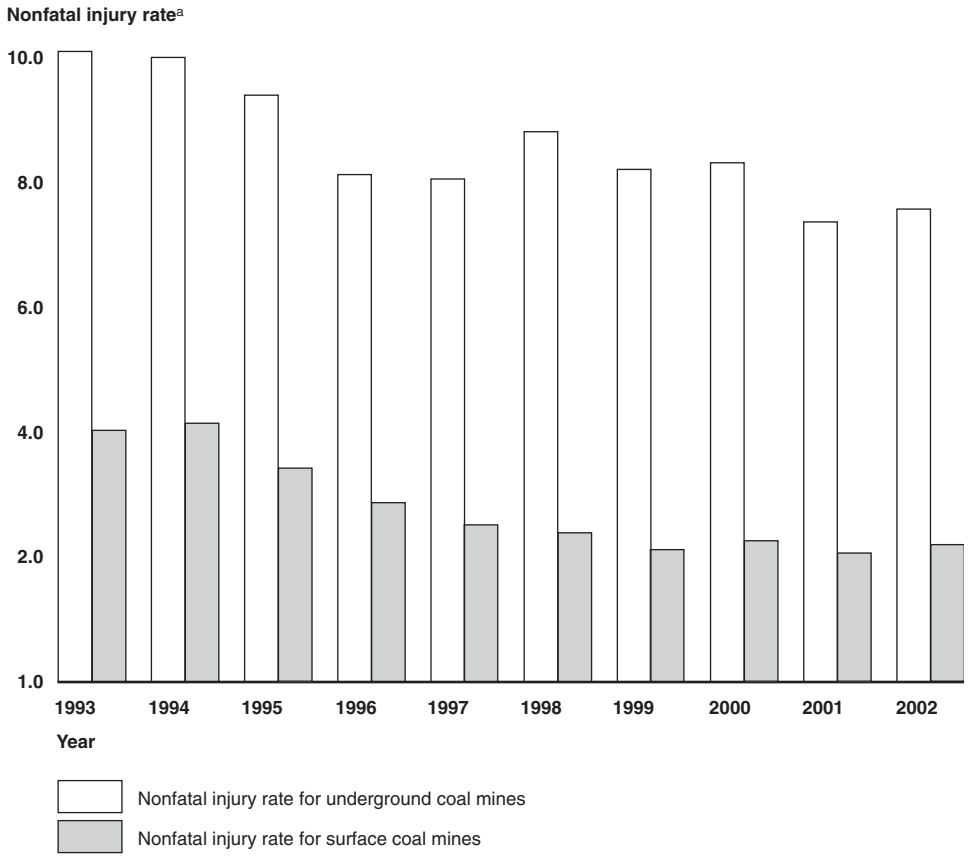


Source: GAO analysis of MSHA data.

[a]Number of fatalities for every 200,000 hours worked.

For 1993 to 2002, nonfatal injury rates for underground coal mines were higher than those for surface mines, as shown in figure 3.

Figure 3: Nonfatal Injury Rates for Underground and Surface Coal Mines, 1993 to 2002



Source: GAO analysis of MSHA data.

[a]Number of nonfatal injuries for every 200,000 hours worked.

A variety of factors contribute to underground coal mines being more dangerous than surface mines. One factor is that many underground coal mines are less than 40 inches high, requiring miners to kneel, crawl, or crouch in the mine throughout their work shifts. In some cases, the workspace is so small that the large machinery used to mine the coal takes up most of the space in the passageway, as shown in figure 4.

Figure 4: Miners Working in "Low Coal" (a Mine No More Than 40" High)

Source: MSHA.

Another critical factor that contributes to the hazardous working conditions is methane gas, which is highly explosive. It is often produced in large quantities when coal is extracted from underground mines. Additional factors are the geological conditions in many areas of the country that make the roofs of mines unstable, the danger posed by fire in an underground mine, coal and silica dust that can cause silicosis and pneumoconiosis (black lung disease), and the close proximity of unknown areas of abandoned mines, which can lead to flooding of the mine, as it did at the Quecreek mine last year.

MSHA's Coal Administration's headquarters is located in Arlington, Virginia, and 8 of its 11 district offices are located in the eastern United States near coal seams located in or near the Appalachian Mountains. As shown in table 1, as of May 2003, MSHA's 11 districts had a total of 1,017 staff who were responsible for protecting the safety and health of mine workers nationwide, including 283 inspectors and 200 specialists assigned specifically to underground coal mines. In addition to the district office staff, MSHA had 38 headquarters staff members assigned to coal mine safety and health, for a total of 1,055 staff.

Table 1: Number of Staff Assigned to Each District Office, May 31, 2003

	District office											
	One	**Two**	**Three**	**Four**	**Five**	**Six**	**Seven**	**Eight**	**Nine**	**Ten**	**Eleven**	**Total**
Managers	**7**	**16**	**16**	**24**	**18**	**18**	**17**	**11**	**14**	**12**	**7**	**160**
Underground inspectors	5	30	22	61	23	44	30	20	27	14	7	**283**
Underground specialists	8	21	19	31	21	14	33	14	15	11	13	**200**
Surface inspectors	7	10	6	9	7	11	10	2	5	2	2	**71**
Surface specialists	0	0	2	4	0	2	1	0	0	1	0	**10**
Trainees	0	0	8	5	11	7	5	2	1	0	5	**44**
Subtotal-enforcement staff	**20**	**61**	**57**	**110**	**62**	**78**	**79**	**38**	**48**	**28**	**27**	**608**
Technical staff	1	0	2	6	5	4	6	1	2	2	2	**31**
Enforcement support	1	2	3	9	2	3	2	2	1	0	0	**25**
Office support	4	15	13	24	14	16	17	10	3	6	3	**125**
Administrative support	3	5	3	5	5	6	5	5	14	3	4	**58**
Subtotal-non-enforcement	**9**	**22**	**21**	**44**	**26**	**29**	**30**	**18**	**20**	**11**	**9**	**239**
Other[a]	0	0	2	0	2	3	1	1	0	1	0	**10**
Total	**36**	**99**	**96**	**178**	**108**	**128**	**127**	**68**	**82**	**52**	**43**	**1,017**

Source: Monthly staffing report dated May 31, 2003, obtained from MSHA headquarters officials.

[a]"Other" includes students and part-time employees.

MSHA Devotes Substantial Effort to Approving Mine Plans, but Does Not Provide Adequate Oversight of the Approval Process

MSHA has extensive procedures and highly qualified staff for approving two of the three types of plans we reviewed—ventilation and roof support plans—and most of these plans are reviewed and approved on a timely basis. However, MSHA headquarters does not adequately monitor completion of 6-month technical inspections conducted as part of the districts' review of ventilation and roof support plans; data maintained by the district offices indicate that some districts are not completing these inspections in a timely manner. In addition, MSHA headquarters has not provided clear guidance to the districts on coordinating technical inspections related to mine plans with quarterly inspections of underground coal mines in order to avoid duplication of effort by district staff. Finally, staffing shortages have prevented MSHA from reviewing and approving plans for containing debris produced by the mines on a timely basis.

MSHA Has Extensive Procedures and Highly Qualified Staff for Approving Ventilation and Roof Support Plans

MSHA has extensive procedures for approving ventilation and roof support plans. The Mine Act and its implementing regulations contain many of the requirements for approving ventilation and roof support plans. Additional procedures are contained in MSHA's Program Policy Manual, ventilation and roof support plan approval procedures handbooks, and the standard operating procedures for each district office. These procedures provide specific steps for approving the ventilation and roof support plans submitted by mine operators to MSHA for approval. Mine operators are required to submit their initial ventilation and roof support plans to the MSHA district in which the mine is located for approval prior to operating a mine and are required to submit revised plans to the district whenever significant changes are made to the plans. The district managers are ultimately responsible for approving ventilation and roof support plans submitted to their districts. Generally, districts are required to approve ventilation and roof support plans within 45 days of receipt unless problems are found that must be resolved. In some of the districts we visited, state mine agencies were also required to approve the mine plans. See appendix I for additional information on MSHA's approval process for ventilation and roof support plans.

Specialists assigned to each district office to review and approve mine plans are generally highly trained and experienced. MSHA currently has 200 underground specialists assigned to its 11 district offices who review ventilation, roof support, and other types of mine plans. A majority of the specialists assigned to underground mines have at least 5 years of experience in mining and were former inspectors of underground coal mines. As such, they receive 25 weeks of underground coal mine inspector training at the Mine Academy as well as on-the-job training, which qualifies them to conduct inspections and write citations for safety and health violations. In addition, most specialists have several years of experience as inspectors before applying for specialist positions. Each specialist is also required to take a minimum of 2 weeks of training in mine safety and health, such as specialized training on ventilation or roof support systems, every 2 years.

Most district offices approve ventilation and roof support plans within the required 45-day period. District offices track the review and approval of ventilation and roof support plans, noting the date mine operators submit the plans to the district, the dates plans are assigned to specialists for review, and the dates the plans are approved. We reviewed this information for the most recent 5-year period, 1998 to 2002, and found that most districts approve these plans on a timely basis.

MSHA Does Not Ensure Districts Are Completing Technical Inspections of Mine Plans

MSHA headquarters does not adequately monitor completion of 6-month technical inspections of ventilation and roof support plans by the district offices. Districts conduct technical inspections of the ventilation and roof support plans at least once every 6 months in order to ensure that mine operators are updating the plans to reflect changes in the ventilation and roof support systems and following the requirements of the plans. The specialists who review the mine plans during the approval process also conduct many of these technical inspections.

Our analysis of the information submitted by the district offices to MSHA headquarters on the timeliness of 6-month technical inspections of mines' ventilation and roof support plans for the most recent 5-year period, 1998 to 2002, indicated that several districts had not completed the inspections as required by agency procedures.[4] The data showed that, although 6 of MSHA's 11 district offices completed the 6-month technical inspections of ventilation plans for most quarters of the 5-year period, 5 districts did not, and 2 districts did not complete these inspections during any quarter of the 5-year period.[5] In addition, our analysis of the data submitted by the district offices to MSHA headquarters on technical inspections related to roof support plans for the same period showed that 3 of the 11 districts had not completed these inspections during most quarters of the 5-year period.

As a result of districts not completing these 6-month technical inspections in a timely manner, some mines may be operating without adequate ventilation or roof support systems. Technical inspections of the mines' ventilation and roof support plans are essential in ensuring adequate airflow and controlling the accumulation of dust particles in underground

[4]We analyzed the timeliness of these inspections by reviewing reports prepared by the district offices from information in the databases they use to track the timeliness of the plan approval process and related technical inspections (the Mine Plan Approval System). Follow up telephone conversations with district officials indicated that, while some of the data showing districts had not completed their 6-month technical inspections were accurate, other data were not. The officials told us that, in some cases, the data in their systems were not current and that the technical inspections had been completed. Therefore, while we can confidently state that not every district is completing its 6-month technical inspections in a timely manner, the reports—and the underlying data on which they are based—do not enable us to give an exact statement of the degree to which they did not complete the inspections as required.

[5]Although district offices conduct technical inspections of the ventilation and roof support systems every 6 months, they conduct inspections throughout the year and collect and report data on the completion of these inspections for each quarter of the year.

coal mines and that the roofs are adequately supported. Inadequate ventilation systems or roof support systems can directly affect the safety and health of mine workers. For example, our review of MSHA's data on fatalities at underground coal mines from 1998 to 2002 showed that problems related to ventilation and roof support systems accounted for high proportions of fatalities in underground coal mines. For this 5-year period, ignitions or explosions from excessive gas or coal dust accounted for the third largest percentage of all fatalities, 14 percent, and roof falls accounted for the largest percentage, 34 percent.

Officials at MSHA headquarters initially were not aware that these inspections had not all been completed in a timely manner and contacted the district offices to find out why. We also contacted several districts and, according to district officials, all technical inspections related to the mines' ventilation and roof support plans had been conducted, but not all of the inspections were completed within the 6-month time frame. In addition, officials in the 5 districts in which the data indicated that technical inspections had not been completed in almost every quarter of the 5-year period we reviewed—districts 1, 2, 4, 9, and 10—told us that information in their databases was not accurate and that most inspections had been completed within the 6-month time frame. However, they were not able to explain why they had not corrected the information in their databases on completion of the 6-month technical inspections.

Headquarters officials told us that ensuring the timely completion of technical inspections would be included in one of the agency's new initiatives. As part of this initiative, which was started in June 2003, individuals from MSHA's Safety Division have been assigned to each one of the 11 district offices and given responsibility for monitoring the district's performance. These monitoring efforts include ensuring that the district is conducting all inspections, tracking trends in the number and rates of injuries and fatalities at the district's mines, and reviewing the number and types of safety and health violations cited. In addition, the Administrator for Coal Mine Safety and Health told us that MSHA plans to incorporate the databases the districts use to track the completion of 6-month technical inspections of ventilation and roof control plans into MSHA's overall data systems as part of its agencywide upgrade of MSHA's databases. This part of the upgrade is currently planned for 2006.

MSHA Has Not Provided Clear Guidance to Districts on Coordinating Inspections

MSHA headquarters has not provided clear guidance to its district offices on coordinating technical inspections of mine plans with quarterly inspections of underground coal mines in order to avoid duplication of effort by district staff. Specialists who conduct on-site technical inspections of underground coal mines related to mine plans often spend several days inspecting the mines' ventilation and roof support systems. For example, a ventilation specialist might spend several days walking through the 30 to 50 miles of airways at large mines to test whether an adequate amount of air is passing through the ventilation system and ensure that the passageways are not blocked. Inspectors are required to walk through these same airways during each quarterly inspection of the mine. They may, however, rely on the work of specialists who conduct the technical inspections, if the specialists coordinate their inspections with the inspectors and charge their time to the quarterly inspections. However, in 2 of the 5 districts we visited, we found that, in some instances, specialists and inspectors were duplicating each other's work, resulting in an inefficient use of MSHA's resources. In one of these districts, because district management prohibited specialists from charging their time to quarterly inspections, inspectors could not count the time spent by specialists examining certain areas of the mines that inspectors are required to examine as part of their quarterly inspections, such as ventilation systems. Therefore, in this district, inspectors were required to examine the same areas of the mines even when a specialist had recently examined them. If the district had allowed the specialists to coordinate with the inspectors and charge the time they spent examining these systems to the quarterly inspections as in other districts, the inspectors would not have been required to examine these same systems again during the quarterly inspection. District officials told us it was their understanding that MSHA's procedures prohibited them from charging specialists' time to quarterly inspections, although MSHA headquarters officials told us there was no such prohibition.

MSHA headquarters officials told us they have no procedures that require specialists to coordinate technical inspections with quarterly inspections in order to avoid duplication. They agreed that the policies and procedures governing whether specialists may charge their time to quarterly inspections are unclear and told us they plan to clarify the procedures soon. In the interim, MSHA headquarters issued a memorandum to the district offices in June 2003 encouraging them to better coordinate inspections by specialists and inspectors.

MSHA Does Not Approve Plans for Containing Mine Debris on a Timely Basis

MSHA is responsible for approving plans for containing mine debris, called impoundment plans.[6] Many of these plans are extremely complex and require highly qualified engineers who are familiar with technical areas such as dam building techniques, hydrology, and soil conditions. Failure of an impoundment can be devastating to nearby communities, which may be flooded with water and sludge, and to the environment, affecting streams and water supplies for years afterwards. Because of the potential for failure, such as the impoundment dam failure in 1972 in Buffalo Creek, West Virginia, in which 125 people were killed and 500 homes were destroyed,[7] MSHA is extremely careful about approving impoundment plans. MSHA has responsibility for approximately 600 coal impoundments.

All but one of MSHA's district offices send most of their mines' impoundment plans to the Mine Waste and Geotechnical Engineering Division of MSHA's Safety and Health Technology Center, which the agency established in 1973 to provide district offices with the technical expertise needed to review impoundment plans. District staff review and approve only plans that are less complex or contain only minor modifications of existing impoundments. The one district that reviews its own impoundment plans has a professional engineer with the qualifications and experience needed to review such plans. See appendix II for additional information on the process for reviewing and approving impoundment plans.

Many impoundment plans sent to the Technology Center are not approved on a timely basis because MSHA does not have an adequate number of technical staff needed to review these complex plans. The Technology Center has historically faced staffing shortages that affect its ability to approve impoundment plans on a timely basis. As a result, the backlog of impoundment plans has grown—it now takes MSHA 2 to 3 years to approve most plans and has taken as long as 5 years to approve some plans.[8] In an effort to address the growing backlog, MSHA developed an expedited process for reviewing and approving impoundment plans in

[6]MSHA refers to the large embankment dams built to contain debris produced by the mines (debris that consists mainly of water, rock, and coal) as "impoundments."

[7]The Bureau of Mines had responsibility for overseeing impoundments at the time of the Buffalo Creek disaster.

[8]These delays do not, for the most part, affect mines' operations because most plans submitted to MSHA for approval are for modifications to existing impoundments at mines that already have an impoundment in place.

order to avoid disruption of the mines' operations. This system, however, added time to the approval process for plans that were not part of the expedited process. In addition, because so many plans were expedited, a backlog of expedited plans developed. For example, the number of regular (not expedited) impoundment plans pending review almost doubled during the 3-year period from 1998 to 2001, from 124 plans to 245. In 2000, when the expedited system was implemented, there were 69 expedited plans pending review. By the following year, there were 148 expedited plans waiting to be reviewed. During this period, engineers who left the Technology Center were not always replaced because, according to MSHA officials, the agency has had difficulty attracting civil engineers and certified professional engineers at the salary levels offered.

MSHA conducted two reviews of its procedures for approving impoundment plans and has begun to take steps for improving the process. The most recent review identified several weaknesses in the procedures, including the need for the agency to develop guidance for determining which impoundment plans should receive expedited review as well as evaluating the staffing levels needed to ensure timely and complete review of the plans.[9] MSHA officials acknowledged that the delays in the review and approval of impoundment plans have been a problem for a number of years. However, the officials told us that they have recently taken a number of steps to alleviate these delays. First, they are in the process of hiring additional engineers for the Technology Center to review impoundment plans and provide assistance to staff in district offices. Second, to reduce the backlog of plans, the Administrator for Coal Mine Safety and Health sent a memorandum to all district managers in January 2003 encouraging them to hire specialists with experience in civil engineering and have them review less complex impoundment plans instead of sending them to the Technology Center for review. Finally, MSHA has formed a committee to rewrite the Impoundment Inspection Handbook, which the agency plans to issue in March 2004. According to MSHA headquarters officials, these new procedures will bring more uniformity to the review and inspection process and will eliminate a number of outdated and confusing procedures and policies. The committee is also tasked with developing a system for rating the complexity of impoundment plans. This rating system will establish

[9]In October 2000, the floor of an impoundment for a mine in Martin County, Kentucky, broke through sealed underground areas of the mine, causing a major coal waste spill in the surrounding community. Although the impoundment dam did not fail, this event prompted MSHA to review its processes for approving all impoundment plans.

criteria for districts to use in deciding which impoundment plans to review in the district and which ones to send to the Technology Center for review. Agency officials said they expect to have this rating system in place no later than March 2004.

MSHA Has Extensive Procedures, Highly Qualified Staff, and Conducts Most Quarterly Inspections as Required, but Its Inspection Process Could Be Improved

Although MSHA's procedures for conducting inspections of underground coal mines are comprehensive, its inspectors are highly qualified, and it conducts almost all quarterly inspections as required by MSHA policy, the inspection process could be improved in a number of ways. Although MSHA has extensive inspection procedures, some of them are unclear, while others are difficult to locate because they are contained in so many different sources. In addition, although MSHA conducted over 96 percent of required quarterly inspections each year over the past 10 years, MSHA headquarters does not provide adequate oversight to ensure that its district offices follow through to make sure that unsafe conditions identified during inspections are corrected. And, although MSHA has highly qualified inspectors, it has no plan for addressing the fact that 44 percent of them will be eligible to retire in the next 5 years. Finally, MSHA does not collect all of the information it needs to assess the effectiveness of its enforcement efforts because it does not collect data on independent contractor staff who work at each mine.

MSHA Has Extensive Procedures for Inspecting Mines, but Some Procedures Are Unclear

MSHA has extensive procedures for inspecting mines. The two major sources of inspection procedures are the policy manual and the inspection handbook. In addition, MSHA issues many ad hoc procedures in formats such as bulletins and memorandums. MSHA's procedures require inspectors to follow many different steps in conducting quarterly inspections of mines. These steps include, among many others, (1) walking all of the air passages in the mine which, in a large mine, can total over 50 miles in length; (2) taking samples of the mine environment, including air, dust, and noise levels; (3) observing miners' work habits; and (4) reviewing the mine operators' records of their own daily inspections of the mine. Inspectors are also required to issue citations for any violations of the law, health or safety standards, rules, orders, or regulations they identify during inspections.

Although MSHA has extensive inspection procedures, some of them are unclear and they are located in so many different sources that they can be difficult to find. Some procedures do not clearly specify the criteria inspectors should use in citing violations. For example, several district officials in two of the districts we visited told us that the lack of specific

criteria for floating coal dust[10] makes it difficult to determine what is an allowable level. As a result, mine inspectors must rely on their own experience and personal opinion to determine if the accumulation of floating coal dust is a safety hazard that constitutes a violation. According to some of the inspectors we interviewed, this has led, in some cases, to inconsistencies in inspectors' interpretations of the procedures—some inspectors have cited violations for levels of floating coal dust that have not brought citations from other inspectors. In addition, the inspection procedures are located in so many different handbooks, manuals, policy bulletins, policy letters, and memorandums that it can be difficult for inspectors to make sure that they are using the most recent guidance and procedures.

MSHA headquarters officials told us that they are working to clarify the agency's procedures and consolidate the number of sources in which they are located. For example, MSHA established a committee in February 2003 to clarify and consolidate its inspection procedures, including developing a checklist for inspections that will be available, along with the procedures, to inspectors on their portable computers. These online procedures will provide a single source of guidance for all types of coal mine inspections. MSHA plans to have these new online inspection procedures completed by late 2003.

MSHA Conducts Most Quarterly Inspections as Required, but Does Not Always Follow Through to Ensure Unsafe Conditions Identified During Inspections are Corrected

MSHA's data on its quarterly inspection completion rates indicates that, of the over 2,000 quarterly inspections district offices are required to conduct each year, they completed over 96 percent each year from fiscal year 1993 to 2002, as shown in table 2.

[10]MSHA refers to this as "float" coal dust. It is extremely combustible and can cause explosions in underground coal mines.

Table 2: Quarterly Inspections of Underground Coal Mines, Fiscal Years 1993 to 2002

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Number of quarterly inspections required	4,216	3,927	3,549	3,195	3,102	2,957	2,513	2,641	2,714	2,519
Number of quarterly inspections completed	4,211	3,780	3,420	3,148	3,066	2,928	2,485	2,613	2,638	2,495
Percent completed	99.9%	96.3%	96.4%	98.5%	98.8%	99.0%	98.9%	98.9%	97.2%	99.0%

Source: MSHA.

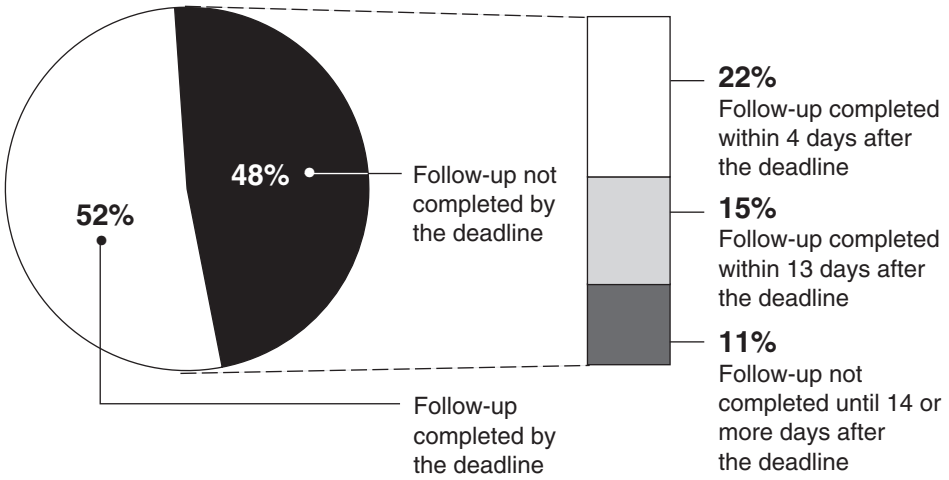
[a]Note: We were not able to independently verify MSHA's completion rates.

Although MSHA conducts almost all of the quarterly inspections as required, MSHA headquarters does not monitor district office performance to ensure that inspectors are following up with mine operators to determine that unsafe conditions identified during inspections have been corrected. During inspections of mines, MSHA's inspectors set deadlines for the mine operators to correct the safety and health hazards violations identified. The deadlines vary based on a number of factors—including the degree of danger to miners affected by the violation—and range from 15 minutes from the time the inspector writes the citation to 27 days afterwards. Deadlines can be a short as 15 minutes because some of the hazards have the potential to quickly lead to serious injuries. MSHA's procedures require inspectors to follow up with mine operators within the deadline they set or to extend the deadline. Inspectors may extend the deadlines under certain circumstances, such as when a mine has temporarily shut down its operations or when a mine operator is unable to obtain a part needed to correct a violation cited for a piece of equipment. MSHA tracks all citations, deadlines for correction, and extensions of deadlines in its Coal Management Information System.

Our analysis of MSHA's data for the most recent 10-year period, 1993 to 2002, indicated that, for almost half—48 percent—of the 536,966 citations for which a deadline was established, inspectors did not follow up in a timely manner to make sure mine operators had corrected the hazards.[11] However, as shown in figure 5, of the 48 percent of the citations for which the inspectors did not follow up in a timely manner, they followed up on many citations within 4 days of the deadline and, for all but 11 percent of the citations, they followed up in less than two weeks to verify that the mine operators had corrected the hazards identified during inspections.

[11]MSHA does not set a deadline for correction of every type of violation. For example, inspectors are not required to set a deadline for an order in which the mine is closed due to "imminent danger."

Figure 5: Percentage of All Citations Issued from 1993 to 2002 for Which Inspectors Did Not Follow Up by the Specified Deadlines



Source: GAO analysis of MSHA data.

Moreover, the more serious type of violations—"significant and substantial" (S&S) violations—accounted for a significant proportion of the citations for which inspectors did not follow up by the deadlines. For the over 235,447 citations written for S&S violations from 1993 to 2002 for which a deadline was specified, inspectors did not follow up on more than 48 percent of the citations by the deadline. However, inspectors followed up on all but about 10 percent of the citations for S&S violations within less than 14 days of the deadline.

MSHA headquarters and district officials told us that there are many different reasons why inspectors may not follow up by the deadlines specified in their citations. One of these, according to several district officials, is scheduling conflicts that prevent inspectors from visiting the mine within the specified deadline. In addition, there are circumstances in which inspectors are not able to follow up, such as when a mine operator suspends a mine's operations. However, in these instances, the inspector should update the information in the database to extend the deadline.

District officials we interviewed said that they are tracking the number of citations for which inspectors have not followed up by the deadlines and are taking steps to reduce this number. For example, officials in District 6 told us that they are revising the process of scheduling mine visits to improve the timeliness of follow up. In addition, MSHA headquarters officials said that tracking the number of citations on which inspectors

have not followed up in a timely manner in each district office is part of their new initiative to better monitor district office performance that began in June 2003.

We did not review the quality of MSHA's quarterly inspections. Some inspectors and mine operators we interviewed at 2 of the 5 district offices we visited, as well as officials from the United Mine Workers of America headquarters, told us that staffing shortages sometimes cause MSHA to rush its inspections at the end of the quarter. For example, inspectors and a mine operator in one district told us that, last year, some of the quarterly inspections were not completed until the end of the quarter and that, in some cases, MSHA sent a large number of inspectors to a few of the district's mines at the end of the quarter in order to complete the inspections as required. MSHA headquarters officials said they were in the process of balancing the workloads of the district offices in order to address some of these staffing shortages. They also have begun hiring additional inspectors for some districts.

MSHA Has Highly Trained and Experienced Staff, but Lacks a Plan for Replacing the Large Number of Inspectors Who May Soon Retire

MSHA's mine inspectors are highly trained and experienced. Under the Mine Act, inspectors are required to have, whenever possible, 5 years of practical mining experience before being hired. Newly hired inspectors receive a minimum of 18 months of classroom and on-the-job training before qualifying to conduct inspections on their own. Classroom training for new mine inspectors includes 25 weeks of instruction at MSHA's Mine Academy provided in 3- and 4-week segments. The classroom training covers a wide range of topics, from inspecting mine equipment to conducting tests of air quality. In between attending classes at the Mine Academy, new inspectors accompany experienced inspectors on mine inspections. Once they have completed their training and are certified by the district office to which they are assigned—a process that takes, on average, 18 to 24 months according to MSHA officials—inspectors receive their Authorized Representative credentials indicating that they are certified underground Coal Mine Inspectors and are allowed to write citations. In addition to their initial training, inspectors are required to take at least 2 weeks of refresher training every 2 years. Finally, MSHA's current underground coal mine inspectors have been with the agency, on average, for over 18 years and most had a number of years of mining experience prior to joining MSHA. For example, each of the four inspectors we interviewed in one of the districts we visited had at least 10 years of mining experience prior to joining MSHA and had from 3 to 16 years' experience inspecting mines.

Although many of MSHA's highly trained and experienced underground coal mine inspectors will be eligible to retire within the next 5 years, and the agency's historic attrition rates indicate that many of them will actually retire, the agency has not developed a plan for replacing these inspectors. As shown in table 3, about 44 percent of MSHA's inspectors will be eligible to retire in the next 5 years and, in 2 districts, a much larger proportion will be eligible to retire. The table also shows that districts have fewer inspector trainees on board than vacancies that will need to be filled when inspectors retire. MSHA's historic attrition data show that half of the individuals who are eligible for retirement actually retire within 1 year of the date they are eligible and 85 percent retire within 4 years.

Table 3: Number of Underground Coal Mine Inspectors Assigned to Each District Office, Percentage Eligible to Retire in the Next 5 Years, and Number of Inspector Trainees in Each District, July 2003

	District office											
	One	**Two**	**Three**	**Four**	**Five**	**Six**	**Seven**	**Eight**	**Nine**	**Ten**	**Eleven**	**Total**
Number of underground coal mine inspectors	5	30	22	61	23	43	30	20	27	14	7	**282**
Number of inspectors eligible to retire in the next 5 years	1	23	19	18	11	14	13	6	9	7	2	**123**
Percent eligible to retire within 5 years	20%	77%	86%	30%	48%	33%	43%	30%	33%	50%	29%	**44%**
Number of underground inspector trainees	0	0	6	3	7	5	5	0	0	0	3	**29**

Source: MSHA.

MSHA headquarters officials also told us that it will be difficult for them to quickly hire and train replacements for the inspectors who retire. In addition to the fact that it takes at least 18 months to train each new inspector, it takes the agency several months from the date an individual retires to advertise and fill each vacant position. As a result of losing these inspectors, MSHA may find it difficult to maintain its current level of enforcement activity, including completing all quarterly inspections of underground coal mines.

MSHA headquarters and district officials told us that they do not have a plan that addresses the potential staffing shortages among its inspection staff because, although they recognize that the shortages may affect their ability to complete all required inspections, they cannot fill vacancies until individuals actually retire, so their options are limited.

However, MSHA is not making full use of available human capital flexibilities to streamline its hiring procedures or retain the services of inspectors.[12] For example, it is not using the direct-hire authority available to federal agencies that would allow the agency to choose applicants directly for inspector positions.[13] Furthermore, use of a category-based rating and selection procedure could help MSHA increase the number of qualified applicants for its inspector positions. In addition, MSHA is not using retention allowances to keep employees with specialized skills, including inspectors, who are critical to accomplishing the agency's mission. Finally, MSHA has not formally reviewed its hiring process, including identifying internal deficiencies, such as problems with its process for assessing the quality of applicants that causes delays in hiring new inspectors. MSHA headquarters officials told us, however, that they are considering conducting a review of their hiring system.

MSHA Does Not Collect Data on Independent Contractor Staff Needed to Assess the Effectiveness of Its Enforcement Activities

MSHA does not collect all of the information on staff employed by independent contractors[14] who work in underground coal mines needed to assess the effectiveness of its enforcement activities. The regulations implementing the Mine Act require mine operators, including independent contractors, to report the number of hours worked by staff at specific mines as well as injuries received during the performance of that work. However, MSHA issued a memorandum in 1981 that limited the reporting requirements for independent contractors who performed all but nine types of services in "high hazard activities," including mining coal, and

[12]Human capital flexibilities represent the policies and practices that an agency has the authority to implement, in managing its workforce, to accomplish its mission and goals. We recently reported on the key practices agencies should use when implementing human capital flexibilities. See U.S. General Accounting Office, *Human Capital: Effective Use of Flexibilities Can Assist Agencies in Managing Their Workforces*, GAO-03-2 (Washington, D.C.: Dec. 6, 2002).

[13]Direct hire authority, which was authorized in the Homeland Security Act of 2002, provides agencies with the authority to appoint candidates directly to jobs for which the Office of Personnel Management has determined that there is a severe shortage of candidates or a critical hiring need.

[14]The Mine Act defines a mine operator to include independent contractors that perform services or construction at a mine.

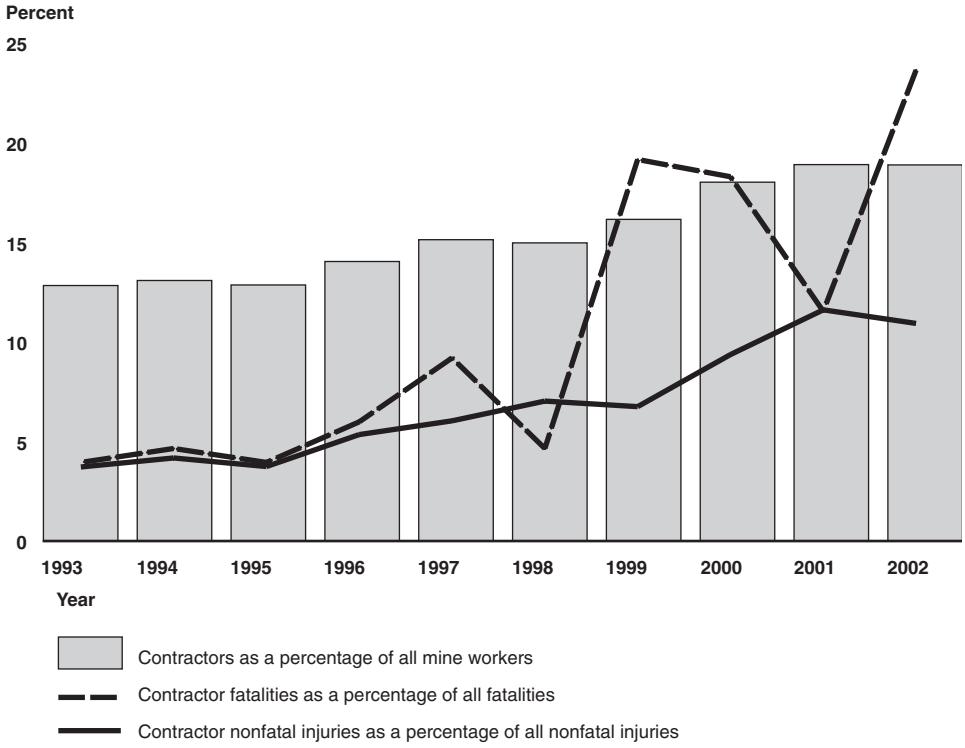
exempted other independent contractors completely.[15] As a result, MSHA only collects aggregate information from independent contractors that engage in these hazardous activities. It collects data on the number of hours worked by their staff at all mines, but does not collect this information for contractor staff at specific mines. MSHA headquarters officials told us the agency exempted independent contractors from these reporting requirements in order to reduce the regulatory burden on them and because, at the time the memorandum was issued, independent contractor staff represented a relatively small proportion of all coal miners.

However, because MSHA does not collect information on the hours worked by contractor staff who mine coal in each underground coal mine, it cannot calculate accurate fatality or nonfatal injury rates for mines that use contractor staff to mine coal—rates used to evaluate the effectiveness of its enforcement efforts.[16] Although MSHA can determine whether it is meeting these goals for all underground coal mines as a whole, it cannot determine whether it is meeting its goals for specific mines. In addition, MSHA cannot track trends in fatal or nonfatal injury rates at mines that use contractor staff to mine coal. The fact that MSHA is not tracking the number of independent contractor staff who work in each mine has become more important in recent years, because the proportion of miners who work for independent contractors has grown significantly since 1981, when they represented only 5 percent of all mine workers. Our analysis of MSHA's data on workers in underground coal mines shows that the percentage of underground coal miners who work for independent contractors increased from 13 percent in 1993 to 18 percent in 2002, as shown in figure 6, and the percentage who incurred nonfatal injuries also increased over this period.

[15]MSHA's memorandum exempted all independent contractors from some of the reporting requirements of the Mine Act except those whose staff provide services in one of the following nine high hazard activities: (1) mine development, including shaft and slope sinking; (2) construction or reconstruction of mine facilities; (3) demolition of mine facilities; (4) construction of dams; (5) excavation or earthmoving activities involving mobile equipment; (6) equipment installation, such as crushers and mills; (7) equipment service or repair of equipment on mine property for a period exceeding 5 consecutive days at a particular mine; (8) material handling within mine property, including haulage of coal, ore, and refuse, unless for the sole purpose of direct removal from or delivery to mine property; and (9) drilling and blasting. Procedures later issued by MSHA clarifying these requirements stated that mining coal was included in activity (8).

[16]Two of MSHA's key performance goals are to reduce the fatal injury rate and the rate of all injuries in coal mines.

Figure 6: Contractor Staff as a Percentage of All Workers in Underground Coal Mines



Source: GAO analysis of MSHA data.

To address these concerns, MSHA established a task group that was directed to work with the members of the mining community[17] to (1) determine how to best identify and collect data on independent contractor staff and (2) develop an enforcement policy for independent contractors. MSHA headquarters officials said the task group is in the process of drafting an action plan but is having difficulty identifying independent contractors because the agency has issued a number of duplicate identification numbers to these contractors. In addition, MSHA headquarters officials told us that obtaining information on the hours

[17]The mining community is a commonly used term for referring to the various types of entities and individuals involved in mining. It can include MSHA enforcement personnel, state mining agency personnel, mine operators, miners and labor organizations, special interest groups, and mining equipment manufacturers.

worked by contractor staff at specific mines will be difficult because these workers often work at more than one mine.

MSHA Has a Comprehensive Process for Conducting Accident Investigations, but Does Not Fully Utilize It to Prevent Future Accidents

MSHA's process for conducting accident investigations is comprehensive, but the agency does not use its investigations to the fullest extent to improve the future safety of mine workers. MSHA has detailed policies and rigorous requirements for how investigations must be conducted and reported and uses a number of mechanisms to monitor the quality of its accident investigations process. However, weaknesses in its databases make it difficult for MSHA to track key data on mine hazards and potentially useful indicators of its own performance.

MSHA's Polices and Procedures for Conducting Accident Investigations Are Extensive

MSHA has extensive policies and procedures for conducting accident investigations. These policies and procedures are contained in the Mine Act and its implementing regulations, the Accident Investigations Handbook, policy documents, and a training manual. They provide guidance for determining when to conduct investigations, who should conduct them, how they should be conducted, and how to report the results. MSHA is required to investigate all accidents involving fatalities and may also investigate nonfatal accidents. While the decisions regarding whether to conduct investigations of most accidents are made at the district level, investigations of high-profile accidents, such as those involving more than two fatalities and mine emergencies, are handled by MSHA's headquarters office.[18] The primary objective of an accident investigation, as stated in the investigation handbook, is "to determine the root cause(s) of the mine accident and to utilize and share this information with the mining community and others for the purpose of preventing similar occurrences." Other purposes of investigations are to determine whether any violations of the Mine Act or its implementing regulations contributed to the accident and to help formulate and assess MSHA's health and safety standards.

[18]Although the investigation handbook states that MSHA headquarters is responsible for investigations of mine emergencies, it does not define what constitutes a mine emergency.

MSHA's accident investigations are conducted by experienced teams of inspectors and specialists, usually consisting of staff from the district in which the accident occurred. Additional staff from MSHA headquarters and the Technology Center, and, in the case of fatal accidents, attorneys from the Department of Labor's Solicitor's Office, may also provide assistance. In order to become qualified to conduct investigations of mine accidents, inspectors and specialists are required to take special training on accident investigations, in addition to that received by all inspectors and specialists during their initial training. The special accident investigation training covers such topics as data and evidence collection, accident reconstruction, interviewing techniques, and preparation of investigative reports. MSHA investigators are also required to take an accident investigation retraining seminar every other year.

Investigators are required to follow specific steps in conducting and documenting each accident, including trying to determine the underlying, or "root," cause of the accident. Investigators must conduct an on-site examination of the accident scene, interview witnesses, and analyze relevant mining equipment and material. Investigators must also follow detailed reporting requirements, including completing standardized forms and, in the case of serious accidents such as those involving a fatality, preparing formal written reports that cover specific topics. In addition to determining the direct causes of an accident, MSHA's investigators must determine the underlying causes. For example, for one mine in which frequent ignitions were occurring, investigators determined that the direct cause of the ignitions was sparks from the metal bit of a cutting machine striking rock. These sparks in turn ignited the methane released as the coal was cut out of the seam. The investigation team also went further and identified the underlying cause as a problem with ventilation at the mine. As a result, the mine operator made changes to the mine's ventilation plan and, according to MSHA officials, there had been no further ignitions in that section of the mine.

MSHA uses several means to monitor the quality of accident investigations. The accident investigation program manager in MSHA's headquarters office and the accident investigation coordinator at each district office monitor the progress of each investigation and provide guidance and recommendations to investigators on resources, collection of evidence, and conducting interviews. A number of individuals at the district and headquarters level review draft investigation reports, which the accident investigation program manager then approves. The district manager, the Office of the Solicitor, and the accident investigation

program manager each review proposed citations and orders to be issued as a result of accident investigations.

Although we did not conduct a comprehensive review of MSHA's accident investigations, we reviewed eight investigations in great depth at several of the district offices we visited. For these selected cases, we reviewed MSHA files and reports, interviewed investigators, and interviewed miners and mine operators at some of the mines involved. We found that, for these cases, the MSHA investigators had followed the required procedures for conducting accident investigations.

MSHA's Databases Used to Track Accidents and Investigations Have Weaknesses

Because of weaknesses in the databases that MSHA uses to collect data on accidents and its investigations, MSHA cannot properly monitor its accident investigations activity, including determining whether accidents were investigated, or track trends in mine hazards that cause accidents.

MSHA cannot use the data it collects on accidents, injuries, and investigations to readily determine whether accidents were investigated or monitor district performance in regard to their accident investigation activity. MSHA has one database that contains information on all accidents and injuries reported to MSHA by mine operators and contractors.[19] It has another database that tracks MSHA's accident investigations activity, including time spent by inspectors and specialists on each investigation. However, it is very difficult to link the information on accidents and investigations contained in these two databases. As a result, MSHA headquarters cannot easily use the data to monitor whether districts have investigated all fatal accidents as required or determine which serious nonfatal accidents have been investigated. For example, we analyzed information from both databases in an attempt to determine whether MSHA investigated all fatal accidents in underground coal mines from 1993 to 2002. Although we were able to manually match each fatality to a fatal accident investigation using the mine identification number and the date of the investigation, and we found that MSHA had investigated all fatalities as required, it was a difficult, time-consuming process.

[19]Mine operators and independent contractors are required to file detailed reports with MSHA on injuries that result from a mine accident. These reports include information on the name of the injured person, the seriousness of the injury and the body part(s) affected, and the number of days of missed work or restricted activity, if any, that resulted from the injury.

In addition, it is difficult for MSHA to track trends in the most frequent causes of mine accidents or to readily determine which types of accidents result in multiple injuries or the percentage of accidents that result in injuries. This occurs because MSHA does not assign an identifier to each accident but rather tracks only the information reported by mine operators on individuals injured in accidents.[20] For example, MSHA cannot easily determine the number of roof falls that occurred each year, or the percentage of all roof falls that were investigated. It can only show the number of individuals who were injured or killed as the result of roof falls and the number of noninjury roof falls that occurred.

A few years ago, MSHA established a third database on accident investigations in order to record and disseminate information on accident investigations, including the results of investigations. The database contains detailed information on some accidents as well as MSHA's investigations activity. However, because the information in the database is not complete (it does not contain information on all accidents), it cannot be used to monitor trends in the types of accidents or to determine the percentage of accidents investigated. Further, MSHA headquarters officials told us that few field or headquarters staff use the database to obtain or analyze information on accident investigations because the system is not user friendly.

Conclusions

MSHA plays an important role in protecting the safety and health of coal miners. MSHA has extensive policies and procedures and has assigned highly qualified staff to its processes for reviewing and approving mine plans, conducting inspections of underground coal mines, and investigating accidents. However, it is important for MSHA headquarters to ensure that the district offices to which it has delegated much of the responsibility for protecting the safety and health of mine workers have appropriate oversight, guidance, and staffing and to collect all of the data needed to evaluate their performance.

MSHA headquarters has not always provided the oversight of district office operations needed to ensure timely completion of 6-month technical inspections in some districts, nor has it ensured that hazards identified during inspections are being corrected by mine operators on a timely basis. As a result, some mines may be operating without accurate or

[20]MSHA does, however, assign an identifier to accidents in which no one was injured.

complete ventilation or roof control systems or with uncorrected hazards, which may adversely affect the safety and health of mine workers.

Headquarters also has not provided inspectors with the guidance they need to carry out their work. Some procedures and guidance it has provided to district offices for inspections are unclear and, in some cases, difficult to locate. In the absence of such guidance, inspectors may not be consistently applying the law and regulations designed to protect the safety and health of mine workers. Moreover, the lack of guidance with regard to coordinating inspections has led to duplication of effort, diminishing MSHA's ability to use its staff resources most efficiently.

In addition, MSHA is not preparing for a likely shortage of inspectors in the future. MSHA officials have said the fact that they are unable to hire until someone retires justifies their lack of planning. However, this discounts the possibility that they might be able to better use their existing resources or plan ways to lessen disruptions during the transitions. If MSHA does not develop a plan for addressing the large number of retirements of inspectors over the next 5 years, it may not be able to continue to ensure the safety and health of underground coal miners.

Finally, MSHA is not collecting all of the data needed to evaluate its performance and prevent future accidents. It does not collect data on the hours worked by staff employed by independent contractors at specific mines. MSHA also does not track information on accidents needed to identify trends in mining accidents or link accidents and injuries to investigations. Given the latitude that district managers have in deciding whether to investigate serious accidents, it is important for MSHA headquarters to be able to link information on accidents and investigations in order to monitor district office performance. As a result, MSHA is not able to assess the adequacy of its enforcement efforts at mines that employ independent contractor staff to mine coal, properly target its efforts to improve mine safety at mines with relatively high injury rates, or maximize the likelihood of preventing future accidents.

Recommendations

In order to provide better oversight over its operations, including collecting all of the data needed to provide this oversight, we recommend that the Secretary of Labor direct the Assistant Secretary for Mine Safety and Health to

- monitor the timeliness of 6-month technical inspections conducted as part of MSHA's review of ventilation and roof control plans to ensure that all inspections are completed by the district offices;

- monitor follow-up actions taken by its district offices to ensure that mine operators are correcting hazards identified during inspections on a timely basis;

- update and consolidate guidance provided to its district offices on plan approval and inspections to eliminate inconsistencies and outdated instructions, including clarifying guidance on coordinating technical inspections with regular quarterly inspections of mines;

- develop a plan for addressing anticipated shortages in the number of qualified inspectors due to upcoming retirements, including considering options such as streamlining the agency's hiring process and offering retention allowances;

- amend the guidance provided to independent contractors engaged in high-hazard activities requiring them to report information on the number of hours worked by their staff at specific mines so that MSHA can use this information to compute the injury and fatality rates used to measure the effectiveness of its enforcement efforts; and

- revise the systems it uses to collect information on accidents and investigations to provide better data on accidents and make it easier to link injuries, accidents, and investigations.

Agency Comments and Our Evaluation

We provided a draft of this report to MSHA for comment. MSHA did not comment on our recommendations but expressed concern about many of our findings and disagreed with three of the findings on which our recommendations are based. In addition, MSHA provided a few technical comments and clarifications, which we incorporated as appropriate. MSHA's full comments and our responses are contained in appendix III.

MSHA disagreed with our finding that the agency does not ensure the completion of 6-month technical inspections related to mine plans conducted by its district offices. While MSHA acknowledged that the information provided by the district offices to MSHA headquarters on technical inspections is not accurate or complete, the agency said that the inspections are actually being conducted by the district offices but not recorded by the districts in the database, as evidenced by reports on file in

the district offices. MSHA also noted that the database is being upgraded, which will enhance the agency's ability to track and monitor the status of technical inspections. In our view, MSHA's current system places all oversight responsibility on the district offices because MSHA headquarters does not have the data needed to ensure that districts are completing technical inspections as required by agency procedures. We maintain that MSHA cannot properly monitor the completion of technical inspections by its district offices when the information provided by the districts to MSHA headquarters for this purpose is inaccurate.

MSHA expressed concern that it would be difficult to develop guidance for all district offices on coordinating different types of inspections in order to avoid duplication of effort because of the dynamic nature of the mining industry. MSHA said that District Managers should be responsible for developing standard operating procedures in this area. We continue to believe that, while developing such guidance may be difficult, it is needed to ensure that MSHA's resources are used most effectively. In addition, several district officials told us that more coordination of effort in this area by MSHA could lead to better use of the agency's resources and eliminate potential duplication of effort.

MSHA took issue with portions of our finding related to the procedures provided to inspectors for inspecting underground coal mines, noting that the agency provides extensive training to inspectors on the procedures and that inspectors must rely on their experience and knowledge in determining what constitutes a violation. MSHA also noted that it is in the process of providing additional training to its inspectors and improving the ease of use of its manuals and other procedures. While we commended MSHA on its efforts to provide additional training to inspectors and consolidate its procedures, we noted that over reliance on inspectors' experience can lead to inconsistencies in their interpretations of the procedures.

On following through on its inspections to make sure that unsafe conditions are corrected in a timely manner, MSHA agreed that this is an important issue and said that it has already taken several actions to address inconsistencies in this area. The agency detailed its efforts to provide better guidance and additional training, establish a new accountability program to ensure the consistency of its enforcement actions, and stress the importance of timely follow up by inspectors to ensure that hazards are corrected.

MSHA disagreed with our finding that it does not have a plan for replacing the large number of inspectors who will be eligible to retire in the next 5 years, saying that it does have such a plan. After receiving MSHA's comments on our draft report, we asked MSHA officials for a copy of the plan referred to in their comments. They told us they did not have one plan but, instead, had recently developed plans for each of the 11 district offices and provided us with a copy of a plan for one district. This plan, however, does not contain all of the elements of a high quality human capital plan, such as linking the accomplishment of the agency's strategic goals to its future human capital needs. We maintain that MSHA needs to develop a comprehensive plan that addresses the agency's human capital needs related to protecting the safety and health of coal miners.

Finally, MSHA disagreed with our finding that the databases it uses to track mine accidents and investigations of these accidents have weaknesses that limit its ability to monitor trends in mine hazards and determine whether districts are investigating accidents. MSHA said that the information it collects on accidents in its databases can be used for these purposes. Our finding is accurate. The Accident Investigation Database to which MSHA refers in its comments does not track all accidents, it only tracks those that were investigated; therefore, the database cannot be used to monitor trends in all mine accidents. In addition, as noted in our report, the information in the database is incomplete, and the database is not widely used throughout the agency because it is not user friendly.

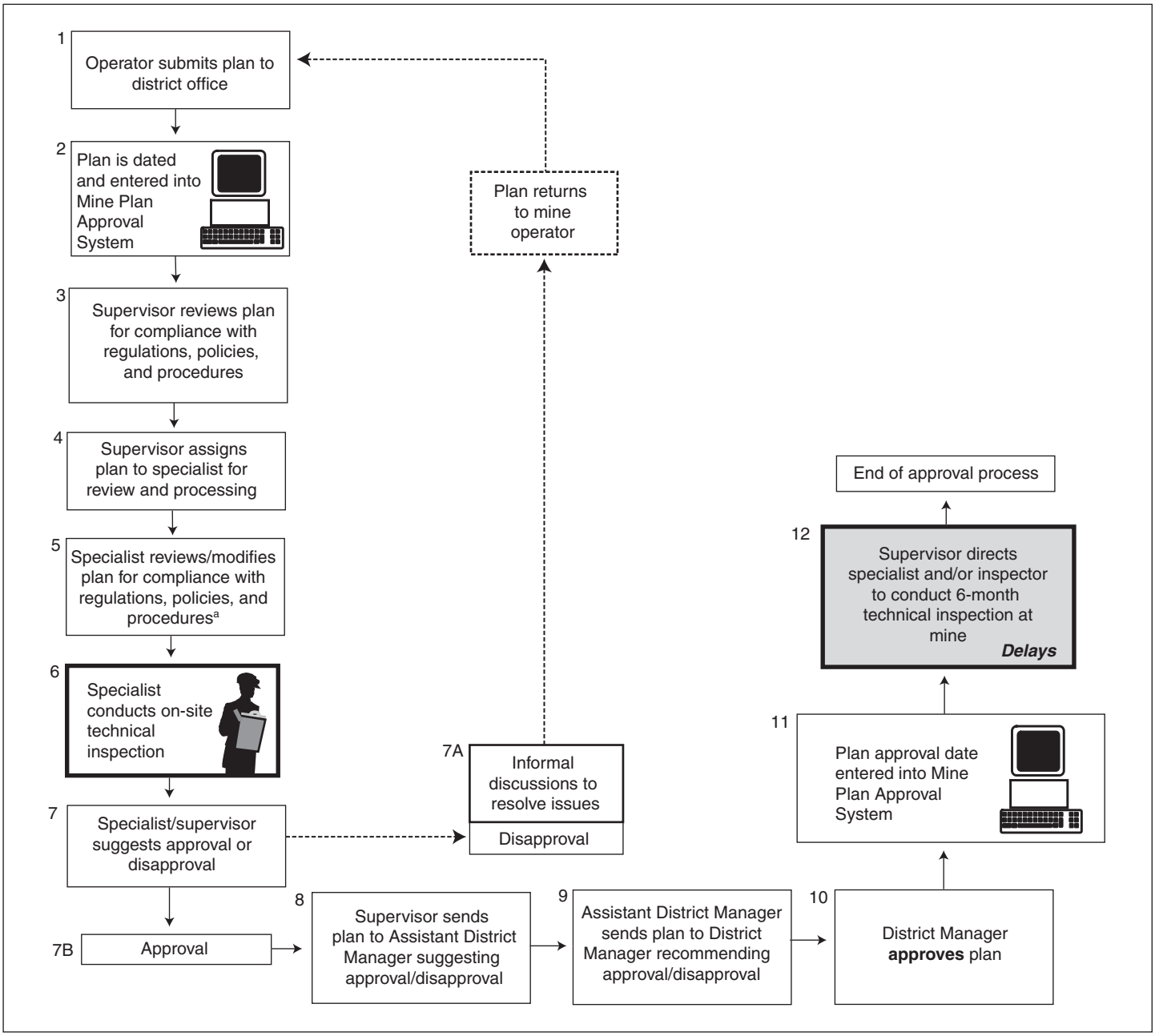
As agreed with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the issue date. At that time, we will send copies of this report to the Secretary of Labor, the Assistant Secretary for Mine Safety and Health, and other interested parties. Copies will be made available to others upon request. This report is also available at no charge on GAO's web site at http://www.gao.gov.

If you have any questions concerning this report, please contact me at (202) 512-7215 or Revae Moran at (202) 512-3863. Other major contributors are listed in appendix IV.

Sincerely yours,

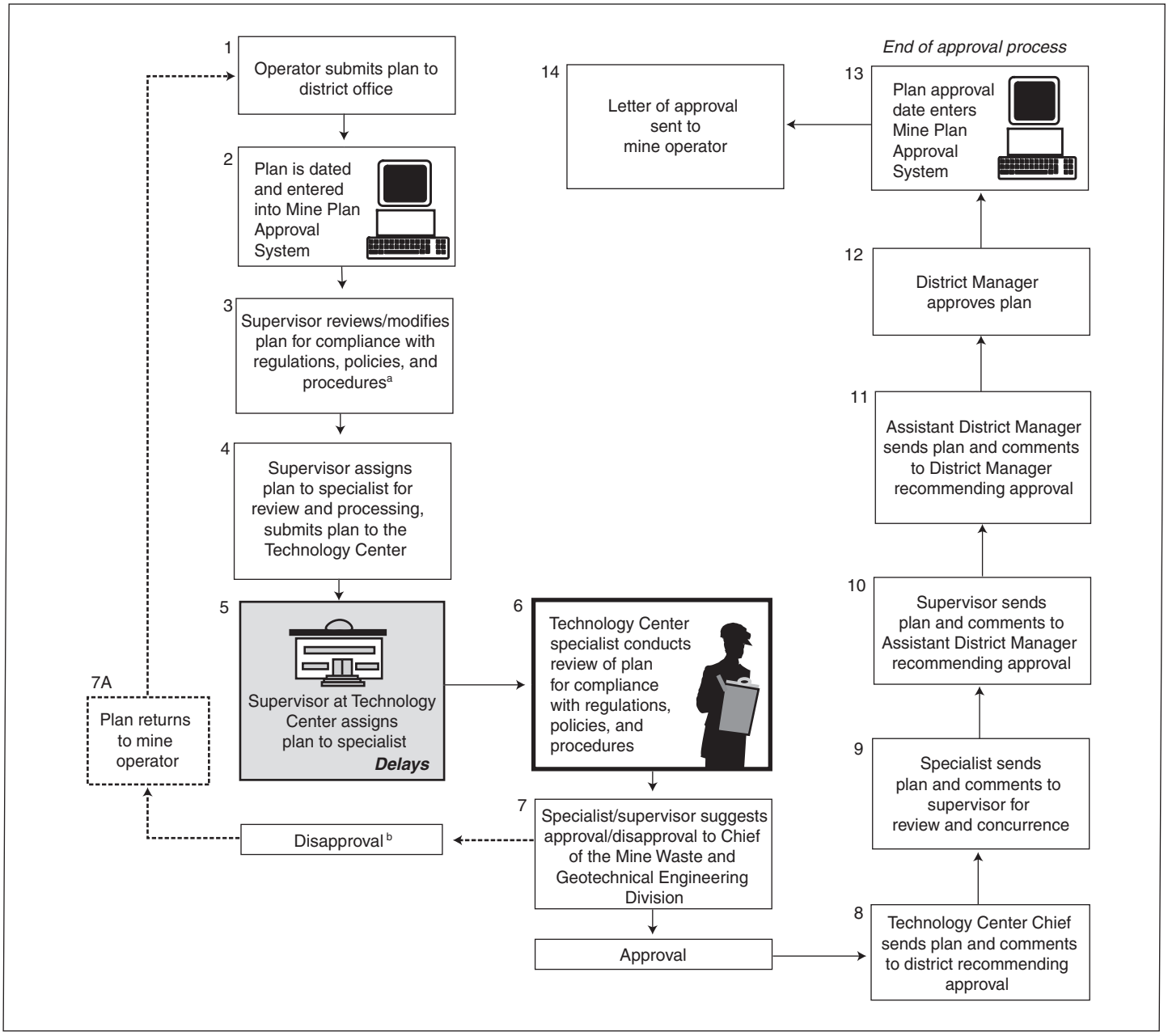
Robert E. Robertson
Director, Education, Workforce,
and Income Security Issues

Appendix I: MSHA's Approval Process for Ventilation and Roof Support Plans



Source: GAO analysis of MSHA data.

Appendix II: MSHA's Approval Process for Impoundment Plans



Source: GAO analysis of MSHA data.

[a]Modifications to the plan can be made at any point throughout the review and approval process.

[b]If the plan is disapproved, MSHA forwards the review comments and requests for additional technical information to the mine operator via the same process indicated for plan approval.

Appendix III: Comments from the Department of Labor

Note: GAO comments supplementing those in the report text appear at the end of this appendix.

U.S. Department of Labor

Mine Safety and Health Administration
1100 Wilson Boulevard
Arlington, Virginia 22209-3939

August 19, 2003

Robert E. Robertson
Director
Education, Workforce, and
Income Security Issues
General Accounting Office
441 G Street, NW.
Washington, DC 20548

Dear Mr. Robertson:

Thank you for the opportunity to comment on your draft report titled "Mine Safety: MSHA Devotes Substantial Efforts to Ensuring the Safety and Health of Coal Miners, but Its Programs Could be Strengthened (GAO-03-945)." We also appreciate the very positive comments about MSHA and its operations during the briefing led by your staff on August 5, 2003.

See comment 1.

While we agree with certain findings and recommendations in your draft report, we also believe that the draft report requires the corrections, clarifications, and modifications described below. We also believe that the overall tone of the report can be improved to more fully convey to the reader what was articulated in the briefing that GAO did not find serious deficiencies during its review, and that MSHA is an agency with considerable strengths and accomplishments.

Report Title

See comment 2.

We feel the proposed title of the draft report does not accurately define the current and on-going programs and initiatives the Agency has and will implement to continue to focus resources on improvements. We would suggest the following modification to the proposed title: *"MSHA Devotes Substantial Effort to Ensuring the Safety and Health of Coal Miners, and Continues to Focus Resources on Improvements."*

GAO Finding: "MSHA Does Not Ensure Districts Are Completing Technical Inspections of Mine Plans"

See comment 3.

This finding is incorrect. Although we acknowledge that the data provided by district personnel for the MPA database would give the reader the *impression* that the 6-month plan reviews were not being conducted by some districts as required - this data does not accurately capture the number of plan reviews that were *actually* conducted by inspection personnel.

Specifically, our MPA database is outdated and will only accept entry of the two required 6-month reviews. However, in all cases, whether a new plan is submitted or a current plan remains unaltered, MSHA conducts timely reviews. Inspectors conduct complete AAA inspections of underground mines four times per year. As a part of each AAA

inspection, the inspector reviews and assesses the adequacy of the plan and satisfies the requirements of the 6-month plan reviews. The AAA inspection completion rates (98+ %) verify that inspections are regularly completed on a quarterly basis. Consequently, the associated plan reviews are also completed as required. Procedurally, the inspector documents the results on MSHA Form 2000-204. The original form is filed with the completed AAA inspection report while a copy is maintained by the Technical Division of each District. Additionally, each inspector is debriefed by his/her supervisor and the supervisor reviews the contents of the inspection report to ensure that all phases of the AAA inspection were conducted. As part of this activity, the supervisor is required to sign the 2000-204 form, certifying that the 6-month plan review had been completed. As supporting evidence, we provided the GAO team with the completed and certified 2000-204 forms from CMS&H District 10 for the time period in question to verify that the actual reviews were conducted, documented, and certified even though the data did not appear in the MPA database (District 10 was one of the CMS&H Districts identified by GAO as having a deficiency in conducting the required plan reviews).

See comment 4.

Also note that the use of the term "technical inspections" is an inaccurate definition of what is correctly termed a 'plan review'. A Safety and Health Technical Inspection is conducted by a specialist considered to be a subject matter expert in the respective mine disciplines, such as ventilation, roof control, electrical, health, etc. The technical inspection is more comprehensive in that it focuses on specific areas of the mine or specific problems that have been identified by the inspector and/or operator. In contrast, the required 6-month plan review consists of a more general evaluation to assure that the mine plans are suitable to current conditions at the mine. The Federal Mine Safety and Health Act of 1977 (Mine Act), in sections 302(a) and 303(o), requires a review of the plans at least every six months. In addition, 30 CFR 75.370(g) requires the ventilation plan for each mine be reviewed every 6 months by an authorized representative of the Secretary to assure that it is suitable to current conditions at the mine. Furthermore, guidance is provided in Chapters 5 and 6 of Coal Mine Safety and Health's (CMS&H) Mine Ventilation Plan Approval Procedures Handbook (PH92-V-6), stating the review should include a physical inspection of the mine ventilation system by either a ventilation specialist or regular inspector.

Again, we agree there is room for improvement in CMS&H's MPA database for reporting the plan reviews. We currently have a team of Information Technology specialists who are rewriting the program for the MPA database. We plan on having the upgrade completed in 2004. This will provide both Headquarters staff and district personnel an enhanced capability to track and monitor the status of required plan reviews.

See comment 5.

Finally, please note that the following statement made on page 12 of the report is not accurate: "Mine operators.....are required to submit revised plans to the district for approval at least every 6 months." It is not necessary to routinely require a complete plan submittal to satisfy the 6 month review. MSHA conducts reviews of current plans at the required intervals – not simply for newly submitted plans. Historically, the number of citations/orders issued to mine operators for operating a mine with deficient mine plans has been extremely small. More often, the mine operator is cited for not following an

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approved plan. In those instances, where the physical conditions of the mine change and a plan revision is required, the mine operator submits the necessary information to the respective district manager for review and approval.

GAO Finding: "MSHA Has Not Provided Clear Guidance to Districts on Coordinating Inspections"

See comment 6.

It is true that there is no formal guidance from Headquarters as to the scheduling and coordination of inspection activities between the regular inspectors and the district specialists. This is a function of district management, relying on their knowledge and familiarity with each mine. In addition, there are frequent conversations at formal meetings between the district managers and the Administrator concerning the scheduling and coordination issue. Headquarters has determined that due to the dynamics of the mining industry, it would be difficult to develop a formal standard operating procedure that details the manner in which scheduling and coordination of inspector/specialist would apply to each district. Therefore, to ensure the most efficient and effective coordination/scheduling of the districts' resources, the respective District Manager should be responsible for developing a standard operating procedure that best suits the needs of the district. For example, the regular inspector may find conditions during his/her normal inspection activities that would necessitate a follow-up visit to that area by a specialist to provide a more in depth technical evaluation of the environment. Additionally, an operator or a representative of the miners may request that the district send a specialist to an area of the mine that has previously been inspected by the regular inspector. Even though these examples would result in duplicate visits to the same area of the mine, this is not a misuse of inspection resources.

GAO Finding: MSHA Does Not Approve Plans for Containing Mine Debris on a Timely Basis.

See comment 7.

MSHA recognizes the fact that, at the present time, the agency does not have the sufficient number of qualified technical personnel both at its Pittsburgh Technology Center and in its District offices to review and approve impoundment plans in a more timely fashion. MSHA, as noted in the Report, is taking the necessary steps to remedy this shortfall of requisite personnel. We are currently implementing a hiring strategy to staff each district with one or more engineers, dependent on the workload, having experience in impoundment construction and inspection. We also plan to hire additional engineers for the Pittsburgh Technology Center, specializing in the highly technical reviews of impoundment plans. The District engineers will be responsible for reviewing increasingly more complex impoundment construction plans, thus sharing a significant amount of the workload. It is important to note that many of the impoundment plans are extremely complex and consist of many construction phases. The current review process addresses these phases in sequential order to avoid unnecessary plan review delays which could affect the safe and efficient operations at the mine site. When onsite problems do occur, the plan is elevated to an expedited review status to ensure timeliness in the

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approval process. This allows the mining operations to continue the safe disposal and handling of refuse without compromising the safety of miners.

GAO Finding: "MSHA Has Extensive Procedures for Inspecting Mines, but Some Procedures are Unclear"

See comment 8.

As to the discussion in your report on pages 4, 18, and 19, MSHA makes it is a very high priority to have its inspectorate trained in proper application of the current legal criteria for taking various enforcement actions. Coal and M/NM headquarters staff worked with the staff of the Division of Mine Safety (Office of the Solicitor) to revise the MSHA Policy Manual text to state the correct and current legal criteria for determining if a given violation "could significantly and substantially contribute to the cause and effect of a safety or health hazard" (known as an S & S violation). That policy guidance was issued over a year ago. There was a "roll-out" with this Manual revision which included new training materials and other documents such as the Citation and Order Manual which have been similarly revised. In response to the Jim Walter Internal Review MSHA arranged to have all inspectors receive additional training on the proper application of the S & S test. Thus, MSHA takes issue with the implication in the report that MSHA and the Office of the Solicitor have not been attentive to making sure the inspectorate receives accurate and timely training on the legal tests needed to be applied for various enforcement decisions including what criteria to be reviewed in making an S & S determination.

While MSHA makes it is a very high priority to have its inspectorate trained in proper application of the current legal criteria for taking various enforcement actions, we agree that improving the ease of use of our manuals and policy letters should be a high priority. We also note that no matter how thorough the training including the review of "frequent scenarios", these determinations must always be made based on the specific on-site facts evaluated by our inspectors. Thus, there may always be situations which look superficially the same, but were in fact evaluated differently based on all of the factors present at the time of the inspection.

Your report refers specifically to several inspectors who expressed differences of opinion as to what constitutes an accumulation of float coal dust. That is an issue related to whether a condition poses a violation. The presence of float coal dust is a condition that must be evaluated on a case-by-case basis. There is no 'shopping list' or clear-cut formula to indicate when and to what degree the presence of float coal dust poses a distinct hazard to the miners. When determining whether the condition constitutes a violation, the inspector must rely on his/her experience and knowledge. One pertinent issue in this decision is the understanding that a minute amount of float coal dust poses an explosion hazard to miners. As a rule the decision to cite float coal dust accumulations is made on the discoloration of the area, not a measurable accumulation. To put this in perspective, the lower limit of coal dust flammability is approximately 3.0 ounces of coal dust per linear foot of an entry with a cross sectional area of 60 square feet. This would equate to a layer of float dust the thickness of a piece of paper. The Agency continually provides training and support for the inspector to enhance his/her ability to make

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effective and accurate judgments. Most recently, during Calendar Year 2003, a technical expert from Technical Support's Ventilation Division in Pittsburgh, Pennsylvania traveled to each of the 11 CMS&H Districts and conducted hazard recognition training for all enforcement personnel relative to coal dust and float coal dust accumulations.

GAO Finding: "MSHA Conducts Most Quarterly Inspections as Required, but Does Not Always Follow Through to Ensure Unsafe Conditions Identified During Inspections are Corrected"

See comment 9.

Your report indicated that the inspectors do not always follow through to ensure timely abatement of violations. This finding was derived as a result of the GAO review of violations issued from 1993 to 2002. In 2002, the Agency also realized some inconsistencies relative to inspection procedures and the enforcement of mandatory safety standards. In response to the Agency's findings, a joint Consistency Plan between Coal and Metal/Nonmetal was developed and implemented on April 2, 2002. The Consistency Plan was updated and its importance was reemphasized by the Administrator for CMS&H on March 31, 2003. In addition, the Administrators for Coal and Metal/Nonmetal jointly issued a revised Citation and Order Writing Handbook in June 2002 (Handbook Number PH02-I-7). The Handbook sets forth procedures to be followed in writing and issuing citations and orders in Coal or Metal/Nonmetal mines. The Handbook provides guidance for all enforcement personnel in issuing, extending, modifying, vacating, and terminating citations and orders. The Handbook was recently updated in August 2003, to provide improved guidance and specific examples of proper enforcement evaluations.

During Calendar Year 2003, a professional instructor from the Mine Health and Safety Academy in Beckley, West Virginia traveled to each of the 11 CMS&H Districts and conducted training relative to citation and order writing.

On January 6, 2003, the Administrator for CMS&H selected a committee to develop a Peer Review Accountability Program to replace our existing Accountability Program (Handbook Number AH95-III-1). The new program will focus on enforcement consistency throughout the nation. In August 2003, the committee circulated the draft handbook for comment prior to final release and implementation.

Furthermore, the Agency conducts periodic reviews of resource allocation to ensure optimum deployment of these resources. This strategy ensures that the Agency fulfills its mandated Congressional responsibilities in the most effective and efficient manner. This will also result in the consistent application of the Agency's rules, regulations, policies, and procedures relative to the issuance of citations and the establishment of appropriate abatement times.

The Agency has taken the aforementioned measures to improve the inspectors' understanding of reasonable citation abatement times and the importance of timely follow-up. This has been done, even though we recognize that it will not always be possible for an inspector to be in the area at the designated time of abatement. As stated

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in the *CMS&H General Inspection Procedures Handbook,* the inspector should make every effort to re-inspect the area as soon as the fixed abatement time has expired The most important factors relative to the abatement process are the initial consideration of the hazard posed to the miners and the 1977 Act's requirement for allowance of "reasonable time" for the operator to correct the condition. One only has to look at an example where a tail pulley is cited for lack of a guard at 3:00 pm on Friday. The inspector must set the abatement time to protect the miners and to allow ample time for correction. The abatement time is established as 9:00 pm on the same day. Monday is a holiday and the inspector knows he/she will not be back until Wednesday. The citation will not be timely abated according to your report, but it is cited and abated according to our guidelines and provides the maximum protection for the miners. The degree of danger to the miners is and must remain the first consideration in determining a reasonable time for abatement. However, due to the inspector's schedule and unforeseen assignments, such as 103(g) investigations, Code-A-Phone investigations, accident investigations, training assignments, etc., the inspector may not be able to re-inspect the area before the abatement time has expired. The fact that the inspector does not return to the area to evaluate the action taken toward abatement of the violation does not relieve the operator of his obligation to correct the cited condition.

See comment 10.

Footnote to Table 2: Quarterly Inspections of Underground Coal Mines, states that MSHA does not keep track of the past status of each mine. This is incorrect. The Coal MIS contains a historical record of all status changes back to October 1981. GAO did not specifically request information relative to historical mine status.

GAO Finding: "MSHA Has Highly Trained and Experienced Staff, but Lacks a Plan for Replacing the Large Number of Inspectors Who May Soon Retire"

See comment 11.

This finding is incorrect. MSHA does have a plan in place to address the potential for significant employee attrition in the near future, and to the extent possible, will implement this plan. We completed analyses of our 11 districts and have allocated human capital, *within authorized ceilings*, to those districts that will experience employee retirements. It must be noted that we cannot hire Full Time Equivalents (FTE) in excess of what has been authorized by Congress. We can only backfill vacancies as retirements occur. This does place us at a disadvantage in that it usually requires 1 ½ to 2 years of formal and on-the-job training before an inspector can conduct mine inspections. Without the authority to double-encumber positions by increasing the number of authorized FTEs, the Agency will continue to see its on-board inspector levels lower than its authorized hiring levels.

See comment 12.

Your report also states that MSHA is not using retention allowances to keep inspectors who are critical to the agency's mission. As the report indicates, MSHA's coal inspectors have been with the agency for an average of 18 years. The majority leave the agency for retirement purposes. A retention bonus is an incentive for unusually high or uniquely qualified employees who might otherwise leave Federal service. The payment of a retention allowance to eligible retirees would not be cost effective to MSHA, as these employees will still likely retire after the fulfillment of their service commitment.

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GAO Finding: "MSHA Does Not Collect Data on Independent Contractor Staff Needed to Assess the Effectiveness of Its Enforcement Activities"

See comment 13.

GAO recommends that MSHA amend guidance provided to independent contractors requiring them to report work hours by specific mine. This may require a regulatory change, not a guidance change. MSHA's intra-agency coordination committee is in the process of reviewing recommendations from the independent contractor task group. MSHA's goal is to find the best method for obtaining the necessary contractor information.

GAO Finding: MSHA's Databases Used to Track Accidents and Investigations Have Weaknesses.

See comment 14.

GAO is incorrect when they say we cannot link certain type accidents to the actual accident investigations. Although the Part 50 database and the Accident Investigation database are separate, stand-alone systems, they are linked using the document control number generated by the Part 50 database. Each database can be independently queried for relative information needed to develop and track accident/injury trends and incidence rates. MSHA agrees with the GAO that this method is cumbersome and MSHA intends to do remedy this situation as the systems are re-written and combined between FY 2004 and FY 2005.

See comment 15.

The GAO report states that "MSHA does not assign an identifier to each accident." MSHA does assign an identifier to each accident, called the Document Number, which is assigned to each 7000-1 Form and becomes a part of the database (this field was not requested by GAO as part of the data sharing). The Document Number is directly linked to individual inspection/investigation events in the accident investigation database.

See comment 16.

The Report also says that "MSHA cannot easily determine the number of roof falls that occurred each year…" Operators are required to complete a 7000-1 for accidents as defined in 30 CFR 50.2(h), which includes non injury accidents such as unintentional roof falls. These are entered into our system and can be identified by using the non injury degree code 00. The accidents were included in the data provided to GAO. Attached is the number of roof falls reported to MSHA each year since 1983.

Additional comments:

See comment 17.

Footnote 7 on page 16 mentions that MSHA's predecessor, the Mining Enforcement and Safety Administration (MESA) had responsibility for overseeing impoundments at the time of the Buffalo Creek disaster. MESA was not created until July of 1973 and Buffalo

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Creek Disaster occurred in 1972. Mine safety responsibilities were with the Bureau of Mines at that time.

We would welcome the chance to meet and further explain our concerns and reasons for the recommended changes. If you have questions on any comments that MSHA has provided, please contact Kenneth Bullock on (202) 693-9778 or Kenneth Murray on (202) 693-9505.

Sincerely,

for Dave D. Lauriski
Assistant Secretary of Labor for
Mine Safety and Health

Enclosure: Roof falls 1983-2002

	DEGREE OF INJURY							
CALENDAR YEAR	ACCIDENT ONLY	DAYS AWAY FROM WORK ONLY	DAYS RESTRICTED ACTIVITY ONLY	DYS AWY FRM WRK & RESTRCTD ACT	FATALITY	NO DYS AWY FRM WRK,NO RSTR ACT	PERM TOT OR PERM PRTL DISABLTY	TOTAL
1983	1,997	549	22	17	23	156	10	2,774
1984	2,218	592	17	11	33	136	5	3,012
1985	2,091	502	18	12	21	135	9	2,788
1986	2,134	506	14	10	30	155	5	2,854
1987	2,272	586	18	10	20	189	4	3,099
1988	2,257	577	24	12	10	216	2	3,098
1989	2,365	616	34	19	20	209	7	3,270
1990	2,372	591	31	14	26	202	11	3,247
1991	2,394	540	40	13	21	171	4	3,183
1992	2,212	482	22	15	14	164	6	2,915
1993	1,783	386	24	24	16	137	3	2,373
1994	1,886	388	30	18	10	168	5	2,505
1995	1,860	285	34	18	7	126	4	2,334
1996	2,148	312	31	14	10	122		2,637
1997	1,911	281	48	22	8	154	1	2,425
1998	1,828	316	25	26	15	122	1	2,333
1999	1,672	257	34	15	13	107	3	2,101
2000	1,373	258	30	16	3	91	3	1,774
2001	1,462	191	13	14	13	103	2	1,798
2002	1,233	190	19	10	5	81	1	1,539
TOTAL	40,092	8,480	535	313	318	2,971	88	52,797

GAO Comments

1. The briefing to which MSHA refers is the exit conference held on August 5, 2003, in which we described the findings, conclusions, and recommendations contained in this report to MSHA in detail. At this conference, as well as briefings held with top MSHA officials in June, MSHA generally concurred with our findings, conclusions, and recommendations. The information presented at the exit conference and the other briefings is consistent with the information contained in this report.

2. We believe the title of the report presents a fair, balanced, and accurate representation of the information in our report. Moreover, MSHA's own suggested title acknowledges a need for improvement.

3. Our finding that MSHA does not provide adequate oversight of the districts' completion of 6-month technical inspections is accurate. As MSHA acknowledges in its comments, the information reported by the district offices to MSHA headquarters on technical inspections is not accurate or complete. Therefore, MSHA headquarters cannot use this information to monitor the completion of inspections by the districts. Our draft report noted problems with the accuracy of the data reported by district offices to MSHA headquarters on technical inspections. However, because of the concerns MSHA expressed in its comments about the accuracy of the data, we clarified the discussion of this issue in the report and deleted detailed information included in an appendix to the draft derived from the data. We commend MSHA on its efforts to improve the accuracy of the data collected by its district offices, thereby enhancing the agency's ability to monitor the status of these inspections.

4. We used the term "technical inspection" in our report in order to provide a reader friendly method of referring to the on-site inspections conducted by MSHA related to mine plans. The term "plan review" used by MSHA does not distinguish the reviews specialists conduct at the district offices in order to determine whether written plans submitted by mine operators comply with the law, regulations, and MSHA's procedures from the on-site inspections conducted at the mines in order to compare the plans to actual conditions at the mines.

5. We clarified the language in the report to more accurately reflect agency procedures.

6. While MSHA believes the "dynamics" of the mining industry preclude a formal plan for coordinating inspections, several district officials we interviewed said that more coordination of effort in this area by MSHA could lead to better use of agency resources and eliminate potential duplication of effort. Furthermore, MSHA headquarters officials issued a memorandum in June 2003 encouraging districts to better coordinate inspections conducted by specialists and inspectors, suggesting that coordination could be important in avoiding duplication.

7. We commend MSHA on its efforts to address this problem. Both of the initiatives MSHA mentions are included in our report, and we encourage the agency to move forward with these hiring and staffing initiatives.

8. We commend MSHA on its efforts to provide additional training to inspectors and to consolidate its procedures. However, our interviews with inspectors indicate that they interpret guidance they receive differently and are sometimes uncertain as to what constitutes a violation. While we acknowledge that an inspector's experience is an important component of the decision-making process, an over reliance on experience can lead to inconsistencies in inspectors' interpretations of the procedures. We also note that MSHA's comment that our report implies that MSHA and the Office of the Solicitor have been inattentive in ensuring that inspectors receive accurate and timely training on the legal tests needed to be applied for various enforcement decisions is not accurate. Our report makes no such statement; it refers only to the written procedures provided by MSHA to inspectors.

9. We commend MSHA's efforts in this area and again stress the importance of using the data it collects in its Coal Management Information System to monitor the timeliness of inspectors' actions to ensure that mine operators are correcting all mine hazards as required. MSHA's own guidance states that a violation cannot be abated until an inspector re-inspects the area. As noted in our report, MSHA officials told us that they have begun tracking the numbers of citations for which inspectors have not followed up in a timely manner as part of a new initiative to better monitor district office performance.

10. We made this correction to the report. However, we note that we did, in fact, request information from MSHA officials on the historical status of each mine but chose not to use the information because the officials expressed doubts about its accuracy.

11. In several conversations with senior level MSHA officials, including the Assistant Director for Human Resources, they told us that, although they were in the process of developing a plan for addressing the large number of retirements the agency is facing over the next 5 years, they had not yet developed such a plan. After receiving MSHA's comments on our draft report, we asked MSHA officials for a copy of the plan referred to in the agency's comments. They told us they did not have one plan but, instead, had recently developed plans for each of the 11 district offices and provided us with a copy of a plan for one district dated March 2003. When we visited this district office in March 2003, we discussed the issue of how the district will address the large number of inspectors who will retire in the next 5 years. At that time, the district officials told us they were in the process of developing a plan for how to replace these inspectors but had not completed the plan. They did not mention having such a plan in place, and we were not provided with a copy of the plan at that time.

    Based on our review of the district plan provided to us by MSHA, we commend the agency for beginning to take appropriate actions necessary to address anticipated staffing shortages. The plan, however, does not integrate accomplishment of MSHA's mission to protect the safety and health of coal miners with its human capital approaches, including identifying the total number of inspectors needed to accomplishment its mission, or address how these numbers will be maintained through hiring and training of new inspectors as retirements occur. The plan also does not link the accomplishment of MSHA's strategic goals using outcome data—such as trends in the incidence rate (fatalities and nonfatal injuries) at underground coal mines—to its future human capital needs. As noted in our recommendation, MSHA needs to develop a comprehensive plan that addresses the human capital needs of the agency as they pertain to protecting the safety and health of coal miners rather than just developing plans for each of its district offices.

12. We suggested the use of retention allowances as one type of human capital flexibility that can benefit an agency facing a potential loss of employees in a particular skill area. The use of retention allowances, however, is only one of the human capital flexibilities we mentioned in the report. In including a list of human capital flexibilities, our intent was that MSHA would select those that are cost-effective and beneficial to the agency.

13. While we commend MSHA in its continuing efforts to address the issue of reporting by independent contractors, our recommendation to amend guidance so that all independent contractors are required to report the number of hours worked by their staffs at specific mines would not require a regulatory change. However, if MSHA believes that a regulatory change is necessary, it should take appropriate action. In either case, we believe that obtaining input from the mining community prior to making such a change and notifying them of the change would be beneficial to the entire mining community.

14. Our report does not state that information on certain types of accidents and investigations cannot be linked but rather that doing so is a difficult process and, in its comments, MSHA agreed that the process is cumbersome. The report, however, refers to linking data in the Part 50 Database in which injuries resulting from accidents are tracked with data in the Coal Management Information System on accident investigations. In its comments, MSHA refers to linking data from the Part 50 Database to information in the Accident Investigation Database. MSHA is correct in stating that injuries and noninjury accidents recorded in the Part 50 Database can be linked to accident investigations in the Accident Investigation Database. However, the Accident Investigations Database only contains information on accidents that were investigated, not all mine accidents. In addition, as noted in our report, the database is incomplete and is not widely used throughout the agency because it is not user friendly.

15. Our finding that MSHA does not assign an identifier to each mine accident is accurate. The document number on the Form 7000-1 to which MSHA refers in its comments is assigned to each injury, not each accident, except for accidents in which no injuries occur. Therefore, it is difficult to determine how many accidents of each type occurred or to track trends in the types of accidents that account for the most injuries.

16. The detailed list MSHA provided to us as an appendix to its comments shows the total number of injuries, by degree, that resulted from roof falls and the total number of noninjury accidents that occurred as a result of roof falls for the past 20 years. The data do not, as MSHA implies, show the total number of roof falls that occurred during this period. As noted in our report, this makes it difficult for MSHA to track trends in the most frequent causes of mine accidents or readily determine the percentage of accidents that result in injuries.

17. We made this correction to the report.

Appendix IV: GAO Contacts and Staff Acknowledgments

GAO Contacts

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Staff Acknowledgments

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