

**STATEMENT OF RICHARD E. STICKLER
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BEFORE THE

**SUBCOMMITTEE ON LABOR, HEALTH AND HUMAN SERVICES,
EDUCATION, AND RELATED AGENCIES
COMMITTEE ON APPROPRIATIONS**

UNITED STATES SENATE

September 5, 2007

Chairman Harkin, Chairman Byrd, Senator Specter, Members of the Subcommittee, thank you for the invitation to appear before you today.

As a third-generation coal miner, I have worked in the coal mining industry for more than 40 years. My experience includes working shifts in underground coal mines, serving as the captain of a mine rescue team, and working in and around mine sites and mining communities every day. I know firsthand that every fatality, injury, and illness is devastating for miners, their families, and the communities they live in. That is why I am deeply saddened by the tragic accident resulting in 6 missing miners that occurred at the Crandall Canyon mine on August 6, 2007, and the subsequent accident during the rescue effort that claimed the lives of three rescue workers, including one Mine Safety and Health Administration (MSHA) employee on August 16, 2007.

These events underscore the importance of the Agency's mission to protect the safety and health of the Nation's miners. In the wake of this accident, my resolve and MSHA's commitment to enforce the Nation's mine safety and health laws have never been stronger. We will not know the cause of these tragedies until MSHA completes its accident investigation. The Crandall Canyon mine accident investigation team is presently at the mine to conduct their onsite investigation activities. The Department has named an independent review team to look at MSHA's actions at the Crandall Canyon Mine before August 6, 2007.

The Crandall Canyon Mine Accident

On August 6, at approximately 2:50 a.m. Mountain Daylight Time, a mine bump occurred at the Crandall Canyon mine, located near Huntington, Utah. The force of this mine bump was registered by seismographs, and the U.S. Geological Survey National Earthquake Information Center initially reported that an earthquake with a magnitude of 3.9 on the Richter Scale occurred near the mine. Seismologists with the U.S. Geological Survey National Earthquake Information Center in Colorado and the University of Utah have since stated that the seismic event was a mine collapse, not an earthquake. Inside the mine, the force of this bump was so intense that it blew the ventilation stoppings out

through cross-cut 95 – more than a mile from the area where the miners were working. Since the event, six miners – Manuel Sanchez, Brandon Phillips, Alonso Hernandez, Don Erickson, Carlos Payan, and Kerry Allred – have been missing. The subsequent rescue attempt within the mine moved slowly, because safety dictated the installation of rib supports consisting of 40-ton rock props, chain-linked fence and steel cables to protect the rescue workers from further mine bumps. These safety precautions – which were recommended by experts from MSHA and outside the agency – proved to not be strong enough to prevent a second burst from fatally injuring three rescue workers, Brandon Kimber, Dale Black, and Gary Jensen, who worked for MSHA. At that point, MSHA halted the rescue attempts inside the mine, while continuing the rescue work from the surface.

In order to understand how we arrived at the events of August 6, I want to provide the committee with the background of the mine. Mining began at Crandall Canyon mine in 1981. According to MSHA records, Murray Energy Corp. became the mine's controller on August 9, 2006. Since Murray Energy took ownership of the operation last year, MSHA has issued 67 violations against the mine, plus the section 103(k) order issued immediately after the accident on August 6, 2007.

MSHA Inspection Activity at Crandall Canyon

Under the Mine Safety and Health Act, MSHA is required to inspect all underground coal mines four times a year. Since the purchase of the Crandall Canyon mine by Murray Energy, MSHA has performed 5 regularly scheduled inspections, two spot inspections, responded to a complaint from a whistleblower, and performed a roof control technical inspection. One of the regularly scheduled inspections was occurring when Murray Energy Corp. purchased the mine. A total of 73 citations were issued during these inspections with proposed penalties of \$19,662.

Crandall Canyon Emergency Response Plan

Under the MINER Act, all underground coal mines are required to develop and adopt a written emergency response plan (ERP) that provides for the safe evacuation of miners and the maintenance of miners trapped underground. The ERP for Crandall Canyon mine was approved on June 13, 2007. The Crandall Canyon mine was in compliance with the SCSR requirements, the lifeline requirements, the communications requirements, the tracking, training, post-accident logistics, and local coordination requirements. The mine had elected to use refuge shelters comprised of oxygen cylinders and pre-packaged soda lime cartridges to meet its breathable air requirement and had placed a purchase order but had not received the refuge shelter. Finally, the mine used personal emergency devices (PEDs) – which are not required under the ERP – in addition to its redundant communications systems.

Retreat Mining at Crandall Canyon Mine

MSHA's records indicate the first plan for retreat mining at Crandall Canyon Mines was approved on September 27, 1989. Prior to Murray Energy taking control, all longwall mining was completed and room and pillar mining was conducted at various locations. Since August 2006, MSHA has approved two amendments to the Crandall Canyon roof control plan that allowed for pillar extraction in both the North Barrier of Main West and in the South Barrier of Main West of the mine. The first plan for retreat mining under Murray Energy Corp.'s ownership was approved on February 2, 2007. The roof-control plan for the mine was amended to allow retreat mining of the North Barrier of the Main West and was signed by the District Manager. A second amendment to the roof control plan was approved on June 15, 2007, for retreat mining of the South Barrier of the Main West. The accident on August 6, 2007, occurred in the South Barrier of Main West.

As part of the operator's submission for roof control approval, two geotechnical reports by Agapito Associates, Inc. (Agapito) were provided to MSHA for review and consideration. Agapito concluded that retreat mining could be conducted safely in that area of the mine. Prior to the approval of the plan, a MSHA roof control supervisor and specialist visited Crandall Canyon to assess the conditions in the North Main Barrier and based on their observations in that area, required amendments to the roof control plan for additional roof supports. In addition, MSHA required Crandall Canyon to install additional roof support for retreat mining in the North Main Barrier.

Mining took place on the North Main Barrier until March 2007, when a mountain bump occurred. MSHA was not notified about this bump or the magnitude of the bump when it occurred. The accident investigation team will determine whether the incident was required to be reported to MSHA as part of its work. After the bump, mining was abandoned in that section and Crandall Canyon submitted another amendment to its roof control plan asking for permission to use retreat mining in the South Main Barrier. It again commissioned Agapito to evaluate the stability of that section of the mine. While Agapito again concluded that retreat mining could be conducted safely, it also suggested extending the remaining coal pillars that were left to support the roof from 80 by 92 feet to 80 by 129 feet. A MSHA roof control supervisor and a roof control specialist were underground in the South Barrier Section on May 22, 2007, to evaluate the operator's submitted plan to retreat mine. The retreat mining plan with the increased pillar dimensions was approved on June 15, 2007.

Retreat Mining of Pillars

Much has been made in the media about retreat mining. Retreat mining is a common practice where coal is mined from coal pillars. When this coal is mined the roof normally falls in a structured manner to relieve the pressure placed on the underground mine workings. As of August 21, 2007, 223 underground coal mines had approved roof control plans that allow for pillar-removal. This represents 48% of all active underground coal mines. Retreat mining can be conducted safely, especially with today's technological advances that include mobile, remote controlled roof supports, if the roof control plans are adhered to. Overall, the roof fall fatality rate in U.S. underground mines has averaged 0.001 per 200,000 hours worked (or 1 per 100,000 full time miners) in

recent years (prior to the Crandall Canyon incident), down significantly from its average in the past.

Mine Bumps

One of the most difficult, longstanding engineering problems associated with mining is the catastrophic failure of mine structures known as bumps. Coal and rock outbursts caused by bumps or bounces have presented serious mining problems for decades in metal, non-metal, and coal mines. Fatalities and injuries have resulted when these destructive events occur.

Bumps have been categorized as either pressure or shock bumps. A pressure bump occurs when a pillar in a developed area is statically stressed past the failure strength of the pillar. A shock bump is caused by dynamic loading of the pillar through dramatic changes in stress distribution within the overlying strata as the result of breaking of thick, massive strata. In many cases bumps are the result of the combination of both pressure and shock forces. Bumps occur when complex arrangements of geology, topography, *in situ* stress and mining conditions interact to interfere with the orderly dissipation of stress. Strong, stiff roof and floor strata not prone to failing are also contributing factors when combined with deep overburden. Questions about the influence of individual factors and interaction among factors arise, but are difficult to answer owing to the limited experience at a given mine.

Bumps have occurred in all types of mining systems. A United States Bureau of Mines report that reviewed bumps that occurred between 1936 and 1993 found that pillar retreat mining accounted for 35% of the bumps, pillar splitting for 26%, long-wall mining for 25%, and development mining for 14%. Long-wall mining methods have increasingly replaced pillar retreat mining since the 1960's and would most likely account for a higher percentage of bumps today.

With more mining operations moving into reserves under deeper overburden and/or below previously-mined areas, there is a need to understand methods to prevent, and, in the event they do occur, to mitigate the consequences of, bumps in such new circumstances. For this reason, MSHA is already reviewing operators' ground control plans to ensure operators minimize the dangers associated with bumps. In addition, MSHA is in consultation with the National Institute for Occupational Safety and Health (NIOSH), in the Department of Health and Human Services, about appropriate research focusing on the danger of bumps in those circumstances.

Crandall Canyon Accident Outline

On the early morning of August 6, 2007, a ground failure occurred at the Crandall Canyon Mine in Huntington, Utah, that, according to the U.S. Geological Survey, registered 3.9 on the Richter Scale, and was initially reported by the Associated Press as an earthquake. MSHA's call center was subsequently notified and MSHA quickly dispatched an inspector to the mine site. Before arriving on site, MSHA issued a section

103(k) order over the phone which required workers to evacuate the mine and effectively secure the site.

Shortly after arriving on site, the MSHA inspector contacted the MSHA Field Office to report that a six-man crew was working in the South Barrier section (where the accident occurred) when a bounce occurred that extensively damaged the mine's ventilation controls. These individuals were unaccounted for, but they were believed to be working approximately four miles from the mine's entrance.

On the afternoon of August 6, 2007, with MSHA's approval, Murray Energy Corp. began mucking out the Number 4 entry at crosscut 120. Meanwhile, a mine rescue team had breached the Number 1 seal in Main West, hoping to be able to get behind that seal and clear an easier pathway to crosscuts 138 and 139 to more expeditiously reach the trapped miners. Unfortunately, the rescue team encountered significant amounts of coal blocking its pathway, and then had to withdraw altogether from the sealed area because another bounce occurred.

Mucking or clearing out the fallen coal from the main entry was a time-consuming process and Murray Energy and MSHA believed that we needed to more quickly reach the trapped miners to save their lives, if they survived the initial collapse. Thus, following the first day of the rescue operation, Murray Energy decided, with MSHA's consultation and approval, to drill bore holes into the mine from the surface in an attempt to establish contact with the miners and to assess the conditions in the area where they were believed to be.

By August 7, drilling had begun on the first borehole, which was a two-inch hole at crosscut 138. The mine operator selected all of the borehole locations with input and approval from MSHA. These locations were based upon the probable locations of the missing miners after the first bounce occurred on August 6. The first set of boreholes was drilled to intersect the mine at the location where the miners were last thought to be working at the time of the accident. Mine survey coordinates were used to pinpoint specific drilling locations.

In all, seven boreholes have been drilled (the rest being 8 and 5/8 inches in diameter) but rescuers have not found the location of the miners. In every borehole, rescuers attempted to insert a microphone and camera to either hear or see the trapped miners. Rescue workers also tapped repeatedly on the drill steel to signal to the trapped miners; miners are trained to reply by tapping below the surface. However, none of these communication efforts have been fruitful.

As the rescuers continued to drill boreholes from the mine's surface, another group continued the mucking and clearing efforts in the mine's entry until another bounce occurred on August 16, which claimed the lives of three of the rescuers and injured six others. Since that bounce occurred, mucking efforts within the mine have been suspended indefinitely. Neither MSHA, nor the outside experts brought to the mine site to review the mining conditions and rescue plan could devise a way to stabilize and

reenter the mine. MSHA believed the plan it approved for the rescue operations prior to August 16 provided the maximum amount of protection to the rescuers possible, but it was not enough.

Since August 16, Murray Energy – with MSHA’s approval – has continued to drill boreholes. There is also a rescue capsule on the mine site if the trapped miners are found alive, but using the capsule would involve extraordinary risk. This risk cannot be taken if there are no signs of life because the danger is too great that more lives will be lost.

MSHA Fulfilled its MINER Act Responsibilities at Crandall Canyon

Immediately after MSHA was notified of the Crandall Canyon accident, MSHA began fulfilling its responsibilities as the primary communicator with the families, policymakers, the public and the media a responsibility which MSHA takes very seriously after the Sago Mine accident.

On the morning of August 6, 2007, MSHA dispatched three family liaisons to the location where the family members were gathered to begin regularly updating them on the rescue operation. MSHA also provided interpreters for the Spanish speaking families. Clergy and counselors were also available. MSHA’s family liaisons continue to honor these responsibilities today.

On Wednesday, August 8, 2007, I began participating in these briefings and spent nearly six hours every day providing updates and answering family members’ questions.

MSHA also acted as the primary communicator with the media. Although news outlets sometimes chose to broadcast parts of the briefings conducted by the mine operator instead of MSHA, the Agency never failed to be the primary communicator. During the first week of the rescue operation, MSHA held regular briefings every day for reporters off of the mine site at the sheriff’s command center. During these briefings, we provided detailed updates regarding the rescue effort and answered reporters’ questions. MSHA also provided regular updates on the Agency’s website regarding the rescue effort and issued media advisories concerning our updates at the mine site.

In addition, MSHA personnel regularly updated Utah’s governor and congressional delegation on the status of the rescue operations, both on and off-site. Kevin Stricklin, MSHA’s Administrator for Coal Mine Safety and Health, also briefed the Utah Legislature at an open public forum on August 29, 2007, in Salt Lake City.

All of these actions underscore how seriously MSHA takes its responsibility to be responsive to the families and to be the primary communicator.

Conclusion

I cannot fully express my personal disappointment and the overwhelming sadness I feel regarding the Crandall Canyon accident and rescue efforts during this last month. I know that words alone cannot and will not provide comfort to the families, friends, and communities of the miners and rescue workers who lost their lives or were injured at Crandall Canyon mine. We commend the heroic efforts of these individuals who put their lives on the line in the effort to rescue the trapped miners.

Each and every individual at MSHA remains dedicated and focused on our core mission: to improve the safety and health of America's miners and to work toward the day when every miner goes home safe and healthy to family and friends, after every shift of every day. MSHA cannot do this alone. The entire mining community – mine operators, miners, and health and safety professionals included – must also do their part to improve mine health and safety. Working together, MSHA, mine operators and miners can achieve this important goal.

Thank you for inviting me to testify today. I look forward to answering your questions and to working with this committee to continue to improve mine safety.

Appendix 1: Accident Timeline

August 7, 2007

- In the early morning hours, repairs to damaged ventilation systems continued. MSHA's roof control personnel traveled into the mine to evaluate conditions to help determine whether or not clearing this entryway could resume safely.
- The drilling equipment used to drill the first 2 inch borehole was put in place at crosscut 138 approximately where the miners were believed to be the evening before and drilling began.

August 8, 2007

- In the morning, MSHA approved a new mine rescue plan presented by Murray Energy to allow clearing the Number 1 entry, but with extensive rib support.
- In the evening, drilling of the second borehole began. This borehole was drilled with an 8 and 5/8 inch bit.

August 9, 2007

- In the evening, the drill for the first borehole broke through the mine cavity and a microphone was lowered in to determine whether or not any underground activity could be heard. No activity was detected and rescuers continued drilling the second borehole.

August 10, 2007

- An analysis of the atmosphere in the first borehole revealed low oxygen readings, but a 3 ½ foot void was detected in the bored area in the mine.
- In addition, a two-man team tried to advance in the Number 1 entry but to no avail.

August 11, 2007

- Early in the morning, the second borehole (8 and 5/8 inches) broke through the mine cavity, but no communication was detected from underground. A roof height of eight feet was detected and a camera was lowered into the cavity but only wire mesh in the roof was detected.

August 12, 2007

- In the evening, another camera was lowered into the number 2 borehole and compressed air began to be pumped in. No response from the trapped miners was detected.
- In addition, a pad for a third borehole began to be constructed.

August 13, 2007

- Early in the morning a third camera was lowered into the second borehole, and again no sign of the miners was detected.
- In addition, the drilling equipment was moved from the second to the third borehole and drilling began in the evening.

August 14, 2007

- Drilling of the third borehole continued while a drill pad began to be constructed for a fourth borehole.

August 15, 2007

- Mid-morning, the third borehole broke through the mine cavity. A microphone was lowered into the hole but no communication with the trapped miners resulted. Seismic equipment, however, picked up an unidentified noise that was not heard again. A camera was subsequently lowered into the hole, but nothing of note was seen.

August 16, 2007

- In the early morning, the drilling equipment was moved to the site of the fourth borehole and drilling began.
- Later in the evening, a significant bounce occurred in the mine and several rescuers were covered up by coal. In the end, six rescuers were injured and three were killed, including one MSHA employee.
- As a result, rescue efforts proceeding inside of the mine were halted indefinitely after advancing over 900 feet. These have not resumed because no way to proceed safely has been identified by either MSHA or outside ground control experts.

August 18, 2007

- In the morning, the fourth borehole broke through the mine cavity. No response from the trapped miners was detected.
- In the evening a camera was lowered into the hole and nothing was detected. Nothing was detected with seismic equipment.

August 19, 2007

- In the evening, rescuers began drilling a fifth borehole.

August 22, 2007

- Drilling in the fifth borehole broke through the mine cavity. Rescuers could not, however, get a camera into the hole because the hole became blocked.

August 23, 2007

- Rescuers began drilling a sixth borehole in the evening.

August 25, 2007

- Drilling in the sixth borehole broke through the mine cavity. A camera was lowered into this hole in the early morning of August 26, but there was no sign of the trapped miners. On August 27, rescuers also attempted to lower a robot into this hole, but were unable to complete this task because there was too much debris in the area.

August 28, 2007

- In the early morning, rescuers began drilling a seventh borehole, which broke through the mine cavity on August 30, 2007.

Appendix 2: MSHA Enforcement and Implementation of the MINER Act

Increased Enforcement

Enforcement of the Nation's mining laws is a key component to protecting the health and safety of miners, and continues to be a top priority at MSHA. In 2006, MSHA issued more citations and orders than in any year since 1995 – and there were almost 3,000 coal operations in 1995 compared to just over 2,000 in 2006.

The number of unwarrantable failure citations and orders issued in 2006 was the highest since 1995. To date this year, MSHA has issued more unwarrantable failure citations and orders than in any full year between 1995 and 2005. The percentage of unwarrantable failure issuances in 2007 (to date) is the highest since 1994.

The total fines assessed against coal operators and contractors increased 46% in 2006 compared to the previous year and were the highest total dollar assessments since 1994. As of the one-year anniversary of the MINER Act, MSHA issued 12 citations for flagrant violations, including three of the largest proposed penalties in the history of the Agency. Year-to-date penalties have increased from \$22.1 million in CY 2006 to \$41.5 million in CY 2007. The average penalty for each violation increased by 29% in 2006 compared to 2005 – and the average penalty for each violation has more than doubled so far in 2007 – with the full impact of the increased penalties that became effective in April yet to be realized. The fatality rate has decreased 70% at coal mines and 45% overall from CY 2001 to CY 2007.

Implementing the MINER Act of 2006

MSHA's full commitment to protecting the health and safety of miners is further demonstrated by the timely and successful implementation of MINER Act provisions – often ahead of schedule. Moreover, MSHA has imposed requirements that go beyond the requirements of the Act. Significant accomplishments over the past 12 months include:

New Penalties for Late Accident Notification and Unwarrantable Failure Violations

Upon the signing of the MINER Act of 2006, MSHA immediately implemented new minimum penalties for late accident notification and “unwarrantable failure” violations.

New Penalties for Flagrant Violations

MSHA issued a Procedure Instruction Letter (I06-III-04) to implement the new “flagrant violation” maximum penalty of up to \$220,000.

Secretarial Order to Improve Post-Accident Communication with Families

The Secretary of Labor signed an Order creating the Family Liaison and Primary Communicator positions that are filled by specially trained MSHA employees at emergency sites. MSHA, with the assistance of the National Transportation Safety Board and the American Red Cross, has trained 15 family liaisons to date. Four more MSHA employees are scheduled for family liaison training in November 2007.

Strengthening Evacuation Practices

MSHA issued a final rule to strengthen mine evacuation practices in underground coal mines. The rule included:

- **Self-Contained Self Rescue (SCSR) Devices:** The rule requires coal mine operators to provide additional SCSRs for each miner underground in areas such as working places, mantrips, escapeways, and other areas where outby crews work or travel. The rule also requires that SCSRs be readily accessible in the event of an emergency.
- **Multi-Gas Detectors:** The rule goes beyond the requirements of the MINER Act by requiring coal mine operators to provide multi-gas detectors to each group of underground miners and each miner working alone.
- **Lifelines:** The rule requires coal mine operators to install directional lifelines in all primary and alternate escape routes out of the mine. Lifelines help guide miners in poor visibility conditions toward evacuation routes and SCSR storage locations. Lifelines must be flame-resistant by June 15, 2009.
- **Training:** The rule requires coal mine operators to conduct quarterly training sessions instructing miners how to don SCSRs and, in particular, how to transfer from one SCSR to another. The training provisions in the mine emergency evacuation rule go beyond the requirements of the MINER Act by requiring “expectations training,” providing miners with simulated conditions they would encounter using a SCSR during an emergency. SCSR training units to simulate breathing resistance and heat for annual expectations training have now been developed.
- **Accident Notification:** The rule requires all mine operators to contact MSHA within 15 minutes of an accident. MSHA also implemented a nation-wide single call-in number (1-800-746-1553) for accidents and hazardous condition notifications to ensure an immediate, consistent and effective response by MSHA.

Requiring Breathable Air for Trapped Miners

MSHA issued a Program Information Bulletin (PIB) (No. P07-03) that gives mine operators a range of options, including boreholes and oxygen supplies, to provide breathable air to miners who are trapped underground. The use of state-approved refuge chambers is acceptable as a means of meeting the requirements of the PIB for breathable air.

New Civil Penalties for Safety and Health Violations

MSHA published a final rule to increase civil penalty amounts for mine safety and health violations. Issuance of this rule goes beyond the requirements of the MINER Act. The new rule provides for a general increase in civil penalties for violations and is applicable to all mines and contractors. The new penalty schedule:

- **Increases penalties:** Increases civil penalties overall, targeting the more severe health and safety violations.
- **Addresses repeat violations:** Adds a new provision to increase penalties for operators who repeatedly violate the same MSHA standards.
- **Eliminates single penalties:** Non-significant and substantial (non-S&S) violations formerly processed as \$60 single penalties are now processed as higher regular formula assessments.

Enforcing Safety Device Requirements

MSHA published a notice in the *Federal Register* notifying mine operators that SCSR training units were available. Mine operators were required to possess these training units, or provide a purchase order, by April 30, 2007, and conduct expectations training with them within 60 days of receipt of the units.

Tracking Inventory of Safety Devices

MSHA implemented a system for coal mine operators to electronically submit their inventories of SCSRs – a requirement of the emergency mine evacuation rule that went beyond the mandates of the MINER Act.

Protecting Miners Near Abandoned Areas

On May 22, 2007, MSHA published an Emergency Temporary Standard (ETS) that increased the protections for miners working near sealed areas in underground coal mines. This final rule was ahead of the December 2007 date required in the MINER Act. The ETS significantly increases the strength standard for mine seals from 20 pounds-per-square-inch (psi) set in 1992, to 50psi, 120psi, or more than 120psi when conditions exist that may create pressures in excess of 120psi. The ETS includes additional requirements not provided in the MINER Act: (1) approval of seal designs and mine-site installation designs; (2) provisions for sampling the atmosphere behind seals; (3) training for persons who sample, and construct and repair seals; (4) removal of insulated cables from areas to be sealed and metallic objects that enter the sealed area; and (5) prohibition of welding, cutting and soldering using arc or flame within 150 feet of a seal.

Developing New Communications Technologies

MSHA has conducted meetings with representatives of 58 communications and tracking system companies, observed the testing and/or demonstration of 23 post-accident communications and tracking systems, and approved 23 systems, including seven new devices.

Approval of Emergency Response Plans

MSHA has fully approved all of the Emergency Response Plans (ERPs) for active producing mines in this country with the exception of 2 partially approved plans. Full approval of these plans is pending review by MSHA of one recently submitted plan by a mine operator and the other entering into the dispute resolution process.

In addition, MSHA is using all available tools - enforcement, education and training, rulemaking, and evaluating/recognizing new technology, to achieve its goal of safer and healthier mines. For example, MSHA is using its statutory authority under the pattern of violations provision in the Mine Act of 1977 to identify mine operators who habitually violate MSHA standards and view penalties as the cost of doing business. In selecting potential pattern mines, MSHA developed a database to provide a more objective analysis of accident trends and enforcement results to better identify persistent repeat violators.

Proposed Rulemaking

MSHA has proposed revised and new standards for certification and availability of mine rescue teams for underground coal mines. MSHA has also proposed updated standards for mine rescue team equipment at mine rescue stations. These standards would apply to all underground mines: metal and nonmetal mines and coal mines.