Miller, Diane M. (CDC/NIOSH/EID)

From: Linda Parsons [lparsons@umwa.org]
Sent: Tuesday, September 15, 2009 12:50 PM
To: NIOSH Docket Office (CDC)
Cc: dodell@umwa.org
Subject: Docket Number NIOSH-174
Attachments: UMWA comments on NIOSH Document - Recent Coal Dust Particle Sixe Surveys and the Implications for Mine Explosions.pdf; UMWA Report on Explosion at Jim Walter Resources.pdf

Attached are the comments of the United Mine Workers of America on the NIOSH Document titled "Recent Coal Dust Particle Size Surveys and the Implications for Mine Explosions." Thank you for your consideration.

Sincerely,

Linda Raisovich-Parsons
Deputy Administrator
Department of Occupational Health and Safety
United Mine Workers of America

United Mine Workers of America

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September 15, 2009

NIOSH Docket Office
Robert A. Taft Laboratories
4676 Columbia Parkway, MS-C34
Cincinnati, Ohio 45226

Re: Docket Number NIOSH-174

Dear Sir/Madam,

Attached are the comments of the United Mine Workers of America on the draft publication available for public comment entitled "Recent Coal Dust Particle Size Surveys and the Implications for Mine Explosions." I ask that you forward our comments to the appropriate person(s) in your agency for review.

Thank you in advance for your cooperation in this matter.

Sincerely,

Linda Raisovich-Parsons

Linda Raisovich-Parsons
Deputy Administrator
Department of Occupational Health and Safety

Comments of the United Mine Workers of America
On The NIOSH Document 174
Recent Coal Dust Particle Size Surveys and the Implications for Mine Explosions

The UMWA has reviewed the NIOSH publication entitled "Recent Coal Dust Particle Size Surveys and the Implications of Mine Explosions." In this publication, NIOSH examines the relative proportion of rock dust that needs to be present in intake and return airways to prevent explosion propagation. The Agency examined the history of the previous studies and test conducted by the U.S. Bureau of Mines with regard to this issue and describes the evolution of regulations affecting the requirements for rock dusting of intake and return entries. In NIOSH's survey, dust samples were collected from the intake and return airways of 61 U.S. coal mines from ten of the eleven MSHA Districts for examination. Following the mine dust size survey, a series of large-scale dust explosion test were conducted to determine the incombustible necessary to prevent explosion propagation. The last such survey and tests were conducted in the 1920's by the U.S. Bureau of Mines. Mining technology and practices have changed considerably since that time resulting in the coal dust found in today's mines to be much finer than in mines of the 1920's. Such a review of the coal dust particle sizes of current mining practices was long overdue and we thank the Agency for expending the resources and time to re-examine this issue.

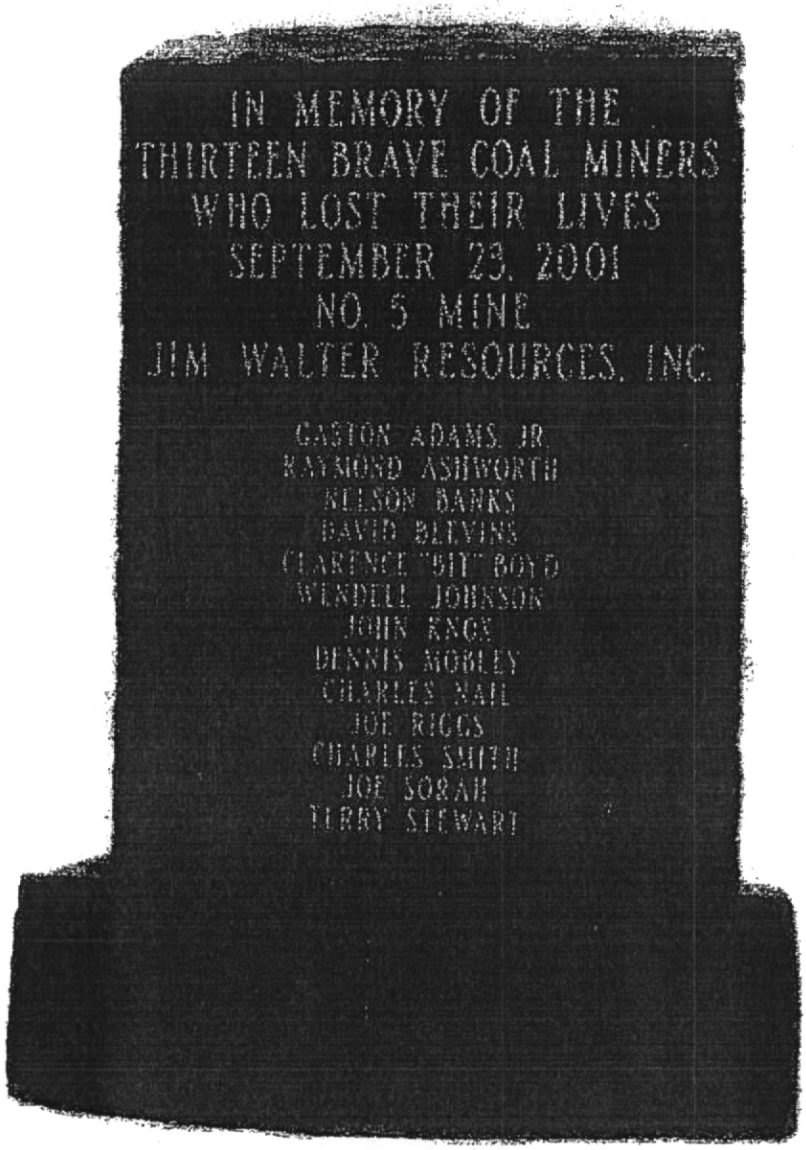
Current regulations require an incombustible content of 65% in the intake entry and 80% incombustible content in the return entries. The survey and test conducted by NIOSH found that the present size of coal particles in intake airways requires more incombustible content to be rendered inert than the current 65% regulation requirement. With the advent of current mining methods, coal mining has become highly mechanized, creating coal dust particles that are much finer (thus more explosive) than those of the 1920's. Consequently, NIOSH recommends a new standard of 80% TIC (total incombustible content) be required in the intake airways of bituminous coal mines. The survey did indicate that the current requirement of 80% TIC in return airways is sufficient. NIOSH also agreed and endorsed the earlier research recommendations of Mr. Nagy [1981] that new rock dusting standards should be based on a worst-case scenario (using high volatile coal) with no relaxation for lower volatile coals. The United Mine Workers agrees with NIOSH that this issue should be addressed though MSHA rulemaking to update the total incombustible content in intake entries to a new standard of 80%. We further agree that the standard should not provide relaxation for lower volatile coals. Considering the many mine disasters in recent years, we would urge MSHA to act expeditiously to correct this serious shortcoming in the regulations and will provide full support to NIOSH in such an endeavor. As pointed out in the UMWA report on the September 23, 2001 explosion at Jim Walter Resources #5 Mine, whether float coal dust increased the violence of the explosion forces was a primary area of concern to the UMWA, especially in light of the troubled compliance history of the JWR#5 Mine prior to the explosion. Attached is an excerpt from the UMWA's report on the JWR #5 explosion concerning float coal dust and rock dusting.

This document was very thorough and presented a clear case for improvement needed in this area of the regulations. The presentation of this material was very professional with test results to substantiate the Agency's recommendations. The paper provided the history of regulation and research on dust particle size and made a very clear and concise case for the need to update the regulations to address the advance in mining methods and technology's affects on the size of dust particles in coal mines. The United Mine Workers thanks NIOSH for its professional and thorough research and presentation of this material. The UMWA will endorse NIOSH in any effort to update the regulations to reflect the shortcomings in the current regulations as proven by this research.

JimWalter Resources # 5 Coal Mine Disaster

September 23, 2001;

A United Mine Workers of America Report



United Mine Workers of America, Department of Occupational Health and Safety

Float Coal Dust / Rock Dust

Whether float coal dust increased the violence of the explosion forces and the death toll on September 23, 2001, at the Jim Walter Resources # 5 Mine was a primary area of concern the UMWA, particularly after reviewing the troubled compliance history of the JWR # 5 Mine. Mining laws require coal mines to be adequately rock dusted to neutralize the highly explosive float coal dust that can accumulate when coal is being mined. Proper rock dusting is critical to prevent the explosion of the fine dust generated from mining activities. Float coal dust can become suspended in the air, and ignite or explode, upon meeting an ignition source. If methane or other gasses explode, suspended float coal dust will increase the explosive forces.

Investigators examined numerous records, statements and documents to determine how float coal dust was controlled in the mine and how "rock dust" was applied to reduce the potential for explosions. Many of the records, including enforcement documents issued by MSHA, revealed that the mine had serious problems controlling float coal dust and accumulations of combustible material, overall. The JWR # 5 Mine had a high number of rock dust / accumulations of coal and float coal dust and combustible materials violations. In less than nine-months immediately preceding these explosions (January 1, 2001 to September 23, 2001), MSHA issued the JWR # 5 Mine 79 citations on combustible materials and rock dusting -- mostly for accumulations of coal and float coal dust. A number of the citations extended for thousands of feet. In the last three weeks leading up to the disaster, MSHA cited the mine operator ten times for accumulations of float coal dust. The float coal dust violations ranged from about 300 feet to 7,000 feet and covered areas throughout the mine. The total area cited by MSHA during the prior three weeks covered over 22,000 feet in the mine. The No. 4 section had been cited for float coal dust just four days before the disaster: 300 feet of float coal dust was cited in the No. 4 section belt entry and 1,000 feet of float dust was cited in that section's left return. These amounts do not reflect the entire section, in that it was not entirely inspected on that day.

When the investigation team was able to examine the mine after the explosions, digging into the packed material on the mine floor, the dust in the last open long crosscut in the No. 4 section appeared black with little evidence of rock dust. Heavy coking was found in the same area as well as in the heading leading into the face of # 3 entry.

Rock dust and coal dust samples were taken throughout the JWR # 5 Mine during the investigation. The samples were sent to the MSHA coal dust analysis facility in Mount Hope, West Virginia for testing. The UMWA made several requests to obtain the results of these samples, but MSHA officials initially denied the requests. Only after MSHA released its final report to the general public was the UMWA able to review the sampling information. The data from those samples is vital to our report. It provides the overall combustible content information and reveals the condition of the mine prior to the explosion.

According to the Federal Code of Regulations, the incombustible content of the combined rock dust, coal dust, and other dust must be maintained to at least 65% in the intake air courses and at least 80% in the return air courses, in the absence of methane.

There were a total of 648 underground samples collected by various teams over four different time periods. The types of samples collected included band samples taken around the entire perimeter

at each location, roof-rib samples, and roof-only samples. At the conclusion of each day's sampling activities, the samples were packaged and transported to Mount Hope for testing and analysis with the results as follows:

- Of the 648 samples collected, 338 samples were collected outby 3-East; 89 of these samples did not meet the incombustible requirements.
- A total of 310 samples were collected throughout 3-East, 4-East, No. 4 section, No. 6 section, and the connecting entries for the 5-9 Shaft. 305 of these samples were tested and found be below an incombustible content of 65% in the intake air courses and an incombustible content of 80% in the return air courses. 123 of these 310 samples collected were band samples and were the only samples used by MSHA to determine if the JWR # 5 Mine complied with the regulatory requirements. The results determined that 121 of these samples, which calculates to 98.4% of the band samples collected, did not meet the regulatory requirements for incombustible content of the combined rock dust, coal dust, and other dust.

MSHA noted that two (2) activities took place during the recovery, which could have affected the sample results:

The first activity was the water pumped into the mine through the 5-9 shafts to extinguish the fire on the No. 6 section and to isolate the explosion area from the rest of the mine. MSHA explained that most of the mine inby 2-East was inundated. It further explained that surface moisture was removed before testing. According to MSHA, if inherent moisture increased as a result of the flooding, the incombustible content of the samples would have been further increased. Only inherent moisture, not surface moisture, contributes to incombustible content of mine dust.

- The sample results collected and analyzed for the No. 4 section were not affected by the flooding because the water level never reached this section. All 31 samples collected on the No. 4 Section were below the requirements for incombustible content.

The second activity was the dumping of rock dust into the 5-8 Intake Shaft. Approximately 88.5 tons of rock dust was pumped into the shaft during the recovery operations to cover the surfaces inby the 2-East area of the shaft. This was done to increase the safety of the rescue teams while they performed recovery work. According to MSHA, this additional rock dust would have elevated the incombustible content of the samples taken from the affected areas.

Following a review of the testing and analysis results of the dust samples collected, evidence shows that the JWR # 5 Mine had inadequate rock dust application that allowed float coal dust accumulations to occur. Consistent with MSHA's findings these accumulations became a major source of fuel for the second explosion. This increased the forces and damage of that explosion that led to the death of at least 12 of the 13 miners.

The UMWA investigation disclosed that top JWR mine management provided training that instructed certified mine examiners not to record float coal dust found during examinations in the "official" mine examination books. Therefore, the legally-required examinations records could not be relied upon to determine how much float coal dust may have accumulated throughout the mine in the days leading up to the disaster. These same records also could not be relied upon to establish whether corrective actions were ever taken. The investigation revealed the mine operator failed to accurately identify the float coal dust hazards and to have them recorded in the "official" examination book.

Interviews conducted during the investigation also revealed there were more float coal dust hazards throughout the mine than the mine examination books reflected.

The violations MSHA issued for accumulations of combustible material and float coal dust at the JWR # 5 Mine identify inadequate rock dusting and cleanup at the mine. Several miners interviewed during the investigation also described flaws and cutbacks in the rock dust procedures at the mine prior to the explosion.

Rock Dust Used at the Mine – The Company purchased rock dust from various suppliers, it was stored on the surface area of the mine and transported underground as needed. Some of the bulk dust used at the mine was described by miners who applied it as being gray in color, damp, fine, sandy, with marble-sized lumps, containing metal, being hard or slow to pump, heavy, plugging the lines and not sticking to the mine roof or ribs. Miners complained that the use of this dust often damaged the bulk dust tanks. Other dust used however, did not have those problems.

In addition to the dust that was applied by the bulk dust tanks, JWR used semi-bulk bags on the sections and 50-pound bags throughout the mine. On each section, a pod duster filled using 50-pound bags was to be used on that return during mining. Also, 3,000-pound semi-bulk bags were to be used in the section returns. Two of these bags were to be spread, per crosscut, in the first block outby the face on the footwall (mine floor) during the move-up process according to a standard operating procedures guide for the sections. The sections also had a scoop-mounted bantam duster that the service crews used to dust recently mined areas using the 50-pound bags of dust. This machine would blow dust through a flexible hose.

Problems With Rock Dusting the Mine - There were eight job bid classified rock dusters working at the JWR # 5 Mine on September 23, 2001. Four miners worked the 11:00 pm to 7:00 am shift, two worked the 7:00 am to 3:00 pm shift and two worked the 3:00 pm to 11:00 am shift. According to miners, the rock dusters applied the dust to areas of the mine outby the section or last open breakthrough using track-mounted bulk tanks. Each crew had an area in which they mainly worked but they could be sent to dust other parts of the mine or to perform other work, pursuant to instructions by their supervisors.

Evidence found that the dusters were required to install pipe so that the dust could be blown in the returns and the belt entries. This pipe was hung in each crosscut as the sections advanced and allowed the dusters to connect a flexible hose to one end of the pipe while the track-mounted bulk tank was hooked to the other end. A rock dust crew generally consisted of three miners on each shift, one operating the bulk tank and the other two dragging the hose that they were rock dusting with, however, sometimes there were fewer dusters. Complaints were raised about having fewer members on the crew than was necessary to adequately complete the job. This made it difficult on those trying to get the dusting done. The company started having the rock dust crews place tanks at locations throughout the mine and turn them on, without an operator, between shifts. This type of dusting was described as "phantom rock dust tanks".

The No. 4 section ran three shifts, with workers now switching over at the face, at least 5 days a week. However, for many years, up until early 2001, rock dusters said they worked nine-hour shifts, so that dust could be blown in areas such as belt intakes, track and returns while the sections were idle between shifts. When the JWR # 5 Mine began producing coal between shifts by relieving the crews at the working face, the rock dusters worked eight hour shifts.

According to one classified rock duster, the dusters did not have their own assigned motors, and there was a shortage of motors for the rock dust crews to use. The JWR# 5 Mine used motors to move supply cars, rock dust tanks, and other duties. This meant that on occasions, the dusters would have to wait for the motormen to help them move the dust tanks to the job site instead of doing it themselves. This was reported as occurring about half the time. Moving the dust tanks required the use of two motors on each loaded tank.

Installation of track did not keep up with the mining development and section advancement. This meant that rock dust pipe had to be hung over greater distances so that rock dust could reach the areas to be dusted. Pumping rock dust a longer distance increases the time needed to apply it. When working nine hours, evidence indicated that the crews would average two to three tanks per shift; with the reduced shifts they would pump only an average of one tank per shift.

Deputy Mine Manager Trent Thrasher noted there was no specific management person who oversaw rock dusting at the mine, and there was not a cycle to the rock dusting. He explained that when an area needed dusting, it was scheduled to get dusted as soon as possible. Don Fowler, haulage coordinator for the JWR # 5 Mine, who has 22 years at the mine, admitted that he was unaware of the company doing any rock /coal dust surveys. The company apparently let MSHA inspectors do rock dust sampling for them. Further, despite the assertion that production concerns did not interfere with rock dust maintenance, statements by both miners and mine management refuted this claim.

Jesse Cooley confirmed that there was no standard protocol for ensuring all areas of the mine were rock dusted. He also said that one or two people may have had sections assigned to them, for purposes of maintaining sufficient rock dust, though he was not familiar with that practice. While Cooley suggested that rock dusts crews were <u>not</u> shut down and utilized to move longwall equipment (saying that miners from the section or other outby people would be used for longwall moves), evidence showed that rock dusting was affected.

During the longwall move in early September 2001, the motors used by the rock dusters to move the dust tanks were utilized to move the longwall equipment. This meant that rock dusting was limited during this longwall move. Haulage coordinator for the # 5 Mine Don Fowler was responsible for the motors used in the mine. He said that the motors assigned to the longwall move, which took about six or seven days, <u>did</u> affect the ability to rock dust the mine during this time period. The purchase orders (JWR numbers 10793-10909) also show reduced purchases of the bulk dust used by the track-mounted dusters during the longwall move. Records supplied by JWR (exhibit numbers 10793 – 10841) show delivery of Chemical Lime products to JWR # 5 are as follows:

March starting (3-23-01) - four loads totaling 115 tons
April of 2001 - eight loads totaling 228 tons
May of 2001 - eleven loads totaling 324 tons
June of 2001 - seven loads totaling 200 tons
July of 2001 - five loads totaling 143 tons
August of 2001 - ten loads totaling 294 tons
September of 2001 – two loads, (9-4-01 and 9-21-01) totaling 56 tons, prior to 9-23-01.

These purchase records disclose that the amount of dust purchased during the month of September was far less than in previous months. This reduced purchase of the bulk dust coincided with testimony that during the month of September tank rock dusting was about half the normal amount.

MSHA Inspection of the No. 4 Section Prior to the Explosion - On September 20, 2001, MSHA Inspector Jarvis Westery reported to the JWR # 5 Mine to do an inspection of the longwall electrical equipment. The longwall had just been assembled for this panel and was required as being part of the normal quarterly inspection to have an electrical examination by MSHA for permissibility to ensure no openings in the electrical boxes were present that could serve as an ignition source. However, Inspector Westery was diverted from going to the longwall on September 20, he instead checked carbon monoxide (CO) sensors and collected rock dust samples on the No. 4 section. On September 20, 2001, three violations were written by Westery on the No. 4 section under part 75.400, Sub-part E, Combustible Materials and Rock Dusting. Those were:

1. Loose coal and muck was allowed to accumulate in the belt entry tail roller extending 20 feet outby, five feet wide, fifteen inches high, also, on the off travel side, loose coal had accumulated behind the wing measuring up to four feet high by five feet wide by ten feet long. (There is no record that this violation was corrected in the required examination records and MSHA did not re-inspect the area prior to the explosion to verify abatement. JWR documents show the violation was worked on during the September 20, 2001, day and afternoon shifts; JWR claims the violation was corrected).

2. Float coal dust, black in color was allowed to accumulate over previously rock-dusted surfaces in the 4-east belt entry. The accumulations were observed on the mine floor and adjoining crosscuts starting at the belt drive area and extending to the Header. This is for a distance of approximately 300 feet. (There is no record that this violation was corrected in the required examination records and MSHA did not re-inspect the area prior to the explosion to verify abatement. JWR documents report that the violation was worked on during the September 21, 2001, midnight (11:00 pm to 7:00 am) shift; this would have been after the violation abatement deadline had passed. Documents did not reveal that the violative conditions were corrected).

3. Float coal dust, black in color was allowed to accumulate over previously rock dusted surfaces in the 4 section left return air course. The accumulations were observed on the floor starting at spad number 13304 and extending for 1000 feet. (The examination records did not contain evidence that the condition was corrected and MSHA did not return to re-inspect the violation after the abatement date had passed. JWR records indicate that during the September 21, 2001, midnight (11:00 pm to 7:00 am) shift work was performed on this violation. Those records do not show the condition was corrected. Evidence shows the rock dust crew dusted from the back drop at the last open crosscut out one crosscut that night, using one tank of dust, which is questionable if that would be sufficient for the area. Spad #13304 was located three crosscuts outby the last open breakthrough.)

During the September 20, 2001, inspection, Westery collected dust samples for combustible content on the No. 4 section at 0+00 and at 0+500 locations. The results of the rock dust samples taken by Westery on September 20, 2001, (revealing that at least half of the samples were out of compliance) are as follows;

Lab #	Bag Number	Sample of	Location in Mine	Results
			No. 1 Entry Return	
S82441	1A1	Band	0+00	98.2
S82442	1A2	Band	0+500	83.1
			No. 2 intake (Track Entry)	
S82443	1B1	Band	0+00	41.3

Lab #	Bag Number	Sample of	Location in Mine	Results	(continued)
S82444	1B2	Ribs	0+500	64.5	
			No. 3 intake (belt entry)		
S82445	1C1	Ribs	0+00	65.8	
S82446	1C2	Band	0+500	64.4	
			No. 4 Entry Return		
S82447	1D1	Band	0+00	63.7	
S82448	1D2	Ribs	0+500	84.6	

Dust sampling is part of the quarterly inspection required under the Mine Safety and Health Act. The sample results that are listed above give the non-combustible content of the combined coal dust, rock dust, and other dust. Regulations require the dust in return entries to be no less than 80% incombustible and the intake entries to be no less than 65% incombustible. Keeping the dust non-combustible prevents the coal dust from becoming explosive if it becomes dispersed into the air. The results of the bag samples numbered 1B1, 1B2, 1C2, and 1D1 (the track, belt and right return entries) contained greater amounts of combustible coal dust than permitted by part 75.403 of the Code of Federal Regulations. Those regulations also require increased non-combustibility of the mine dust where methane is present. Part 75.403 also states:
Where methane is present in any ventilating current, the per centum of incombustible content of such combined dusts shall be increased 1.0 and 0.4 per centum for each 0.1 per centum of methane where 65 and 80 per centum, respectively, of incombustibles are required.

Other evidence indicated that methane was present in the right return at levels as high as 1.2% on September 20, 2001 (the day this dust sample was taken). The presence of methane in the return should have been factored into the rock dust sampling, increasing the 80% level accordingly. Using the formula in 75.403 means that a minimum non-combustible content would have to be 84.8%, given the presence of 1.2% methane. The non-combustible content in the right return was less than 84.8%. The mine operator examination book had excessive methane in the No. 4 section recorded on each of the four days prior to the disaster.

Coal Dust / Rock Dust Violation History at the JWR # 5 Mine – The company's violation history shows that float coal dust and combustible material violations were a significant problem at the JWR # 5 Mine. In 2000, the JWR # 5 Mine was cited 110 times for violating the combustible material / rock dust standards. Over thirty-one involved float coal dust, coal dust or coal accumulations, with each covering a distance of 500 feet or more. For at least fifty-six (or just over half of those) MSHA did not check for correction on the abatement date, and at least twenty-seven of those went unchecked four or more days after the legal deadline for correction had passed. MSHA cited over 90% of those as "non S&S" violations; nearly all the violations MSHA cited listed only "one person" as being affected by the conditions. MSHA's actions (in not using certain enforcement tools available to it) helped keep the operator fines low. Section 104 of the Mine Act gives MSHA the power to take tougher enforcement actions, including issuing closure orders, at mines where the operator unwarrantably fails to comply with the mine laws. By way of comparison, in 2002, MSHA cited the operator at least seven times under the Mine Act for unwarrantable failures to comply with the combustible material / rock dusting standard.

The JWR # 5 Mine continued to exhibit a pattern of non-compliance with the combustible material / rock dust standards in 2001. Seventy-nine combustible material and rock dusting citations/orders were issued in the nine-month period of January 1, 2001 through September 23, 2001. For fifty-two (or approximately two-thirds), there is no evidence to show the violations were abated as required. Seven were fifteen or more days past the abatement date before MSHA re-inspected the areas, including seven that remained outstanding at the time of the explosion. Over 80% were cited using the weaker "non S&S" enforcement tool. Ninety percent were cited by MSHA as conditions affecting only one person. MSHA did not cite the operator for an unwarrantable failure to comply for any of the combustible materials / rock dust violations cited in 2001. The extent of the problem in 2001 includes: nineteen citations/orders issued for this condition in excess of 500 feet, eleven (11) in excess of 1,000 feet, five in excess of 2,500 feet and two for a distance over 5,000 feet. Despite the magnitude of the problem, MSHA cited only five of these as "Significant and Substantial".

MSHA's failure to vigorously enforce the Act and to require timely corrections likely contributed to the widespread violations in the mine. By citing most of these as "non S&S", leaving little threat of hefty fines or closure orders for repeated violations, and allowing the accumulations of coal and float coal dust violations to languish for days or weeks after its own deadlines for correcting the conditions had passed, and citing only "one person" as affected by the violation, MSHA did not curb the operator's non-compliance.

A number of complaints by miners about the rock dusting practices at the JWR # 5 Mine were raised during the investigation. Those concerns need further investigation by MSHA.

Mine Ventilation

Another area that was a particular focus of attention during the UMWA's investigation was the mine ventilation. From the outset of the investigation into the disaster, many miners expressed criticisms about mismanagement of the ventilation system at the # 5 Mine. A review of the mine operator examination books, MSHA inspection records, interviews of miners and mine management personnel, and the review of numerous documents and plans confirmed that serious deficiencies existed in the mine ventilation system at the JWR # 5 Mine. Some difficulties were brought about by the challenging conditions that were beyond the norm, and which required increased attentiveness. Some, however, were brought about by the way these special challenges were actually handled and mismanaged by mine management. Evidence also disclosed that methane problems existed at the mine, some of which were not documented by required company records. MSHA issued ninety-two violations regarding ventilation standards (30 CFR 75.300) in just the last nine months (January 1, 2001 to September 23, 2001). Of that, twenty-one were cited as "Significant and Substantial".

The investigation also disclosed that the mine operator had made major changes in the mine ventilation system, about five months prior to the disaster. Those changes had not been submitted to MSHA for review and approval under part 75.370 of Title 30 CFR, though the law requires such changes to be submitted and approved. They involved adding a new air shaft in the mine and changes in ventilation to the working sections. Those unapproved-changes were in place at the time of the explosion. MSHA inspections, over a five-month period, failed to address this serious violation of the law. Miners raised numerous concerns during the investigation calling on MSHA to investigate the ventilation problems at the # 5 Mine. A number of these are cited in this section.