BULLETIN

HOLMES SAFETY ASSOCIATION

SAFETY EFFICIENCY

MINERAL INDUSTRIES

February 1994

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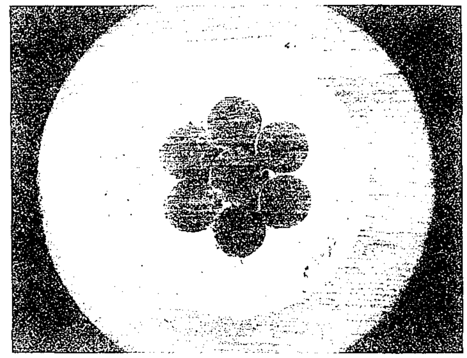

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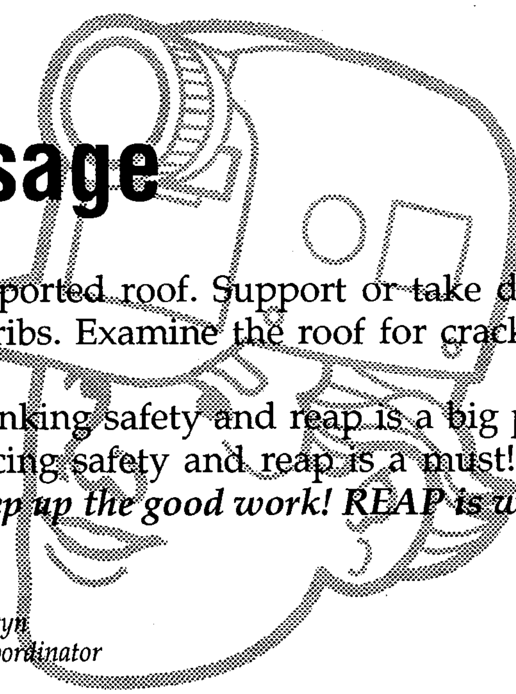
KEEP US IN CIRCULATION

The Holmes Safety Association Bulletin contains safety articles on a variety of subjects: fatal accident abstracts, studies, posters and other safety-related topics. This information is provided free of charge and is designed to assist in presentations to groups of mine and plant workers during on-the-job safety meetings.

Welcome new members

NAME	CHAPTER NO.	LOCATION
River Bend	10719	Salem, OR
Biltmore Plant	10720	Asheville, NC
National Perlite Products Co.	10721	Malad, ID
Jeffrey Sand	10722	North Little Rock, AR
Paul Hubba Construction Co.	l0723	Riverside, CA
Kinross Delamar Mining Co.	10724	Jordan Valley, OR
North Star	10725	Mankato, MN
H. R. Wesson Sand Company	10726	League City, TX
Cecilville	10727	Grauts Pass, OR
Lower Emma Mine	10728	French Gulch, CA
Consolidated Placer Dredging	10729	Randsburg, CA
Raisch Products—Natividad	10730	San Jose, CA
Arthur R. Wilson Quarry	10731	Watsonville, CA
Mine No. 1	10732	Quinwood, WV
Sammy Joe Enterprises	10733	Abingdon, VA
Cresson Steel Company	10734	Cresson, PA
Mining Consulting & Service Co.	10735	London, KY
Hubco Construction & Services	10736	London, KY
ACM	10737	Mesa, AZ
Arizona Safety	10738	Phoenix, AZ
G.E. (Ted) Holmes Consulting	10739	Peoria, AZ
CDK Contracting Company	10740	Carlin, NV
Anna B. Lofton	10741	Phoenix, AZ
Robert J. Zache	10742	Miami, AZ
Las Vegas	10743	Las Vegas, NV

REAP message



Twelve miners were killed in 1993 from the falls of roof or ribs. Six of these accidents occurred with miners inby supported roof. This was an increase of five from 1992.

Take time to warn each miner on the working section of the hazards of unsupported roof and ribs. Follow the approved roof control plan. Don't work or travel or permit others to work or travel under unsupported roof. Support or take down loose ribs. Examine the roof for cracks or faults.

Thinking safety and reap is a big plus! Practicing safety and reap is a must!

Keep up the good work! REAP is working!

Tony Turyn
REAP Coordinator

Holmes Safety Association District Council Safety Competition Quarterly Report

Council name: ____________________ Date: ______ Quarter (1-4): ______

Number of District Council meetings held this quarter: ______________

	Total hours worked this quarter	Number of incidents		Chapters reporting to council this quarter
		Lost-time injuries this quarter	Fatalities this quarter	
Underground COAL mines				
Surface COAL mines and facilities				
COAL contractor				
Underground METAL/NON-METAL mines				
Surface METAL/NON-METAL mines and facilities				
METAL/NON-METAL contractor				

Return to: **Robert Glatter, Secretary**
Holmes Safety Association
P.O. Box 4187
Falls Church, VA 22044-0187

Holmes Safety Association Monthly safety topic

Fatal fire accident

GENERAL INFORMATION: A 54-year-old quarry truck driver, with 14 years of mining experience, was seriously injured in a fire involving the engine and operator's cab of the haul truck he was operating. He succumbed to the burn injuries two weeks later while still in the hospital.

The operation was a limestone quarry, normally operated one, 10-hour shift a day, 4 days a week. A total of 22 persons were employed.

Limestone was mined by typical quarrying methods. Blasted limestone was loaded into haul trucks and transported to the primary crusher. The crushed limestone was sized and transported by conveyor and front-end loader to stockpiles to be sold to customers.

DESCRIPTION OF ACCIDENT: On the day of the accident, the victim reported to work at his assigned starting time of 6:00 a.m. He operated the Mack 50-ton haul truck tramming ore from the quarry to the primary dump. He had made a few haul cycles without incident.

At about 7:00 a.m., the victim was observed by another truck operator returning to the quarry. At that time everything appeared to be normal with no apparent problems with the victim's truck.

As the victim approached the crusher area and began making the turn necessary to position his truck at the gyratory crusher dump, the crusher operator saw what he thought was white smoke coming from beneath the bed at the rear of the truck. The crusher operator told a mechanic that the victim's truck was smoking. The mechanic grabbed the control room fire extinguisher and ran toward the right-hand side of the truck, yelling for the crusher-operator to get help. The crusher-operator used the CB radio to call the superintendent and anyone else that could help. By the time the mechanic arrived at the right side of the engine the truck was stopped and flames and black smoke were visible.

The mechanic sprayed his fire extinguisher at the right side of the engine for a few seconds and went around the front of the truck to the left front side. He sprayed his fire extinguisher at the left side of the engine then upwards to the catwalk and door to the operator's compartment. He managed to knock the flames down away from the door and yelled for the victim to get out. The door opened and the victim jumped or fell to the ground. He recovered his footing and started to run away from the truck. The mechanic got the victim to stop and lie down and first-aid was administered.

The truck slowly rolled downhill away from the victim and came to rest against the berm along the elevated roadway. Other persons arrived and at least two persons using hand-held fire extinguishers reduced the flames to a smolder. The victim was conscious but did not seem to know what had happened, since he made no comments or explanations. The rescue squad arrived and treated the victim for burns and shock and transported him to the hospital. He died from complications resulting from his burns two weeks later.

CONCLUSION: The probable cause of the accident was a leak in the pressurized power steering hose which caused the hydraulic fluid to contact the engine manifold, resulting in vaporization, followed by the ignition. Contributing to the severity of the injuries may have been the accumulation of vapors in the operators cab, causing a sudden, wide spread, intense flame.

A witness to the accident observed white smoke emanating from beneath the truck prior to seeing a flame. The white smoke may have been vaporized hydraulic fluid atomized as the result of power steering fluid being forced through the small hole in the hose under pressure. As the hydraulic fluid contacted the hot engine manifold a white vapor was formed.

There were several hydraulic hoses, air hoses, and electrical wires situated below the operator's cab near the left side of the diesel engine. The power steering hydraulic fluid reservoir had a 7.5 liter (8 quart) capacity and the fluid was pressurized at high pressure in the hydraulic hoses. About .7 liters (0.7 quart) of power steering fluid remained in the hydraulic fluid reservoir after the fire. All other fluid levels were normal.

Examination by an independent consultant indicated the power steering hose had a small hole in the wall where the hose passed below the floor of the operator's cab.

The vapor evidently entered into the operator's cab prior to ignition. When ignition occurred the fire must have been just short of an explosion and set combustibles on fire at the same instant. In two minutes or less the victim received third degree burns over 60 percent of his body.

Approximately one minute after the victim exited the cab the fire diminished, indicating a depletion of the fuel feeding the fire. The fire developed and was extinguished within a total of about three minutes.

Tailgate topic: Eye protection

Shut both eyes. While they are shut, try to write your name or walk across a room. It always seem so simple to understand how an accident happened after it is over. If only the person had been wearing some form of eye protection, he or she wouldn't be blind now.

MSHA RULE 56.15004—EYE PROTECTION

All persons shall wear safety glasses, goggles, or face shields or other suitable protective devices when in or around an area of a mine or plant where a hazard exists which would cause injury to unprotected eyes.

MSHA RULE 56.15014—EYE PROTECTION WHEN OPERATING GRINDING WHEELS

Face shields or goggles in good condition shall be worn when operating a grinding wheel.

We need our eyes. They provide the means to do and enjoy almost everything we do. With the gift of sight being so precious, why do people still have so many excuses for not protecting their eyes? In 1991 there were 90,000 disabling injuries to people's eyes nationwide. Most, if not all, of these could have been prevented by proper eye protection.

The next time you know that no one is watching and you want to remove your safety glasses, remember to ask yourself this simple question: "Can I still earn a living for my family if I am blind?"

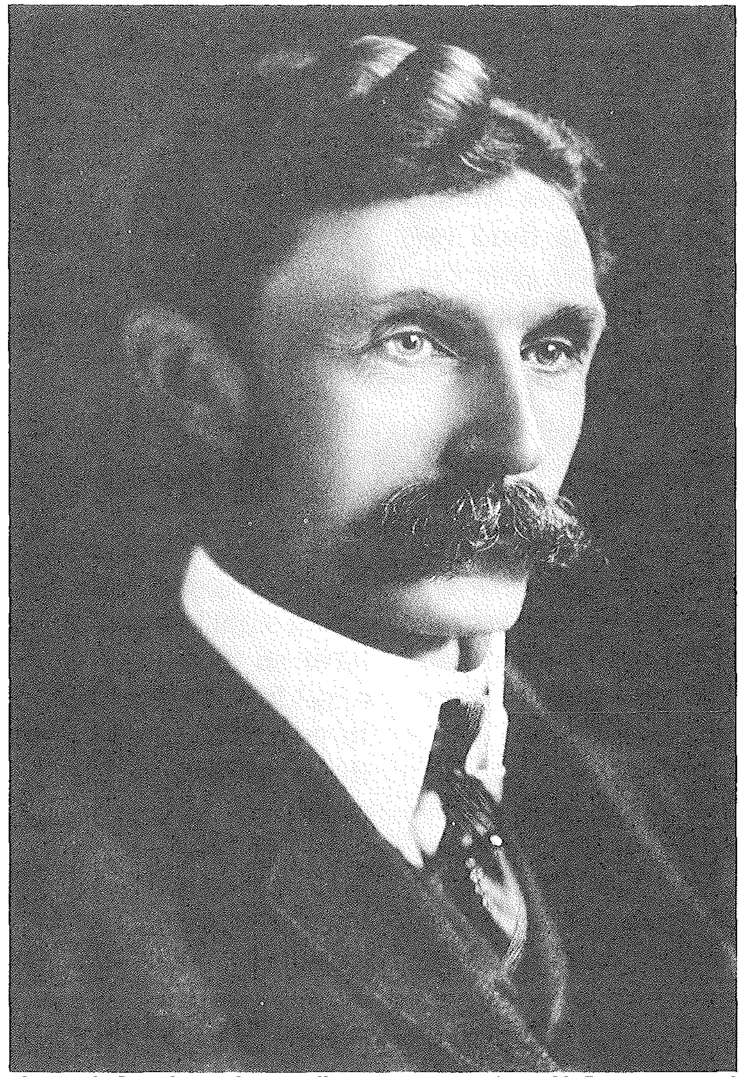
SHORTCUTS MAY COST YOU MORE THAN YOU HAVE

REMINDER: The Winter Alert is still in effect!

- *Rockdust*
- *Preshift and onshift checks*
- *Check for methane frequently*
- *Keep equipment maintained*
- *Check the roof—especially near mine entrances*
- *Check ventilation often*
- *NEVER smoke underground!*

Joseph Austin Holmes—Part 1 of 2

Joseph Austin Holmes, first Director of the Bureau of Mines and originator of the slogan, "Safety First," was born at Laurens, S.C., on November 23, 1859, the son of a Presbyterian minister. He attended the Laurens Academy, noted in its day for the thoroughness of its curriculum, and then entered Cornell University. There he gave special attention to the natural sciences, chemistry, and surveying, and received the degree of bachelor of agriculture in 1881.



Joseph Austin Holmes, first director of the U.S. Bureau of Mines

After graduation, he became professor of geology and natural history at the University of North Carolina. There he began an active campaign for the establishment of the State Geological Survey and for building good roads. The State Geological Survey was established in 1891, with Dr. Holmes as State geologist, and through his efforts, the annual tax for public roads was increased from $10,000 in 1885 to $750,000 in 1900, with the result that more than 1,000 miles of macadamized roads were built.

Two grave problems in the Nation's mineral industries that were beginning to receive public attention appealed particularly to Dr. Holmes' imagination and sympathies—a tremendous waste of natural resources, and the death rate in mines, which was attaining frightful proportions. Their solution became his one great ambition, and remained so until his death. When he had the opportunity to take charge of the department of mining and metallurgy of the Louisiana Purchase Exposition at St. Louis in 1903, he seized it eagerly. His plan in organizing the exhibits of Fuels was to show how their utilization could be improved, and he was able to persuade the great fuel interested to spend large sums in demonstrating fuel economies, and in obtaining equipment for investigations to be carried on after the close of the exposition. The impression made by these studies persuaded the Congress in 1904 to authorize a general investigation into fuel economics, and early in 1905, as chief of the Technologic Branch of the Geological Survey, be was placed in charge of them.

Feeling that the problems were too great and pressing to be entrusted to a branch of a Government agency concerned mainly with other subjects, Dr. Holmes marshaled arguments for creation of a separate Bureau which led in 1910 to establishment of the Bureau of Mines. Although the Technologic Branch of the Geological Survey was transferred to the new Bureau, Dr. Holmes was not at first named Director, and as name after name was discussed for the post, he despaired and informed a friend that if the regents of the West Virginia State University offered him the presidency, which was then vacant, he would accept. However, after the post had remained unfilled for several months, President Taft announced his selection as Director of the Bureau.

At a memorial session of the American Mining Congress in San Francisco on September 21, 1915, shortly after Dr. Holmes' death, Van H. Manning, who succeeded him as Director, said:

"Dr. Holmes' work as Director of the Bureau of Mines was characterized by the same spirit that marked all his previous endeavors.

"His achievements are matters of the Nation's industrial, economic, and sociological history. Even briefly to enumerate a few of them requires some little time. In the short period of its existence the Bureau of Mines has assisted in reducing materially the death and accident rate in the Mines:

"Completely demonstrated the explosibility of coal dust.

"Put into operation eight mine-safety cars and established six mine-safety stations in the various mining fields.

"Standardized mine-rescue and first-aid methods.

"Reduced the testing and selection of mining explosives to a scientific basis.

"Encouraged the various States of the Union to extend greatly their mine inspection and accident prevention systems.

"Demonstrated the practicability of an American radium industry and reduced the cost of production of this mineral.

"Brought about the saving of millions of dollars' worth of natural gas.

"Led the way in the adoption of scientific practices in the combustion of coal instead of the wasteful, haphazard methods heretofore employed.

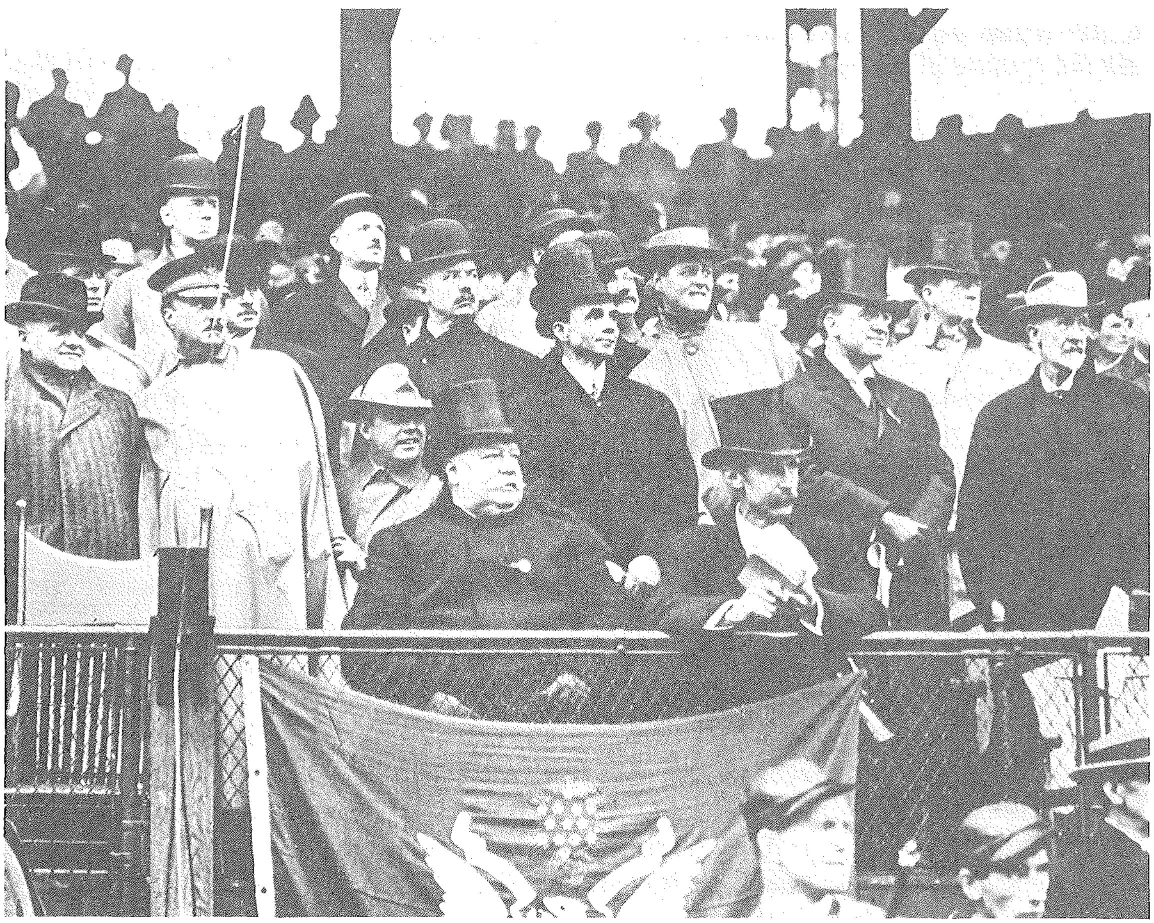
"Demonstrated the practicability of the elimination of the smoke nuisance.

"Discovered a commercial method for the conversion of petroleum into gasoline.

"Shown the practicability of the successful utilization by briquetting of the lignites and peats of the West and South.

"Standardized methods of the analysis of coal, and established the feasibiity of the purchase of coal under specifications.

"Determined, tabulated, and published the analyses and steaming and gas-producing qualities of thousands of American coals.



President William Howard Taft accompanied by Dr. Joseph A. Holmes, the first Director of the U.S. Bureau of Mines, is watching a safety demonstration at Pittsburgh's Forbes Field, October 13, 1911. James F. Burke stands between the two while Pittsburgh Mayor William A. Magee is at the right in a silk hat; Archie Butt, a presidential aide is in military uniform to the left of the President.

The faces of the crowd reflect the grave concern felt by family of the 362 missing miners waiting at the site of the Monongah explosion of December 6, 1907. This incident spurred Congress to create the Bureau of Mines.

"Obtained authorization from Congress for the establishment of mining experiment stations in the different mining fields of the country.

"Compiled and annotated the multitudinous Federal mining laws.

"Assisted in simplifying the smelter-fume problem.

"Arranged cooperative agreement with various State institutions for the utilization of low-grade ore deposits hitherto considered as waste; and published 250 reports relating to these various investigations."

Dr. Holmes arranged for the importation of oxygen breathing apparatus and training of men in their use; at the time, there were only three sets of apparatus in the United States; and subsequently for improving the design of such apparatus. In the Bureau's early days, when there were not funds for purchasing mine-rescue railroad cars, he persuaded the Pullman Company to donate cars, later replaced by steel ones. He also directed the incorporation in the Bureau's safety program of first-aid training, which up to that time was almost nonexistent in this country except in the Pennsylvania anthracite region. He also was instrumental in organizing the American Mine Safety Association; and the germ of the present National Safety Council, which later absorbed the Mine Safety Association as its mining section, was sown at a meeting of the Institute of Iron and Steel Electrical Engineers at Milwaukee, Wis., in 1912 in which he participated. He presided over a full session devoted to safety in the industries; it was the first time that any industry other than mining had held a great safety conference.

Dr. Holmes had the faculty of making everyone he met feel that he was a personal friend, and the ability to impart his own enthusiasm to others so as to get them stirred up to help carry on projects in which he was interested. He won the confidence of both management and labor in the mining and allied industries, and held it; both recognized his deep interest in increasing safety and efficiency and reducing waste of resources, as well as his absolute neutrality regarding their disputes.

Dr. Holmes was a tireless worker, and he wore himself out traveling to attain the objectives of safety and conservation to which his life was dedicated. He visited Europe to confer with scientists and technologists of other lands conducting research on problems of mine safety and efficiency. He spent much time visiting various mining regions of the United States and Europe, and a strenuous trip into the interior of Alaska contributed to the development of tuberculosis, of which he died in 1915. Of this latter trip, W. R. Maloney, then Territorial mine inspector, who accompanied him, later said:

"I knew him on the trail to be a man who did his duty and his part of the work, and more. He was handicapped from the start of our trip to the

Alaskan Range by a horse stepping on his foot. From that time on he had to ride, making it very uncomfortable to the Doctor, as anyone who knew him knows how well he liked to walk around and see the surrounding country wherever he might stop, but nevertheless he was an indefatigable worker in the camp. He would cut wood and build fires and do anything he could to make things pleasant. At the time most of us in the party recognized that his constitution would hardly stand the trip, lying on the ground at night and traveling under difficult conditions in the daytime.

"We had to go through the snow and storm the better part of the time, and because of the snow and the thawing, and because of chills, it was a most disagreeable trip. We were making forced journeys of 35 and 40 miles a day, where ordinarily 15 miles was considered a good day's travel."

Another friend and associate, Dr. A. E. Ledoux of New York, recalls of Dr. Holmes that:

"While he was interested in the conservation of American natural resources and endeavoring to assist our citizens in the business of mining or agriculture, the human side of it all was always to the front; lifesaving and the uplift of poor and ignorant employees were the things which seemed nearest to his heart.

"Nor was his interest bounded by the area of the United States. He looked further afield, and was active in securing cooperation with foreign governments for the betterment of labor conditions throughout the world. It was my privilege to be appointed by the Secretary of the Interior as one of the consulting engineers of the Bureau of Mines, and to be sent as a special emissary of the Bureau and of the State Department for the investigation of a certain problem in the hope of establishing one more point of contact and usefulness between the governments of the civilized world. Although Dr. Holmes was at that time in failing health, and had to absent himself from his post, by letter and by cable he kept in touch with men, showing his keen interest in all these things ."

Carl Sholz, then president of the American Mining Congress, recalled of him in 1915:

"The first introduction to a President of the

Workers carry victims of the Monongah explosion to a make-shift morgue.

United States which was afforded me was under the guidance of Dr. Holmes, at the time when I invited Mr. Taft to speak at the Chicago convention of the American Mining Congress in 1911, and at that time Mr. Taft very generously said, "What do you want of me? You have Holmes; he can tell you more about the work than I know."

A tribute to Dr. Holmes by President Wilson, reads:

"In the death of Dr. Holmes the country lost a public servant of unusual character and of singular devotion to duty. We are often called upon to note the career of some public benefactor, but we do not often enough note the services of the devoted men who, with little compensation and little public gain, seek to advance the interest of their fellow-countrymen through services of the department of the federal government at Washington, D.C. Dr. Holmes was one of the most disinterested and most serviceable of these. He devoted his whole time and thought to turning science to human and generous use."

Reprinted from the March/April 1976 issue of the Department of Interior's MESA magazine.

To all mine, plant, and quarry workers:

Your job may require you to use machines to extract raw material from the earth. Or, maybe you're involved in crushing, concentrating, or otherwise adding value to the material. Your hard work makes profits for your company, and earns you enough money to support your family. Unfortunately, your work also exposes you to hazards. If you fail to notice and protect yourself from these hazards, you are risking an accident that could separate you from your family forever.

Even ground not yet mined is subject to changes wrought by such natural forces as weather, erosion, and gravity. Mining both adds to and accelerates these changes, and your safety depends on your ability to recognize and adjust to them. Of the 94 fatalities that occurred at metal and nonmetal mines in the United States from January 1, 1992, through December 3, 1993, 37 (36.4%) resulted from unstable or misjudged conditions of ground or mined material. Further analysis of these accidents reveals that problems with ground or material contributed to 16 of 23 underground mining deaths (69.5%) and 21 of 71 surface fatalities (29.6%).

Title 30, Code of Federal Regulations, Parts 56/57, Subpart B, is titled "Ground Control," a phrase which probably expresses an impossible goal. For underground mines, 30 CFR 57.3360 requires ground support to "be used where ground conditions, or mining experience in similar ground conditions in the mine, indicate that it is necessary." While rock bolts, timber, wire mesh, and other supports usually slow down ground movements long enough to allow miners to safely extract the ore, assuming that supporting the ground actually controls ground movements is dangerous.

During a pre-shift inspection at an underground gold mine last spring, two supervisors observed a fall of ground that had occurred during a long weekend when the mine had been idle. Approximately 50 tons of material had fallen from the rib and back in a drift about 20 feet from the face. Both supervisors observed cracks running along the hanging wall adjacent to the fall of ground, but neither of them performed any testing of ground conditions or thought additional support was necessary. Instead, they sent a loader

operator and a truck driver to the caved drift to muck out the fallen material.

The gold ore in the mine was located in a vein between two faults. As mining progressed, ground competency tended to deteriorate as the ore values increased in grade. Ground conditions grew worse the longer drifts remained open, because of air drying out the moist, crumbly, clay-like ore. Prior to the fall observed by the two supervisors, several falls had occurred that had pulled above the anchorage points of the bolts. One of the falls had trapped five miners for several hours. An evaluation made by MSHA ground support specialists after the entrapment incident had recommended bolting wire mesh further down the sides of the ribs to prevent rocks from falling on miners.

As the loader operator and truck driver proceeded to load, haul, and dump the fallen ore, the truck driver noticed during one of his trips to the surface that the muck contained bolts and wire mesh. He tried to tell the loader operator about this during the loading process, but was apparently not heard above the engine noise. After about the sixth load, the loader operator signaled that the mucking was finished, then returned to the face to back-drag the area while the truck driver hauled the last load to the surface.

When the truck driver returned to the drift 10 minutes later, he found the loader buried under 300 tons of material that had fallen from the area adjacent to the previous fall. The second fall was 30 feet long, 4 feet wide, and 6 to 8 feet deep. After about 40 minutes of digging by the truck driver and other miners, the loader operator was found, dead from suffocation and massive trauma.

In the subsequent investigation, the company was issued a 104(a) citation for failing to immediately notify MSHA of the initial fall of ground; a 104(d)(1) (unwarrantable failure) citation for failing to take down or support the ground after cracks were observed in the area adjacent to the initial fall; and a 104(d)(1) (unwarrantable failure) order for failing to test ground conditions after the initial fall prior to *assigning* a miner to muck out the heading.

Geologic conditions at many underground mines provide "natural support" of the ground once ore is removed. For protection at such mines, miners depend on sounding and scaling the ground after each blast to detect and take down loose material. Fatal accidents may occur when miners go beyond scaled areas, or fail to sound and scale at all.

Occasionally, ground is sounded and scaled, but some loose material remains undetected. Or, loose material is detected, but attempts to dislodge it are unsuccessful and the material is left in place, presumed to be "safe" by those assigned to work under it.

Recently, a scaling crew at a "naturally supported" limestone mine detected a hairline seam in the roof of a heading that was 24 feet high and 42 feet wide, dimensions that were typical for the mine. After blasting, normal practice was to "hand scale" loose rock from the roof and ribs using tower scalers, muck pile scalers, and face scalers. The tower and face scaling crews barred down loose rock from the roof, ribs, and face while standing in the baskets of various bucket-lift trucks. The muck pile scaling crew removed loose rock from the face and ribs while standing on the muck pile. Scaling bars provided for the crews

were made of double strength aluminum pipe with a hex steel bit. They were pieced together in 3-1/4 feet sections and ranged in length from 6-1/2 feet to 13-1/2 feet.

Following company policy, after the scalers detected the hairline seam they reported it to their foreman, who then examined the seam and assisted the crew in an unsuccessful attempt to bar down the rock. The foreman and the five members of the scaling crew then concluded that the rock could not be barred down and that the area was safe. Face scalers performed additional testing and scaling the following day.

The next day two miners stood under the hairline seam as they operated a twin-boom jumbo drill. Just before they finished drilling a round, a 500-ton slab of rock fell from the roof, crushed the drill, and killed both miners instantly.

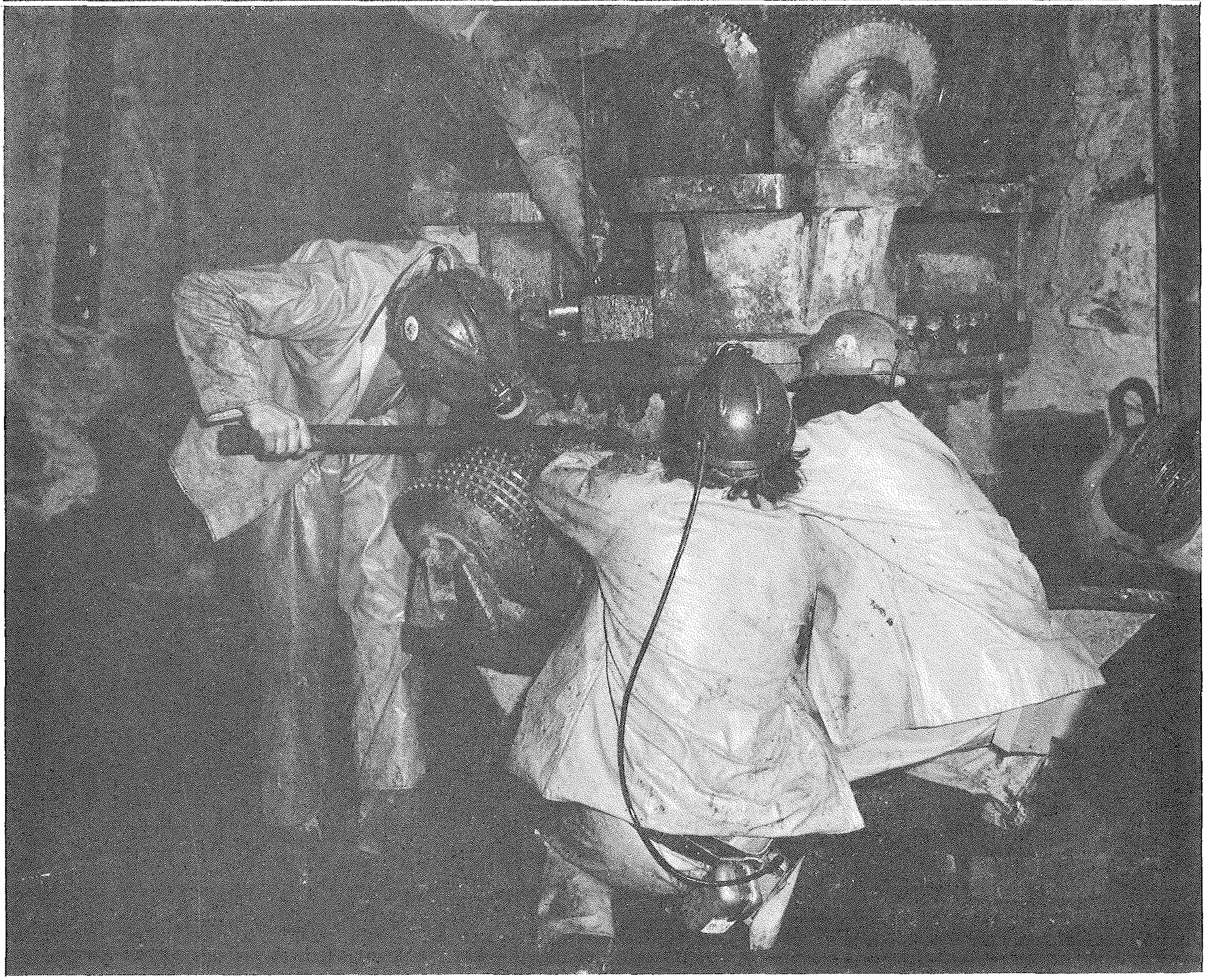
After the accident, the company was required to take the following steps recommended by MSHA ground support specialists:

- Purchase a mechanical scaler capable of reaching heights in excess of 40 feet, and of removing large blocks of material that are difficult to bring down by manual scaling.
- If a bedding plane or joint that could affect roof stability is detected, reduce the mining height to create a competent roof beam. If reducing the mining height is not possible, then take down the rock below the discontinuity.
- Spot bolt areas where bedding planes or jointing reduce the integrity of the beam of rock spanning an opening. Use a length of bolt suitable to the angle of the bedding plane and the point at which the roof and bedding plane intersect. However, because of the difficulty in assuring roof bolt anchorage above an unstable area, the preferred methods for creating a competent beam are by reducing the mining height or by taking down the questionable material.

Directions of bedding planes, joints or fractures in the rock, steepness of slopes, and other natural features affecting stability are just as worthy of respect in surface mines as they are underground. Such daily irritants to pit and quarry workers as wind, rain, snow, and freeze-thaw cycles are things that underground miners never have to worry about. Add in the effects of blasting, loading, hauling, dumping, crushing, and stockpiling, and you can identify a multitude of surface mining hazards by changing conditions of ground and extracted material.

Just standing around can be a dangerous activity if you're standing too close to a stockpile or an unstable highwall. Early in 1992, a contract truck driver who had backed next to a sand pile got out of the truck after it was loaded, apparently to remove excess sand that had spilled over onto the truck frame. As he stood by the back of the truck, the sand pile collapsed and covered him. He died 21 days later from traumatic asphyxiation. In the summer of 1992, a gravel pit owner and his 13-year-old son were standing next to a highwall taking samples for a gradation test when the toe of the highwall failed. The released material buried the owner up to his waist; but, tragically, it completely engulfed his son, who died the following day.

Looks can be deceiving where highwalls and stockpiles are concerned. A stable bank may turn out to be only a downpour, an undercut, or a windstorm away from becoming a rampaging horror. Whether it collapses next week, tomor-

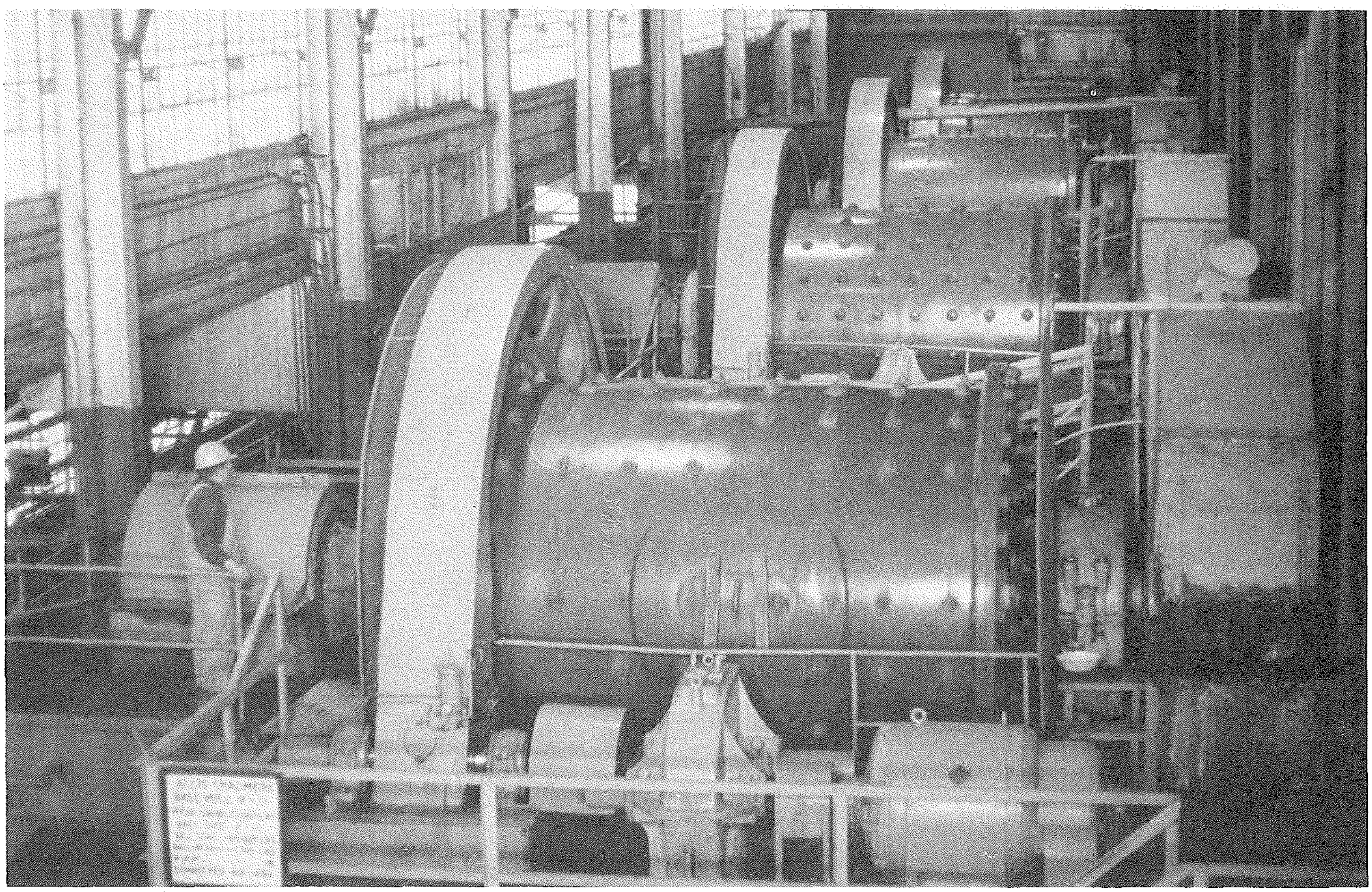


row, or five minutes from now, standing next to it is never a good idea.

Working at the top of a stockpile can be dangerous as well, especially if it has been undercut through loading at the bottom. If you see cracks, fractures, eroded berms, or other signs of instability at the top of a pile, get back. If the material collapses and falls, it's going to take you with it. In the fall of 1992, a truck driver at a gravel pit attempted to dump a load of stone from the top of a stockpile that had been undercut. As the driver backed toward the stockpile edge, the stockpile face crumbled and failed under the loaded truck's weight. The truck overturned and the driver was thrown out of the cab. His body was later found pinned between the truck and the embankment. Contributing to the accident's severity was the prior removal of the truck's cab door and the victim not wearing the provided seat belt.

Instead of dumping over the edge of a pile that has been loaded out at the toe, dump back from the edge of the slope. A good rule of thumb to avoid problems is to dump a distance of one truck length back from the edge of the pile.

Another frequently misjudged condition is the grade of haul roads. In late September of 1992, three employees of an open pit gold mine were descending a 6% grade in a 1-1/2 ton maintenance truck. The vehicle's brakes failed as they approached a curve and went out of control. After the driver turned onto a secondary road, the vehicle rolled over. Two of the employees were



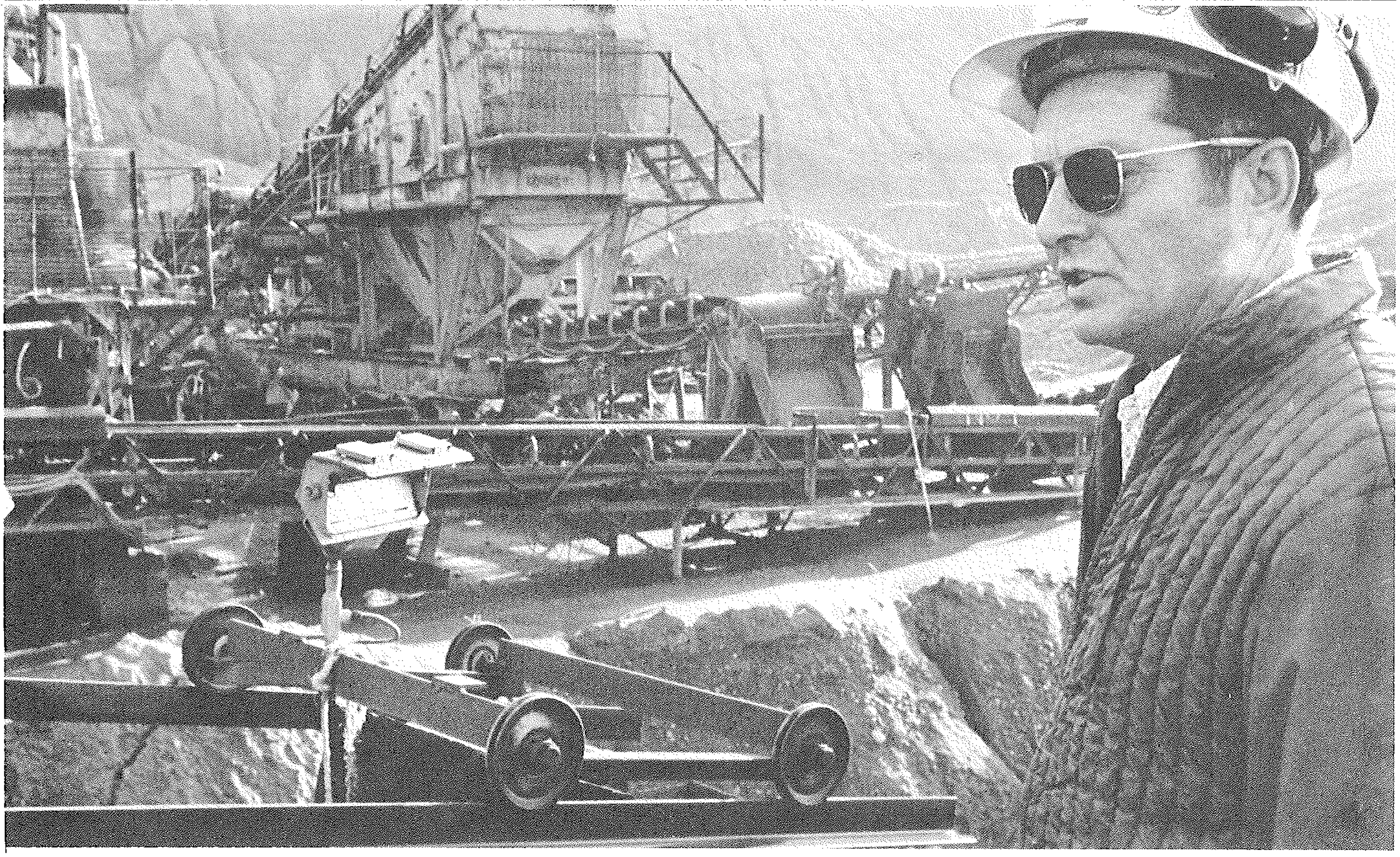
thrown out, with one killed and one seriously injured. The driver remained in the truck, fatally injured. MSHA's investigation revealed that the truck's brakes had functioned improperly because of a master cylinder leak, and that the truck had been in too high a gear for the road grade at the beginning of its descent.

Just over two months later, a driver of an 85-ton haulage truck also drove at a higher gear than recommended by the manufacturer. He lost control while descending a 9% grade, drove through a berm, and tumbled 90 feet to his death.

Equipment operators face additional hazards when berms are not built or maintained properly on elevated roadways. Outside a cement plant in August of 1992, an operator of a front end loader lost control and went over the side of an elevated roadway. The loader overturned and landed upside down on a lower level. The loader operator was pronounced dead at the scene from crushing head injuries. The areas of the roadway where the accident occurred did not have an adequate berm around the outer edge. Also, since the loader was manufactured prior to July 1, 1969, it was not required to have a Rollover Protective Structure (ROPS). While a ROPS could not have prevented the rollover, it might have prevented the fatality.

Another dangerous ground condition that is sometimes overlooked is the presence of undetonated explosive material after a blast. At a crushed stone operation in the summer of 1992, undetonated primers and blasting caps were found and removed from a muck pile on two different occasions in the days immediately following a production shot. About two weeks after the shot, a shovel operator loading trucks at the muck pile apparently encountered another misfire. The resulting unplanned explosion and movement of material dislodged a large boulder from a spoil pile which abutted the highwall to the right of the shovel. The boulder sheared the cab from the shovel and crushed the operator.

The law requires faces and muck piles to be examined for misfires after each blast, and per-



mits only work necessary to remove the misfire in the affected area until the misfire is disposed of safely. One disposal method recommended by explosives experts is to remove the undetonated charge by water flushing or air pressure, and then to visually inspect the hole using a light source to make sure that the charge has been completely removed. If you're not sure what to do about a suspected misfire, find somebody who does before you start digging into the material. It's not worth betting your life that you won't set off an explosion.

Whenever unconsolidated material is piled together over a drawhole or in a bin, the potential always exists for some of the material to form a bridge over a hollow spot. When material gets hung up and stops flowing, stepping on a potential bridge defies logic and common sense, but every year people continue to do it. As they poke at the material with bars, they often succeed at releasing the hang up. Of course, when the material flows, they flow with it, suffering the terror of being buried alive, and then dying of suffocation. The law requires platforms or safety lines to be used when work is performed over drawholes and bins. Obviously, a lot of people either don't know what the law says, or choose to disregard it.

Once you learn how to recognize and protect yourself from unstable ground hazards, your safety becomes largely a matter of choice. The 2,200 employees of Phelps Dodge Morenci, Inc., in Morenci, Arizona, have become very adept at making safe choices. Last summer, they received the Sentinels of Safety Award for working nearly two million hours without a lost-time injury, which was the best safety record in the United States for open pit mines in 1992. Every day miners at Morenci see signs emblazoned with these words: "IF IT'S NOT SAFE, DON'T DO IT." Following this simple advice has worked quite well for Morenci's miners, and it can work just as well for you.

Reprinted from the December 1993 issue of ***Cal Quarryman's Safety Newsletter.***

PROTECT your hearing

Computer program for seismic signal analysis

Objective

Develop personal computer (PC) based software for analyzing and/or filtering time- and frequency-domain attributes of seismic and electromagnetic signals from geophysical surveys for the enhanced interpretation of rock masses and subsurface geologic structure.

The problem

Both mining and petroleum geophysicists utilize seismic signals to characterize rock masses for delineating subsurface stratigraphy and structural conditions. However, a vast amount of information available in seismic project evaluation data often is unavailable for interpretation unless these data are enhanced. New processing technology increases the quality of these signals for analysis and interpretation. Comprehensive signal processing software is mostly written for petroleum exploration companies. Commercially available signal processing programs are often limited to a single application or are restricted for use with specific hardware, e.g., a digital oscilloscope or a mainframe computer. The programs may use computer codes that are proprietary, restrict user modification to expand capabilities, or may be hard to interface. They may have insufficient documentation for easy use and be support dependent.

Approach

The Bureau has developed Bureau of Mines Signal Processing Software (BOMSPS) to provide the mining industry a signal processing program for the enhancement of geophysical data. BOMSPS is a comprehensive software package that provides for improved signal quality to assist in the interpretation of seismic data collected in mining operations. The software can analyze various time- and frequency-domain attributes and possesses filtering capabilities. Postdigital enhancement by BOMSPS to band limit or reject selected information provides greater resolution for necessary interpretations. The software is an inexpensive tool for the geophysicist, engineer, and/or researcher performing seismic surveys in mining and environmental operations.

How it works

BOMSPS consists of nonproprietary codes for signal processing and interpretation of geophysical data. It is written for IBM or compatible PC's in FORTRAN and C languages. The program consists of several modules that can be used to filter, enhance, and interpret seismic and electromagnetic signals. Operations such as automatic gain control, muting, normalization, polarity conversion, randomization, scaling, shifting, stacking, smoothing, and windowing account for the basic time-domain operations.

Higher order time-domain enhancement capabilities involve convolution, deconvolution, autocorrelation, and cross correlation. Frequency-domain attributes such as the real and imaginary transforms, relative amplitude, power, phase, dynamic amplitude, and dynamic power spectra can be determined. Frequency-domain filter capabilities permit the investigator to employ a half-sine or cosine window, band-pass, notch, high pass, and/or low pass filters, while interactively defining the rolloff of either a linear or cosine taper. Calculation of related trace attributes such as quadrature (Hilbert transform), instantaneous amplitude, and instantaneous phase are also available.

The program is documented in detail in Bureau Information Circular (IC) 9242. The IC details those signal processing concepts and expressions incorporated into the BOMSPS code and provides a user's document for implementation of the code. The Fourier transformation and its properties are reviewed to illustrate applicability in developing those mathematical expressions used as digital operators. The advantages and limitations of basic and higher order time- and frequency-domain operations are discussed. The examples and easy-to-follow menus outlined in the tutorial facilitate the implementation of BOMSPS on a routine basis.

For more information

For a free single copy of IC 9242, write to the Bureau's Publication Distribution Section, Building 149, P.O. Box 18070, Cochrans Mill Road, Pittsburgh, PA 15236 0070.

Source and executable codes in FORTRAN (signal processing) and C (graphics) are available from the principal investigators listed below. Requests for the software package should reference this article and include a high density IBM PC or compatible 5-1/4- or 3-1/2-inch diskette. Additional information may by obtained by contacting:

M. J. Friedel or K S. Roessler Twin Cities Research Center U.S. Bureau of Mines 5629 Minnehaha Avenue South Minneapolis, MN 55417-3099 (612-725-4500)

*Reprinted from the Bureau of Mines' August 1990 issue of **Technology News.***

Fall prevention for office workers

Avoiding slips and falls at the office

It may come as a surprise that falls are the most common type of office injury. Yet almost all falls can be prevented by using common safety sense and learning how to recognize and correct typical fall hazards in the office environment.

Understanding balance

A fall occurs when you lose your balance and your footing. In short, your center of gravity is displaced and there's nowhere to go but down. You may be thrown off balance by a slip (on a wet floor, for example) or a trip (over an obstacle in your path), but once you lose your footing and support, a fall is inevitable.

Common fall hazards

One of the most common causes of office falls is tripping over an open desk or file drawer. Bending while seated in an unstable chair and tripping over electrical cords or wires are other common hazards. Office falls are frequently caused by using makeshift "ladders" (such as a chair, or a stack of boxes) and by slipping on wet floors (by the water cooler or coffee machine, for example). Loose carpeting, objects stored in halls or walkways, and inadequate lighting are other hazards that invite accidental falls. Fortunately, all of these fall hazards are preventable. The following checklist can help you stop a fall before it happens.

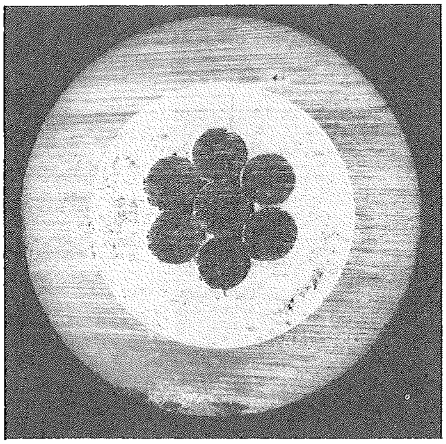
Fall prevention checklist

- Look before you walk—make sure your pathway is clear.
- Close drawers after each use.
- Avoid bending, twisting, and leaning backwards while seated.
- Secure electrical cords and wires away from walkways.
- Always use an appropriate stepladder for overhead reaching.
- Clean up spills immediately.
- If you see anything on the floor—a pen, a paper clip, etc.—pick it up.
- Report loose carpeting or damaged flooring to appropriate manager.
- Make sure walkways are well-lighted.
- Walk, ***don't run***!

*Reprinted from the second quarter FY 1993 issue of the Interior Department's Bureau of Reclamation's **Safety News.***

Cable bolts for coal mine gateroads

Supplementary support of coal mine gateroads has become an area of great interest as coal production from longwall technology has increased in the United States. What type of supports to use and where to use them are difficult questions to answer. Variations in geology, stress conditions, and mining geometries all affect the decision on support selection. With the goal of improving safety, the Bureau of Mines is investigating the use of cable bolting as another support option for longwall gateroads.



Cross-section of cable bolt.

When a longwall panel is mined, the adjacent gateroads are loaded with additional stresses. The primary supports, installed to stabilize the immediate roof, are no longer adequate to provide reinforcement for these additional loads; therefore, more support is required. The most common type of supplementary support has been the use of wooden cribs. They can provide significant reinforcement capacity over a large deflection range. However, this support system may restrict the flow of air necessary for the ventilation of the work place, cause unacceptable floor heave, and permit large roof deformations that can lead to failure. Additionally, the placement of wooden post or cribs accounted for approximately 5 percent of all underground accidents in 1992.

Actual tailgate entry supported with resin-grouted cables subjected to first panel loading.

Cable bolts are composed of multi-strand wires that are grouted into the mine roof. Because they are flexible, the cables can be installed into much deeper holes than the primary support. Cables also have a high load-carrying capacity, 58,000 lbs, and the reinforce-

Typical wooden cribs such as this accounted for about 5% of all underground accidents in 1992.

ment mechanism is similar to resin-grouted roof bolts. Rock is strong in compression but weak in tension, and most roof failures are caused by tensile failures of the rock. Bolts act to decrease the tensile forces, which reduces roof failures.

Cable bolts as a supplementary support system have several advantages. Improved roof conditions lead to safer mining conditions, and cable bolts minimize the resistance to ventilation, which permits higher volumes of air at lower velocities and helps to minimize suspended rock and coal dust. The use of cable supports can also reduce the material handling injuries related to the placement of wooden cribs, since cables are much lighter and are easy to install.

Four test areas have been established in coal mine gateroads using cable bolts as supplementary support, and the results have been favorable. The immediate roof of the tailgate entry was maintained as the retreating longwall passed the test area. This was accomplished while increasing production and reducing the total support costs by at least 50 percent.

Cable bolts may not be the answer to every supplementary support situation, and more research is required to study the rock/support interaction mechanisms to develop safe cable bolt reinforcement parameters and designers. However, this promising technology is another example of the commitment of the federal government to improve the health and safety of every miner in the United States.

For more information, please contact:
Stephen C. Tadolini
U.S. Bureau of Mines
Denver Federal Center
Bldg. 20
Denver, CO 80225
Phone: (303) 236-0751

REMINDER: The Winter Alert is still in effect!

- Rockdust
- Preshift and onshift checks
- Check for methane frequently
- Keep equipment maintained
- Check the roof—especially near mine entrances
- Check ventilation often
- NEVER smoke underground!

Instability hazards in handling and storing materials
Part 2 of 3: Surge Piles

by John Fredland, Kelvin Wu, and Donald Kirkwood,
Pittsburgh Safety and Health Technology Center, MSHA

This series of articles deals with hazards that can occur, due to material instability, during handling and processing operations. Part 1 reviewed the recent accident experience, while Part 3 will focus on truck-built stockpiles. In this part, the safety precautions associated with surge piles, or stockpiles which have below-ground draw-off points, are discussed.

Surge piles vary in design, but have the common feature of feeding material onto a conveyor belt which runs in a tunnel beneath the pile. Typically there are a number of different drawpoint openings, or feeders, which can be activated to discharge material from different parts of the pile.

When a feeder is activated, material slides through the opening onto the conveyor belt. Material flows through the feeder from a cone-shaped zone above the draw point (Figure 1). The angle or steepness of the sides of the cone depends on the type and condition of the material. Factors such as moisture, the amount of fines, how loose or compacted the material is, and temperature, all can affect the shape of the cone. A loose, granular material may form an angle of 35 to 45 degrees, while a material with a higher moisture and fines content, which is compacted, will stand at angles of 65 degrees, or steeper.

The capacity of a surge pile can be increased by using mobile equipment, operating directly on the pile, to push material to the draw points. This practice exposes the equipment operator to potentially hazardous conditions because the stockpile material itself is being relied on to support the equipment working on the pile.

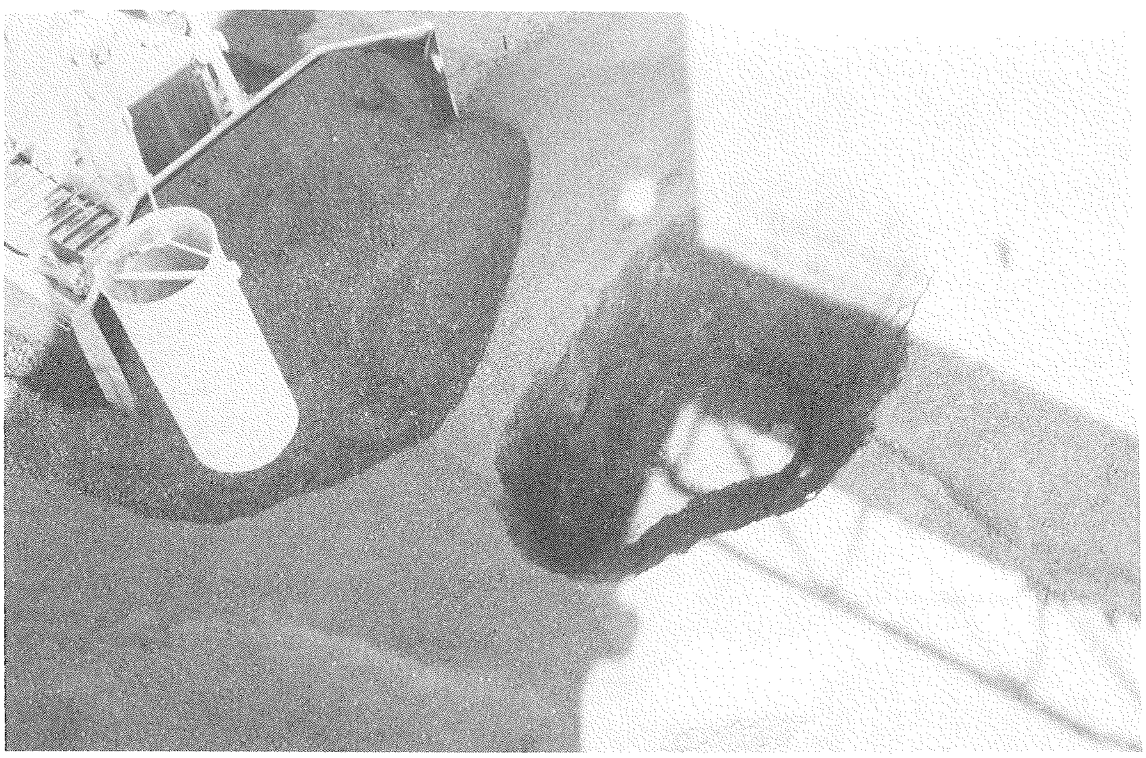


Figure 1.—Drawhole above a drawoff point.

The dangers

There are a number of dangers associated with the operation of a surge pile. Four situations are of particular concern.

First, it is obviously extremely dangerous for a person or piece of equipment to be on the pile above the draw-off point when a feeder is activated. Once the material begins to feed into the draw-off, the flowing material will not support any weight. When flowing into a draw point, material has been described as "quicksand." A person or piece of equipment which is near a feeder when the feeder is activated will be drawn into the material with disastrous results.

The second danger deals with the safety of working near the edge of the cone of discharging material. While being on the material which is flowing into the feeder is obviously dangerous, the material around the *edge* of the cone is also dangerous. This material is only marginally stable and is normally on the verge of flowing. It has just enough strength to hold up its own weight, and will not necessarily support the additional weight of a piece of equipment, or even a person. No one should walk near the edge of a withdrawal cone, and equipment operators must be extremely careful to avoid getting to a point where the weight of their equipment may collapse the edge of the cone. If this occurs the equipment may be drawn into the draw hole and become buried.

The third condition may be the most dangerous. In this case, a completely hidden danger can occur when material bridges or arches over the draw point, creating a void just above the discharge opening. The stability of this bridge may be precarious, depending on the temporary strength of a frozen crust of material, or resulting from a compacted zone which may gradually spall away and collapse. A bridge of material may support its own weight, but may suddenly collapse without warning under the weight of equipment or personnel. **Surge pile accidents have most commonly occurred when a dozer has driven over and collapsed a bridged area** (Figure 2).

Figure 2.—Dozer in drawhole.

The practice of operating mobile equipment directly on a stockpile can contribute to bridging problems. The weight and the vibration of equipment as it operates on a pile tends to pack the material below it. The tighter packed material has less of a tendency to flow freely. A bridge can form because the deeper material, i.e. the material at the feeder opening, is in a looser condition and more readily flows, while the denser material nearer the surface of the pile arches over the opening. Denser packing may also result from material dropping on the pile from a conveyor, and/or from the weight of the material itself as the pile gets higher.

Bridging can occur due to freezing when ice bonds the near-surface material, giving it a high temporary strength, while the material buried deeper in the pile doesn't freeze and remains able to flow. The unfrozen material discharges through the draw point, while the frozen material arches over the void. As the material thaws, the temporary strength from freezing gradually is lost and the bridged area can collapse, endangering anyone on the pile.

Bridging may also be influenced by the percentage of fines in the material and by its moisture content. The presence of moist fines can result in the creation of surface tension which makes the stockpile material adhere or tend to cake, and makes it less free flowing.

A bridge of material over a void is an extremely dangerous condition. On the surface of the pile, there may be no physical indication that the void exists. Once a bridge has developed, it can collapse at any time from loss of strength due to vibration, thawing, or gradual spalling from underneath, or it may fail due to the added weight of equipment or a person.

The fourth dangerous situation occurs when a feeder becomes clogged. The concern is that the efforts to get the material flowing again may expose miners to hazardous conditions from unstable material above them, or from the flowing material once the obstruction is freed. Fatalities have occurred when attempts have been made, from on top of the pile above a bridged opening to break through or weaken material which was known, or suspected, to have bridged. In these cases, the stockpiled material which the workers are trying to free, is also the material which is providing support for those workers. This practice invites disaster and must not be permitted.

The precautions

To avoid placing miners in danger from the different situations described above, a surge-pile-safety program must be followed. Such a program must cover a number of points, as described in the following:

1. **Training**—Perhaps the most important part of a surge-pile-safety-program is training. Everyone who works on or near surge piles must be trained to be aware of the dangers. They must understand how the pile works and the significance of the cone of material immediately above the feeder. This includes the miners who work around the pile, as well as others, such as engineers, contractors, and suppliers, who may have reason to be on or near the pile.

2. **Work methods**—Workers must stay away from the cone area and realize that the size of the cone depends on the height of the pile and the condition (draw angle) of the material. Workers should assume there is a hidden void over each feeder because one can develop any time that a feeder might be activated.

Equipment operators need to be specifically trained on pushing material toward the draw-point. This is of particular concern because of the limited field of view from the cab, and the danger of collapse of the edge of

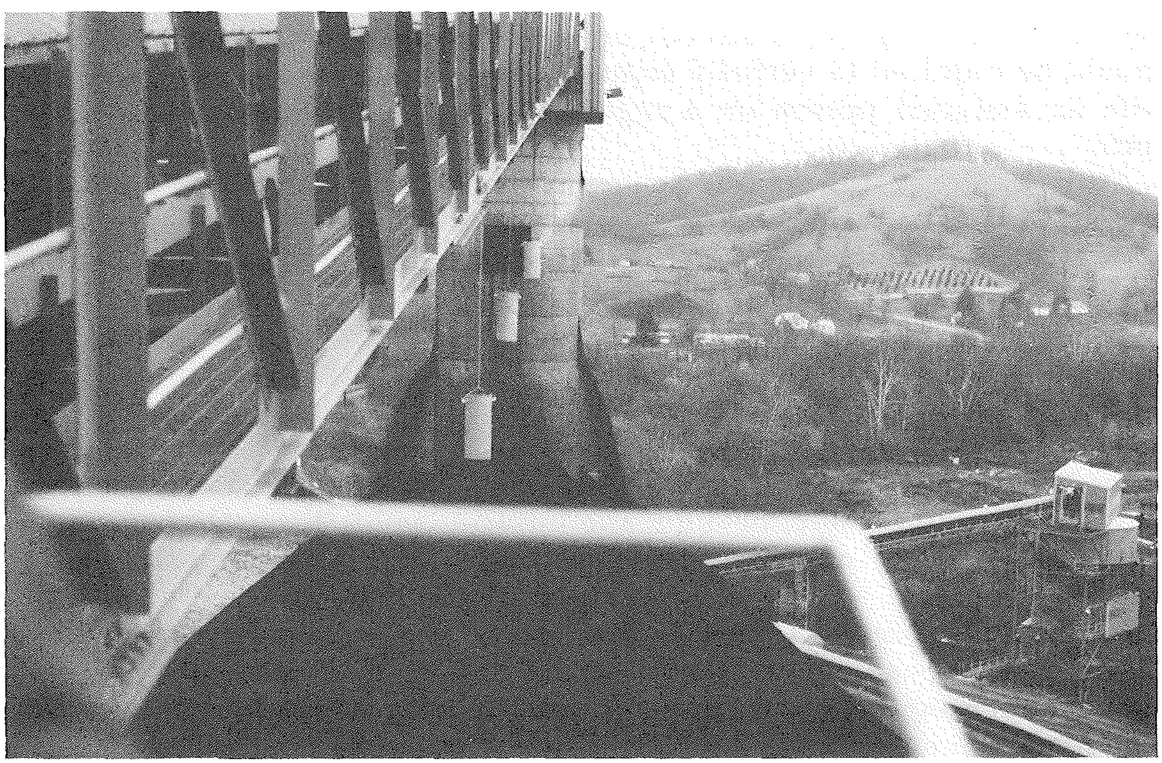


Figure 3.—Suspended markers.

the draw hole. Forward travel should stop once the pushed material begins to slide into the drawhole so that the equipment can stay back and not be drawn in. Equipment should always be operated perpendicular to the edge of the draw hole.

3. Feeder location indicators—The location of each feeder should be identified by a suspended marker (Figure 3). This will give workers an indication of the areas of the pile which must be avoided.

4. Active feeder indicators—Activated feeders should be identified by a blinking light or some other readily observed means. This will allow equipment operators to be alert to feeding material, and to the possible development of a void above a discharge point.

5. Communications—Many of the potential problems can be eliminated by having proper communications between the persons who work on or near the pile and the persons controlling the feeders. Everyone involved should know which feeders are being used, and who is working on the pile. Before starting a feeder, operators must be certain by visual inspection, or other positive means, that no one will be endangered. Mobile equipment operators who work directly on the pile should be required to verbally communicate with an assigned person on a regular time cycle.

6. Fully enclosed cab—any equipment that operates on a surge pile should be equipped with a fully enclosed cab which is supplied with breathing apparatus. Cabs equipped with strong window mountings and high-strength window material, or window guards, would maintain their integrity in the event the piece of equipment became buried. In this regard, mine operators and equipment manufacturers should explore, develop and implement measures to improve cab window integrity.

7. Adequate lighting—At many mines, stockpiling operations are performed at night. Night operations raise new concerns because of the reduced visibility. For nighttime activities, the work area must be adequately illuminated so that the operators perceptions and judgments are not adversely affected.

8. Lockout requirements—Any repair work should be performed when the facility is emptied and there is no hazard from unstable material either above or below the work area. If there is a need to go near a feeder which has not been emptied, only workers specifically trained for the dangers should be used, feeders should be shut off and locked-out, the status of the feeder just before it was locked out, i.e., either flowing or blocked, should be known and taken into account, and a safety harness and line, with a second person keeping the line taut, should be used. Ladders, platforms or some other form of support should be provided in this situation. This is extremely dangerous work and should be done only as a last resort.

9. Dealing with a blocked discharge—Storage facilities are designed to operate most efficiently with a particular material. Based on the material's size and flow characteristics, design features such as the steepness of the sides of the chute and the size of the opening are determined. Factors such as moisture, variation in material characteristics, and abrasion or rusting of the chute lining, can lead to problems with blockage.

Facilities may be equipped with accessory units, such as vibrators, which are designed to break up any bridges or blockage. If these methods of freeing a blockage are unsuccessful, then it may be necessary to excavate into the pile to free the material. This work is potentially dangerous and must be done with care. Material should be removed by working from a safe area off to the side of the drawpoint, so that the equipment operator is not exposed to the hazard of breaking into a void. Material must be removed in such a fashion that no steep slopes or overhangs are created.

Although a surge pile is a potentially dangerous work-place, surge pile accidents can be eliminated if workers are aware of the dangers and these safety precautions are followed.

Holmes Safety Association Monthly safety topic

Fatal powered haulage accident

GENERAL INFORMATION: A 30-year-old general laborer with a total of only 6 days of mining experience was crushed between the rear end of a truck and the side of the explosive trailer he was loading.

The operation is a surface mine employing 15 people and producing 200 tons of coal daily—working one shift per day, six days per week.

DESCRIPTION OF ACCIDENT: The co-owner and foreman, arrived at the mine at 6:45 a.m., to conduct an examination at the work area. The crew arrived at 7:00 a.m., to begin their regular shift. The co-owner talked to the crew and assigned work duties. He instructed the victim to assist other crew members in servicing the equipment. The victim was to provide them with water and fuel. He was to hand carry the water if needed and reach the fuel hose up to the equipment operators. The fuel tank is stationary and is located on the right side of the maintenance storage area. The storage area is located at the front end of the explosives storage trailer where the fatal accident occurred.

Servicing of the equipment was completed at approximately 7:20 a.m. The co-owner had been checking a water pump in the pit and he returned to the storage area and instructed the victim to load 20 or 25 bags of ammonium nitrate from the storage trailer into the bed of a 1977 Ford Model F-250 truck.

The truck was parked along the entrance side of the explosive trailer. It had last been driven by the victim and according to interviews was parked in this location by him at the end of that shift.

After instructing the victim to load the explosives into the truck, the co-owner returned to the maintenance storage area where two mechanics were repairing a Caterpillar 769 truck. They were located approximately 75 feet from the explosive trailer on the opposite side from where the victim was loading the explosives. The co-owner looked under the trailer and saw the victim's legs. It appeared he was either standing behind the truck or sitting on the rear bumper.

He walked from the maintenance storage area to the entrance side of the explosive trailer to see what the victim was doing. As he approached the truck he saw that the victim was pinned between the rear of the truck and the side of the explosives trailer. When he reached the truck he discovered the engine was running. He put the gear selector in the forward gear and moved the truck forward. He exited the truck and shouted for the two mechanics to help him. He checked the victim for vital signs and found he was not breathing, but he thought he felt a heartbeat. Assisted by the two mechanics, the co-owner performed CPR on the victim but there was no response. CPR was discontinued and the co-owner left the mechanics with the victim while he called for an ambulance.

The rescue squad responded to the call and artificial resuscitation was performed on the victim with hand-held respirators. He was taken to the hospital where he was pronounced dead at 10:45 a.m. by the county coroner.

CONCLUSION: The accident occurred as a result of an inadvertent reverse vehicle movement which resulted in the victim being crushed between the vehicle and the explosives-storage trailer. The inadvertent reverse movement was most likely attributed to defects in the steering column mounted transmission selector mechanism which allowed the vehicle to remain in powered reverse when the shift indicator indicated the transmission was in park.

Tailgate topic— Pre-operation equipment check

Think about how exciting it would be to find out half way down a steep hill that the brakes on your truck or fork lift did not work. You could find yourself in that position with all the excitement, attempting to extract yourself from the wreckage, if you don't do pre-operation checks on mobile equipment.

MSHA RULE—56.14100 Safety Defect; Examination, Correction and Records.

(a) Self-propelled mobile equipment to be used during a shift shall be inspected by the equipment operator before being placed in operation on that shift.

(b) Defects on any equipment, machinery, and tools that affect safety shall be corrected in a timely manner to prevent the creation of a hazard to persons.

(c) When defects make continued operation hazardous to persons, the defective items including self-propelled mobile equipment shall be taken out of service and placed in a designated area posted for that purpose, or a tag or other effective method of marking the defective item shall be used to prohibit further use until the defects are corrected.

(d) Defects on self-propelled mobile equipment affecting safety, which are not corrected immediately shall be reported to, and recorded by the mine operator. The records shall be kept at the mine or nearest mine office from the date the defects are recorded until the defects are corrected.

That lengthy bit of legality means simply:

1. Do an inspection of the equipment before you use it and fill out the equipment card.
2. If a defect is found or if one develops, record it and B.O. the equipment.
3. Have the equipment placed where it can be repaired if it is safe to do so. If it can not be moved safely, do not move it.
4. Record that the defect was repaired before the equipment is used again and keep that record.

When you use a piece of equipment, always do a pre-operation check. Avoid the excitement.

SAFE PRODUCTION IS NO ACCIDENT

Mark your calendar

The Joseph A. Holmes Safety Association and the Holmes Safety Association will hold their annual business meeting at the Radisson Hotel in Lexington, Kentucky, on June 7-9, 1994. The agenda includes many timely safety topics which will be of much interest and well worthwhile to participants. Mark your calendar and make your reservations today.

Lodging at the Radisson will be $52 Double. Make your own lodging reservations directly with the Radisson by calling 606-231-9000 or 800-333-3333. It is highly recommended that all reservations be guaranteed either by advanced deposit of one night's lodging or by credit card. A block of 150 rooms have been reserved, which will be held until May 11—be sure to indicate you are attending the Holmes Safety Association meeting.

A meeting registration fee of $50 per person will be required. Registrations are due by April 30, 1994. Registration fees received after April 30 will be $65.

REMINDER: *The Winter Alert is still in effect!*

- *Rockdust*
- *Preshift and onshift checks*
- *Check for methane frequently*
- *Keep equipment maintained*
- *Check the roof—especially near mine entrances*
- *Check ventilation often*
- *NEVER smoke underground!*

Be prepared

This microfilm card helps prompt quick action in emergencies.

In an emergency, minutes and seconds count. Knowledge of the person's medical history is often critical in administering on-the-spot care.

To help reduce delay, an *Emergency Response Card* is now available. The wallet-sized card contains a microfilm insert imprinted with your medical information, which is read by using a backlight source, such as a flashlight.

The card, which costs $19.95, furnishes EMS or emergency room personnel with information that promotes quick action, including your name, address, telephone no., date of birth, blood type, insurance information and who to contact in case of an emergency. It also includes information about medical conditions, such as diabetes, a heart condition, allergies, emphysema, seizures, high blood pressure, or a back problem. A hearing or visual impairment or the use of special equipment, like a prosthesis or pacemaker can be included.

A sneaker-attachable ID is available for children which includes permission for emergency treatment when the parent/legal guardian is unavailable.

For information, contact:
MedCard of America, Inc.
Dept. LW, P.O. Box 1422
Ridgewood, NJ 07451

Cutting boards

Surprising news about which type of surface is the most sanitary.

When acrylic cutting boards first hit the scene, they were touted to be superior to wooden varieties. Why? Wood encouraged bacterial growth; plastic didn't. Now, a new study finds that the opposite may be true.

Microbiologists at the University of Wisconsin created a study to determine which type of cutting board created the greatest breeding ground for bacteria. They made a startling discovery—bacteria thrived on plastic acrylic boards and sometimes survived even after a good scrub with soap and water.

Not only did bacteria survive, it also *multiplied.* On wooden surfaces bacteria stayed alive only 3 minutes or less. Puzzled, they decided to repeat the experiment, using different kinds of wood and plastic. The results were the same.

Does this mean you should throw away your plastic cutting board and dig out the old, wooden one? Not at all, say food handling experts. But, you should be careful to properly clean all cutting boards. Reserving one cutting board for meat and another for vegetables is also a good idea.

Safety tips

For both plastic and wood:

- Wash in the dishwasher, if possible, or wash thoroughly by hand with hot, soapy water.
- Periodically deep clean by scrubbing with salt (or a weak chlorine/water solution).
- Discard splintered wooden cutting boards or scarred plastic boards.
- If only one board is available, avoid going from cutting raw meat to vegetables without thoroughly cleaning the board first.

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THE LAST WORD...

"A man is a success if he gets up in the morning and gets to bed at night, and in between he does what he wants to."

"One should never wear one's best trousers to go out and battle for freedom and truth."

"One of the best ways to measure people is to watch the way they behave when something free is offered."

"It is difficult to live in the present, ridiculous to live in the future, and impossible to live in the past. Nothing is as far away as one minute ago."

"The secret of joy in work is contained in one word—excellence. To know how to do something well is to enjoy it."

"Money is a very excellent servant, but a terrible master."

"All that is gold does not glitter; not all those that wander are lost."

"All wars are popular for the first thirty days."

"Happiness is that state of consciousness which proceeds from the achievement of one's values."

"We'd all like a reputation for generosity and we'd like to buy it cheap."

"Meetings are indispensable when you don't want to do anything."

NOTICE: We welcome any materials that you submit to the Holmes Safety Association Bulletin. We cannot guarantee that they will be published, but if they are, we will list the contributor(s). Please let us know what you would like to see more of, or less of, in the Bulletin.

REMINDER: The District Council Safety Competition for 1994 is underway—please remember that if you are participating this year, you need to mail your quarterly report to:

Mine Safety & Health Administration
Educational Policy and Development
Holmes Safety Association Bulletin
P.O. Box 4187
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