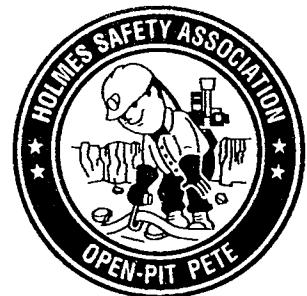

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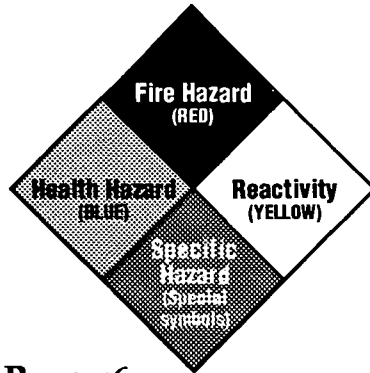
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Please note: The views and conclusions expressed in HSA Bulletin articles are those of the authors and should not be interpreted as representing official policy of the Mine Safety and Health Administration.

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	NAME	CHAPTER NO.	LOCATION
No. 1 Preparation Plant	10744	Midway, WV	General Paving Company	10766	Morgantown, WV
Pahrump Valley Gravel	10745	Pahrump, NV	Justice Strip	10767	Coal Center, PA
Dyna-Safe of Wyoming, Inc.	10746	Mountain View, WY	Coal Stripping	10768	Mt. Pleasant, PA
Premium Sewell, Inc.	10747	Monterville, WV	Kirby Energy	10769	Independence, WV
Yeager Training	10748	Belle, WV	Triplett Brothers Excavating	10770	Morgantown, WV
Cal-Sierra Development, Inc.	10749	Marysville, CA	Albert Shaffer Trucking	10771	Masontown, WV
CSP Quarry	10750	Wells, VT	Cresson Steel Company	10772	Cresson, PA
Jackson Gulch	10751	Winterhaven, CA	Cole Bros. Contractors, Inc.	10773	Battle Creek, MI
Wm. Mueller & Sons, Inc.	10752	Hamburg, MN	Treasure Canyon Calcium	10774	Preston, ID
St. James Concrete	10753	St. James, MN	Kazin No. 2	10775	Man, WV
Fairmont Concrete	10754	Fairmont, MN	Kazin No. 3	10776	Man, WV
The Bosshart Company	10755	Truman, MN	Celatom Plant	10777	Vale, OR
Windom Ready-Mix	10756	Windom, MN	Roseburg Sand & Gravel	10778	Roseburg, OR
Gould Erectors & Riggers	10757	Glenmont, NY	Rheox Inc.	10779	Newberry Springs, CA
B & C Repair	10758	Belva, WV	Royal Mountain King Mine	10780	Copperopolis, CA
Winifrede Dock	10759	Marmet, WV	John Hertzog	10781	Mokelumne Hill, CA
Kcac Mill	10760	King City, CA	Morgantown Heating And Cooling	10782	Morgantown, WV
Metz Plant	10761	Greenfield, CA	Kauai Aggregates	10783	Lawai, HI
Clark Trucking Company	10762	Mammoth, AZ	Way's Drilling Company	10784	Morristown, AZ
Robison, Carlon & Carlon Porta	10763	Sacramento, CA	Summitt Environmental	10785	Independence, KS
Ladd Ready Mixed Concrete Co.	10764	Lake Isabella, CA	Safety Systems & Solutions, Inc.	10786	Troy, NY
Yellow Eagle Mining	10765	Fairbanks, AK			

Southern Regional Mine Rescue Contest to be held

The Southern Regional Mine Rescue Contest will be in New Iberia, La., on May 6 and 7. The Field Competition will be held on May 6, and the written

exam, gas test, benchman's test, and crawfish banquet will be on the 7th. For further information, call Dan Haupt or Whitey Jacobsen at (214) 767-8401.

A scientific look at *Back Belts*

By Sean Gallagher and Christopher A. Hamrick,
U.S. Bureau of Mines, Pittsburgh Research Center, Pittsburgh, PA

A tremendous increase in use of back belts by companies attempting to control back injury costs has been seen in recent years. Numerous belt designs are being made available to industry, based on the premise that they reduce the risk of low back pain. Many claims have been made regarding the effectiveness of back belts; however, not many of these have been based on sound scientific evidence. In fact, there is contradictory information on the value of back belts. Some studies have supported the use of belts, while others have suggested that workers would be better advised to refrain from their use. This paper will review evidence relating to back belt effectiveness and will provide some suggestions relating to their use in the workplace. It is largely based on a review of back belt literature by the noted spinal biomechanist Stuart McGill (McGill, 1993).

There are several potential benefits and drawbacks associated with wearing back belts that should be considered before a responsible policy can be established. Let us first examine the hypothesized benefits associated with back belt usage and the related scientific evidence.

Potential benefits of back belts

The following list details the major benefits that might be provided by back belts:

1. Back belts may decrease the load experienced by the low back.
2. Back belts may help to "stiffen" the spine to make it stronger.
3. Back belts may restrict spine mobility and prevent hazardous movements.
4. Back belts may provide a safety margin by increasing an individual's tolerance to heavy loads.
5. Use of back belts in industrial settings may decrease back injury incidence.

The following sections will address the scientific evidence related to these hypothesized benefits.

Do back belts decrease the load experienced by the low back?

One of our best methods for establishing the answer to this question is to examine muscle activity. If back belts decrease the load on the low back, we would expect to see a decrease in the electrical activity of the powerful back muscles. However, studies have shown convincingly that there is no difference in back muscle activity when wearing a belt.

Does use of back belts in industry decrease the incidence of back injuries?

Several recent studies have been performed attempting to determine whether belts actually do reduce the incidence of injury (Holmstrom and Moritz, 1992; Asundi, et al., 1993; Walsh and Schwartz, 1990; Reddell et al., 1992). Unfortunately, the studies performed thus far have been of widely varying quality. Only two back belts studies have been performed that use the method that provides the highest quality data (i.e., prospective studies using matched control groups). These studies were performed by Walsh and Schwartz (1990), and Reddell et al. (1992).

The Walsh and Schwartz (1990) study is the one pointed to most frequently by back belt proponents as evidence of the effectiveness of back belts. These investigators studied 81 workers in an industrial warehouse setting. Results of this study did, in fact, demonstrate a reduction in lost time back injuries due to use of back belts, but careful scrutiny of the data indicates that the benefit was found *only* among workers who had experienced previous back injuries. No benefit was observed for previously uninjured employees.

The second of these studies examined the effectiveness of back belts using 642 airline baggage handlers (Reddell et al., 1992). These authors found no differences in back injury incidence rates be-

tween groups using back belts and those not using belts. However, these authors did discover a disturbing trend. Workers who started the study wearing back belts and who dropped out (discontinued use of the belts) had a higher incidence of back injury than any other group. The authors of this study concluded that back belt use may cause some physical dependency, leaving the back at increased risk when the device is withdrawn.

It is important to note that neither of the studies cited above demonstrated that belt use had any benefits for uninjured workers. However, it is noteworthy that belts did seem to help workers who had experienced prior back injuries. This indicates that belts may have some usefulness in the workplace under certain circumstances.

Potential drawbacks of back belts

The following arguments are typical of back belt detractors:

1. Back belts may lead to weakened back muscles (muscle atrophy).
2. Back belts use causes workers to develop a "false sense of security."
3. The increased intra-abdominal pressure (LAP) observed during back belt use may result in adverse physiological changes.

Let us examine the evidence with regard to these issues.

Do back belts cause muscles to become weaker (atrophy)?

Several studies have examined this issue, and all of these seem to agree that back belts do not lead to a decrease in muscle strength, at least over the short term. This is consistent with the observation that back muscle activity is not decreased with belt use, as mentioned above. However, a recent Swedish study suggested that while back belt use does not result in loss of strength, muscular endurance may be decreased with prolonged belt use (Holmstrom and Moritz, 1992).

Do back belts create a "false sense of security?"

There is some evidence that belts may lead to a false sense of security in workers. As noted above, lifting belts do not appear to increase an individual's load tolerance. However, studies have

indicated that workers are willing to lift up to 20% more weight when wearing a belt (McCoy et al, 1988). Thus, it appears that workers who use belts appear willing to place higher strain on the back, and in fact, are willing to work at a higher percentage of their maximum load tolerance. Therefore, workers who wear belts may be working with decreased safety margin with regard to the low back.

Do back belts result in adverse physiological changes?

Back belts do seem to cause certain unwanted physiological changes to occur. The most significant of these is the increase in blood pressure that has been observed when lifting using a belt. Blood pressure has been shown to be elevated almost 15 mmHg when lifting with a belt (Hunter et al., 1989). Any individuals with history of heart problems or those with significant cardiovascular risk factors should consult a physician prior to donning a back belt. An increase in blood pressure by 15 mmHg may lead to serious health problems among those with a history of cardiovascular problems.

Summary and recommendations

The foregoing information indicates a somewhat mixed bag of evidence—some in support of back belts and some in opposition. Evidence supporting use of back belts includes some restriction in end-range motion of twisting and side bending, clinical evidence of a decrease in lost-time back injuries among those with prior back injuries, and a suggestion of increased trunk stiffness which may be of some benefit. Evidence in opposition of back belt and a "false sense of security" that may lead workers to overstrain their backs.

This review of the literature indicates that the following approach to use of back belts be followed (following McGill, 1993):

1. Back belts should be treated as prescription item and should be provided only to individuals having had a previous back injury. These workers should be weaned from the belts as soon as it is appropriate.
2. Back belts should *not* be universally distrib-

uted to all workers at a worksite, given the lack of demonstrated effectiveness among uninjured workers and potential increased risk of injury after discontinuation of use.

3. Individuals considered for a back belt prescription should be screened for cardiovascular risk, due to the increased blood pressure associated with belt use.

4. Individuals using back belts should be required to participate in a mandatory exercise program, and should continue in the program after being weaned from the belt during the period of increased back injury risk.

5. Workers using back belts should be exposed to a mandatory education program, to ensure that the back belts are used properly.

6. A full ergonomic assessment of the workplace should be performed to reduce any physical hazards that may increase the incidence of back injuries.

The evidence presented in this paper suggests that back belts have a rather limited role to play in controlling the costs and incidence of back injuries. Reliance on back belts as a sole method of combating this problem clearly does not provide an effective solution. Effective back injury control programs tend to emphasize job redesign, where the worker's job is changed to reduce the amount of manual lifting that has to be done (or the lifting that must be done is made easier). Methods of job redesign applicable to the mining industry are contained in the Bureau of Mines Information Circular 9235 (Gallagher et al., 1990). Employers who are interested in keeping the cost of back injuries down are encouraged to focus on job design as a primary method of injury control, and if back belts are to be used, careful consideration should be given to the factors discussed above.

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Holmes Safety Association monthly safety topic



Fatal powered haulage accident

GENERAL INFORMATION: A 21-year-old truck driver was fatally injured while attempting to clean a build-up of limestone material from the interior walls of a metal surge bin.

The quarry was an open pit limestone mine. Limestone was mined using conventional multi-level benching. The overburden was removed with diesel-powered earth movers and the limestone was drilled with diesel-hydraulic drill machines and blasted for removal. Front-end loaders were used to load the broken limestone into end dump haul trucks which transported it to the crushing plant at the mine site. The limestone was crushed, screened, sized and stockpiled where it was loaded into haul trucks and transported to construction and preparation site locations. The material was used primarily for concrete and asphalt.

The mine operated one, 10-1/2 hour shift, five days a week. Total employment at the mine was 13 persons who were all present the day of the accident.

DESCRIPTION OF ACCIDENT: The victim reported for work at 7:00 a.m., his normal starting time. It had rained during the night and was still raining when the employees arrived at the mine that morning. Because of the weather conditions the superintendent postponed plant start-up pending weather determination.

In the interim the superintendent assigned the victim and the plant operator the task of cleaning the beds of the haul trucks. The wet weather conditions had caused the limestone material to stick and accumulate in the beds of the trucks, thus reducing the load capacity. They cleaned three truck beds at the equipment parking area which was located north of the crushing plant.

At 8:45 a.m., the planned detonation on the production ledge at the quarry occurred and the

crushing plant was started up at 8:50 a.m. The plant operator started the crushing plant while the victim began hauling waste dust from the No. 4 surge bin to a water-filled depression at the production ledge in the quarry. The material was dumped into the depression in an attempt to dry up the water. After it was determined a sufficient amount of waste dust had been dumped at the production ledge, the victim began hauling the waste material from the bin to the waste dust stockpile area. Work progressed routinely for the next few hours.

The driller and another employee had completed loading the drill holes in the quarry and were ready to blast. At about 11:35 a.m., the driller drove to the quarry office located next to the screening plant and informed the superintendent that the loading of the round had been completed and was ready to be blasted. After his conversation with the superintendent, he drove to the No. 4 surge bin and stopped to talk to the victim. The driller located the victim inside the bin. Noticing that the discharge and feed belts were operating and that the victim was not secured in any manner, he informed him that what he was doing was a good way to get himself killed. The driller instructed him to get out of the bin. The victim put the shovel he was using out through the inspection window onto the work platform and started to climb out. Assuming that the victim had climbed out, the driller turned and walked down the stairway, got back into his truck where he drove back to the quarry.

At 11:58 a.m., the plant operator went to the crusher control station and shut the crushing plant down. From that location, he was able to see the No. 4 surge bin, the conveyor coming from the finish screens that supplied material to the bin, the bin discharge belt conveyor, and the victim's

haul truck that was located under the bin. The plant operator did not notice anything unusual in the area after the shutdown and went to lunch at the equipment parking area.

When the plant operator shut the plant down, the plantman, also left for lunch. The plant was not locked-out during the lunch break shutdown. The method and manner in the way the plant was shutdown was a daily routine at lunch break and coincided with the noon blast in the quarry.

At 12:05 p.m., another driver was heading for the parking area for lunch break and noticed that the victim was standing on the outside work platform at the No. 4 surge bin.

After the noon blast was initiated at 12:15 p.m., The driller stopped by the truck parking area and asked the loader operator a truck driver if they had seen the victim. No one could locate the victim. The driller drove to No. 4 surge bin and saw the discharge belt conveyor operating and a trickle of dust coming off the belt into the haul truck below. He got out of the truck called for the victim. When he received no answer, he started up the stairs to the elevated work platform on the bin and in doing so, saw feet sticking out of the bin discharge chute onto the discharge belt below the bin. He immediately turned the discharge belt conveyor off and went to the pickup and radioed the scale house requesting assistance. The scale house employee received the message and began notifying mine personnel. The driller returned to the bin and called the victim's name again and received no response.

The superintendent and the driller cut the 36-inch wide rubber discharge belt above the point

where the chute discharged onto the belt and attempted to free the victim. When they realized they could not free him, they removed the flow adjuster on the chute by removing two bolts that secured the adjuster flap to the chute. The victim was removed and placed on the ground next to the surge bin and cardiopulmonary resuscitation (CPR) was administered until emergency rescue personnel arrived and took over.

The victim was pronounced dead at 11:00 p.m., with the cause of death attributed to suffocation.

CONCLUSION: The direct cause of the accident was the victim entering a 35-ton capacity surge bin *without* wearing a safety belt and having a second person attending the lifeline. The discharge conveyor belt was operating and the victim was either engulfed by the material sloughing off the bin sides or fell onto the moving conveyor belt and was subsequently covered with material. He was trapped between the adjuster flap on the discharge end of the bin and the belt and the upper part of his body was covered with material inside the bin.

The victim failed to heed the warning given by his coworker regarding the bin hazard.

The company failed to indoctrinate the victim, who was a new employee, in the safe work procedures for entering the bin.

The company failed to equip the bin with a mechanical device or to provide any other effective means for avoiding material hang-ups to prevent the need for personnel to enter the bin on a routine basis.

Learning from simulations... Avoiding disasters before they happen

University of Kentucky Professor Henry Cole has developed a way for coal miners throughout the world to experience disaster on paper—before they have to experience it in reality.

Cole and his Behavioral Research Aspects of Safety and Health (BRASH) group have developed 70 simulated accidents. The exercises are being used across this nation—and now in China

to teach miners how to avoid injury and death.

"They're based on errors that people actually made in those situations," said Cole, a professor of educational and counseling psychology.

"What it was designed to do was to find out what sorts of injuries were happening and what the precursors were," he said. "Almost all of them are preventable."

Cole helped found the BRASH group in 1984. Using \$700,000 in grants from the U.S. Bureau of Mines, the group developed scenarios aimed at improving the miner's critical skills to prevent emergencies—or to cope with them when they occur.

"The simulations are told in a story format, interactive stories," he said. "It's a story that begins before the accident occurs... and then the story progresses and people get into trouble and then it basically becomes a problem."

In developing the materials, BRASH interviewed 120 people in hospital trauma centers and emergency rooms in four mining states. Cole also used the U.S. Mine Safety and Health Administration's (MSHA) data base to get a complete record of all mining injuries and deaths.

The training materials also cover the aftermath of an accident. Cole was looking for what miners did well in emergencies and what they did poorly.

"They treat known injuries well," he said. "What they didn't do well was diagnose hidden injuries," such as those from electrocution.

Cole said he found many instances where an injured miner would have survived if the rescuers had maintained better contact with the outside.

Cole said 400,000 copies of the simulations have been distributed by MSHA's Academy in Beckley, West Virginia.

"They've been very popular with the miners," said academy Superintendent Tom Kessler. "They're problems the miners can relate to."

The materials also have gotten rave reviews from private entities.

"In my opinion, he (Cole) has done more to help safety training of American miners coast to coast than certainly any one individual I know of," said John Howard, associate dean of coal mine technology at Illinois Eastern Community Colleges.

Asked if the materials had saved lives, Howard said, "I don't think there's any question."

Reprinted from the February 1994 issue of Acquire's Coal Today.

Training aims beyond the workplace

Health and safety training go way beyond the confines of the workplace; a person must be concerned about these vital issues 24 hours a day.

That's not as daunting a task as it sounds. In the Arizona State Mine Inspector's Office (ASMI), Education and Training Department, classes are being given around the state to emphasize the importance of being aware of hazards everywhere—on and off the job.

Often, a group of workers assembles for an 8 a.m. class prepared for "just another boring safety class." Within the first few minutes, however, we are discussing how all their training applies just as much at home and elsewhere as it does on the job.

"Anyone with children at home, or anyone who has ever raised kids, becomes a health and safety training officer," they are told by Bob Zache, trainer for ASMI. Bob travels around the state conducting the classes. "How many times have you told a child, 'don't run with that stick; you'll

fall down and poke your eye out.' Or, 'Don't play in the street; you'll get run over.' Or, 'Stay away from the deep end of the pool, you'll fall in and drown.' All of us have lectured our kids about the hazards they face while playing; and we need to adopt that attitude for ourselves."

Zache points out that with the 40-hour work week most of us have, we only spend about 22 percent of our time at work; the other 78 percent of the time we are somewhere else—at home, on the road going to or from work, shopping, hunting, fishing, camping, or whatever. So statistically, we are more at risk away from the job than at work.

"In addition," Zache notes, "the home is probably more hazardous than the workplace. At work you store hazardous chemicals in a secure place; and they have to be labeled. How about your home? Look under your kitchen sink, or the bathroom medicine cabinet, the laundry room, shop or garage. Chances are there are dangerous chemi-

icals there, unlabeled and unsecured.

"And I'd bet money that first thing this morning you were standing wet and naked on a slippery porcelain surface—taking your morning shower, and every day someone slips and falls in the shower or tub. If you were walking around under those conditions at work, you'd be required to wear a safety belt and non-skid boots."

Even the most classroom-resistant worker begins to take interest in the training when it starts to relate to things he or she is really close to, like a spouse or children, Zache said. Then they begin to think about the attitude they have on the job as well as elsewhere and problems with

stress or anger can be discussed.

"Classroom discussion is an important part of the health and safety training sessions," Zache said. "Everyone who comes into the class can add something to it. I like to get them talking. Many of their actual, real-life experiences are more valuable and educational than any of the videos I have or anything I can tell them. I often end up learning as much from my classes as the people in them."

Reprinted from the January 1994 issue of the Arizona State Mine Inspector's Health and Safety News.

Controlling risks

There are many different approaches to controlling workplace risks. The International Loss Control Institute talks about pre-contact, contact and post-contact methods. Pre-contact methods include anything that prevents a worker from coming into contact with an energy source or hazard (e.g., covering an open hole). Contact methods reduce the risk of injury in the event of contact (e.g., wearing safety glasses). Post-contact methods merely lessen the effects of contact (e.g., providing first aid—obviously not a prevention strategy at all). The Canadian Center for Occupational Health and Safety (CCOHS) recommends that controls be put in place in the following order: 1) eliminate the risk (e.g., substitute a non-toxic chemical for a toxic one);

- 2) contain the risk (e.g., machine guards);
- 3) revise work procedures (e.g., use scaffolds instead of ladders); and
- 4) reduce the exposure (e.g., ventilation).

The U.S. National Safety Council recommends that controls be concentrated first at the source (e.g., buy equipment that does not produce excessive noise); secondly, along the path to the worker (e.g., enclose noisy equipment); and last of all, at the receiver (provide hearing protection).

System Safety's Order of Precedence is similar. First, design or re-design equipment or pro-

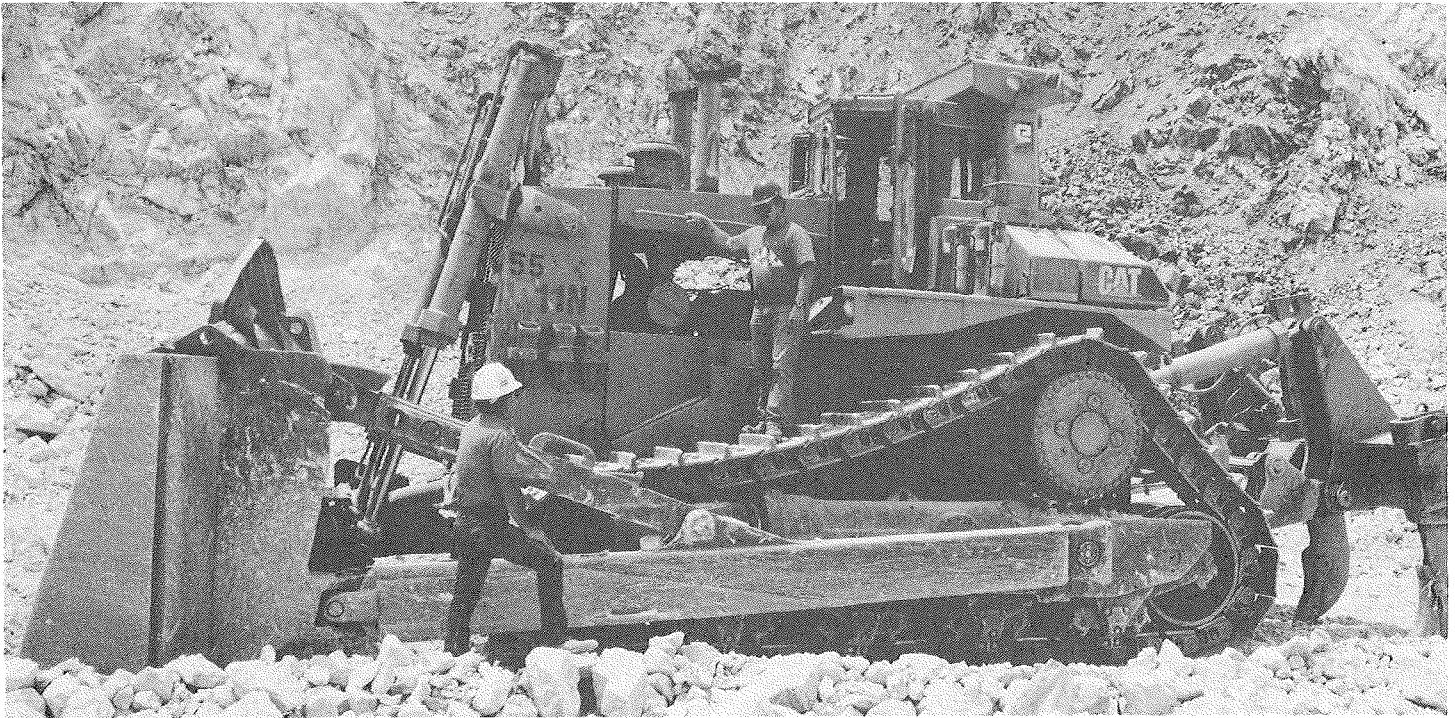
cesses to eliminate the risk or reduce it to acceptable levels. Second, incorporate safety devices. Third, incorporate warning devices. And last, employ procedures and/or training, including PPE.

These risk control strategies, and others that we have not even mentioned, all take the same basic approach: the best controls are those that eliminate or reduce the hazard at its source, at the design stage, before it contacts the worker, etc. And the least effective controls are those that rely on the worker to protect him or herself by following proper procedures, wearing PPE, etc. Training and other techniques to encourage safe and healthy behaviors are a vital component of any safety program—all risks cannot be engineered out. But they are no substitute for controlling as many risks as you can at their source.

Look around your workplace. Every time your safety or health relies on wearing PPE or on not making an error, ask yourself "Is there a better way?" Encourage your Joint Health and Safety Committee to use System Safety's Order of Precedence or some other more pro-active approach when brainstorming ideas on how to control risks in your workplace.

Reprinted from the December 1993 issue of Ontario, Canada's Mines Accident Prevention Association's Safety Reminder.

Team work, culture, commitment achieve mine safety award



Oftentimes when an ultimate goal is achieved, others want to know the secret formula behind the success. For Phelps Dodge Morenci, Inc. (PDMI) and Phelps Dodge Corp. (PD), winning the 1992 Sentinels of Safety Award represents a host of contributing factors, but closer observation reveals very specific characteristics that both corporate and federal officials have identified.

"The most important thing is team work and the culture that we create," said Douglas C. Yearley, chairman, president and CEO of Phelps Dodge Corporation.

"I think I've established in this operation a clear message that the most important thing we are doing is safe work. And, the way we have safe work is through everyone thinking safety and working toward improved safety," Yearley said.

People make safety, Yearley explained. "If people are thinking safety and working together as a team toward safety and have pride in what they are doing, that will lead to good safety records. "

Vern Gomez, metal/nonmetal administrator of the Mine Safety and Health Administration

(MSHA), said the two most significant factors contributing to Morenci's safety success were the commitment to the safety program and the employees' willingness to also support the program.

"I've dealt with PD for a long time, and I'm not surprised, I'm happy," Gomez said.

From his perspective, MSHA's Rocky Mountain District Manager, Rod Breland, said it was the employees' positive attitude and feelings of personal ownership in the company that contributed to Morenci's successful safety record.

"It doesn't seem to matter who you talk to here, whether it's a manager, a corporate level manager, or a worker, they all have this attitude of individual ownership in the company and a sense of pride they've instilled in each other," Breland said.

Larry Aubuchon, field office supervisor for the Mesa Group II Office of MSHA, said management's commitment to spend the time and money to start a good basic safety program that developed trust with the employees was a key factor in PDMI's ability to win the 1992 Sentinels of Safety Award.

"We are certainly proud of their accomplishment; it's a benchmark," Aubuchon said.

"As a whole, the mining industry has come a long way, he added, but Phelps Dodge is at the pinnacle."

Safety program initiates change

Most success stories don't happen overnight but are rather a culmination of factors that evolve and change with time. Such is the case for PDMI and their ongoing, award winning, safety program for its 2,200 employees.

Morenci's safety program has provided a safer environment and initiated positive change for the employees and Phelps Dodge Corporation.

Tommy Sanders, road maintenance supervisor in the mine division, said one positive change was the increased role of communication, which has become more focused and plays a more important role at all levels within the mine. "Communication from me to the employees and from the employees back to me and from the employees to employees is very important," Sanders said.

He believes that improved communication among employees has provided a framework where the exchange of information helps employees perform a safer job. Sanders said employees also are offering helpful ideas for doing a safer job and the division has developed more specific procedures for accomplishing tasks.

Matching the best qualified employee with a specific type of job has also been very beneficial, Sanders said. "You put people in places where you know they can do the best job, plus the safest job," he said.

In addition to the five-minute, daily safety discussions, employees offer perspectives on safety changes. Sanders said "the communication is a lot better—both visual and spoken communications. Everybody is working toward that same common goal."

Hill said the monthly safety meeting and daily tailgate safety meetings before each shift begins work have also been very beneficial. "Anybody who has a good idea or workable idea, we follow through with it," he added.

One example of an employee suggestion that was implemented is the jigs that are now being

used, Hill said. "A jig is a tool that you put on a forklift that will hold a big component, so you can put it on or off the truck. And, these have all been designed in-house by mechanics or supervisors," he added.

"We couldn't do the things we are doing today without the money being put back into the operations and that reflects all the way down the line, both in terms of safety and job security," Hill said.

"With good safety, we can actually improve production." That's how John Lakey, assistant leach supervisor in the hydrometallurgical division, views the role of safety within the operations.

"If you have a good safety program and the employees know you care about them, that improves morale," and greater productivity results, Lakey said. "People who think that safety and production don't go hand-in-hand, they're wrong. It does."

Another change that is attributed to PDMI's safety program is the peer pressure that is demonstrated among the employees within the division, Lakey said. "Each one of our people feels like a safety inspector," and share the responsibility for keeping their fellow employees safe, he added.

Daily tailgate safety meetings, monthly safety meetings and increased employee awareness of safety are positive changes that have resulted from Morenci's safety program, said Coochie Gomez, concentrator division shift supervisor. "The crews treat each other like family members and watch out for each other. It's more of a team effort now," he said.

In addition, safety chains in appropriate areas, more visible signs, and drug and alcohol testing are also changes that have helped to achieve employee safety, Gomez said.

The careful tagging of inoperable equipment by electricians that safeguards equipment from starting while repair crews are at work is another positive change, Gomez said. "It takes a little bit longer, but it's safer. And in a long run, it's going to save somebody's life."

Reprinted from Phelps Dodge Morenci, Inc.'s October 1993 issue of Copper Today.

Early miners built the West, personified the American dream

By Bill Epler, Staff Reporter

The rich mines of the Old West wouldn't have been worth a plugged nickel if it hadn't been for the men who descended deep into the earth to wrest the metal from its ancient resting place and bring it to the surface.

The miner's job in those early days was a tough one. Ventilation was poor or nonexistent, tem-

peratures in the working areas was often more than 100 degrees, the only lighting was provided by flickering candles, there were no hardhats or other protective gear and danger was ever present.

But as tough as the work was, it was far better than in Europe from where many of the West's early miners came in droves during the last of the



19th Century and the beginning of the 20th Century.

In the fabulously rich southeastern Arizona copper camp of Bisbee working conditions were considered above average due to good ground conditions, lack of extreme heat and a growing awareness of better safety practices. As part of a trend across the nation, mechanization was coming to the mines along with efforts to improve working conditions.

The two early miners above stopped by the photography studio in their working garb, perhaps to send photos to relatives "back home." Their assured confidence in themselves and each other as a working team is clearly evident. Except for mustaches, they are clean-shaven and neatly groomed. Their "diggers," as their garb was called, gave mute evidence of the strenuousness of their work.

mounted in iron holders with sharp points that were jammed between rocks or into a handy timber. If there had been much ventilation in the stopes where the ore was being mined, the candles would not have kept burning.

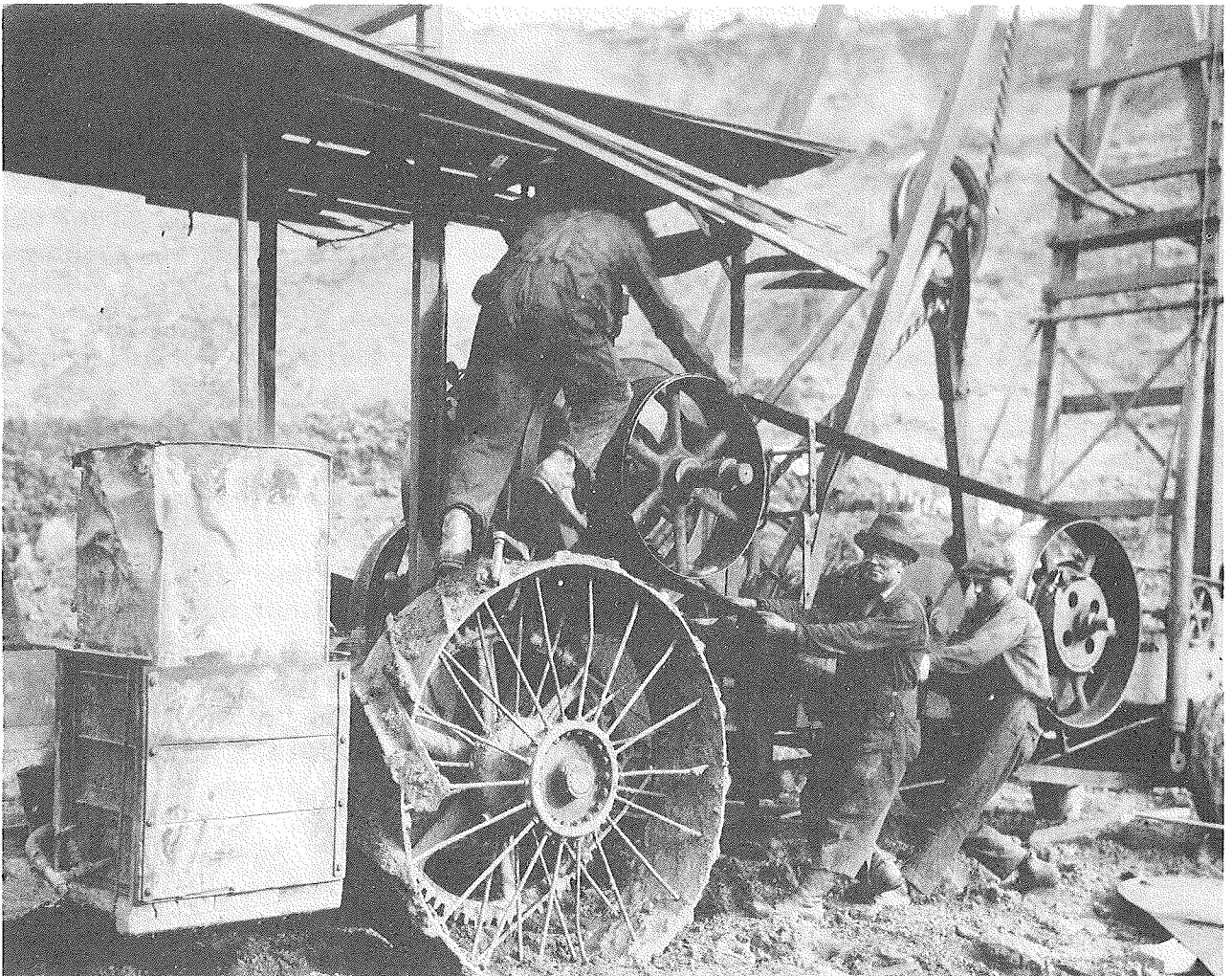
In the early days, candles were all the miners had for illuminating their working areas. Their lot was improved considerably some time later when carbide lamps, mounted at first on their caps and then on hardhats, came along providing much better light. An even bigger improvement was made when battery-powered lights, still used to this day, were introduced.

Gradually, electric lights came into use in the underground mines, but were largely confined to the drifts and haulageways that spread out from the shafts. In time, they were gradually installed in some of the large stopes that took weeks and months to mine. But in many smaller mining areas,

Took lots of
hearty grub

Their large lunch buckets were filled with hearty food for it took a lot of fuel to carry a man through a day's labor, especially in those days when everything was done by hand and shifts were 10-12 hours long.

In their hands are candles used underground,



the individual miners' candles or lamps were the sole source of light.

The candles used in the early days were also indicators of air conditions. If the flames were strong and bright, the air was considered pretty good. If they were not—especially if they went out—the air was dangerously lacking in oxygen and the miners would retreat to a passageway where it was better.

In the earliest days of Western mining, most of the miners were men who had migrated from the East, looking for a better way of life. This was especially true immediately after the Civil War when hundreds of thousands of men were mustered out of military service and jobs simply were not available for them.

Many of them headed West as part of the tide moving in that direction and lots of them became prospectors, looking to make a big strike. As their prospecting dreams faded, it was only natural that many of them turned to mining for someone else who had discovered a mine in order to make a living.

Many came from Europe

During the last quarter of the 19th Century there was need for more miners, especially those with at least some experience. There were hard times and turmoil in Europe and as word reached there from some of the early immigrant miners and by advertisements from mining companies that there were good jobs available here, they came to the Western United States by the thousands. It was during the flood tide of immigration and the gates to the U.S. were wide open.

The immigrant miners came from two primary areas—Cornwall in England and the Balkans in southeastern Europe, mainly from what is now known as Yugoslavia. There also were some from the coal mining regions of Germany.

They were good miners and hard-working men, asking only for an opportunity to establish themselves in a new land. The Cornishmen were among the very best hardrock miners in the world, having a background of several hundred years of working in the tin mines of Cornwall, considered the center of advancement in mining techniques.

The Cornish miners were called "Cousin Jacks"

in the Western United States, an appreciative reference to the way the ones already here helped the newcomers.

The established Cornish miner would take a new arrival to the mine and tell his boss something to the effect that "me Cousin Jack has just come over from the old country and is looking for work," even though they were not related.

The Serbians also were excellent miners. Many of them were also sharp businessmen and instead of becoming miners—or after they had mined awhile to get a nest egg together—they established businesses in their new communities, particularly restaurants and grocery stores.

Although their numbers are dwindling as they gradually intermarry and scatter to other parts of the country, there are still a number of descendants of the Cornishmen and Serbians in Bisbee, Globe-Miami, Morenci, Rock Springs, Butte, Wallace and other Western mining camps. They are solid members of their communities, many of them operating their own businesses or professions, such as attorneys and doctors.

Personified the American dream

We think we see representatives of all these ethnic backgrounds in the picture of the 2 miners. They were proud men, establishing a foothold in a new land far across the sea from where they were born and reared.

They had struck out to establish a new and better life. They didn't whine about ethnic problems, but buckled down and earned their place in society. They worked hard, did their jobs well and took no guff from any quarter.

They established production records for the mines where they worked and helped generate the mineral wealth that built communities, states and the nation and made possible the highest standard of living ever enjoyed by any society the world has ever known.

They personified what has become known as the American dream.

Reprinted from the August 1993 issue of the Rocky Mountain Pay Dirt



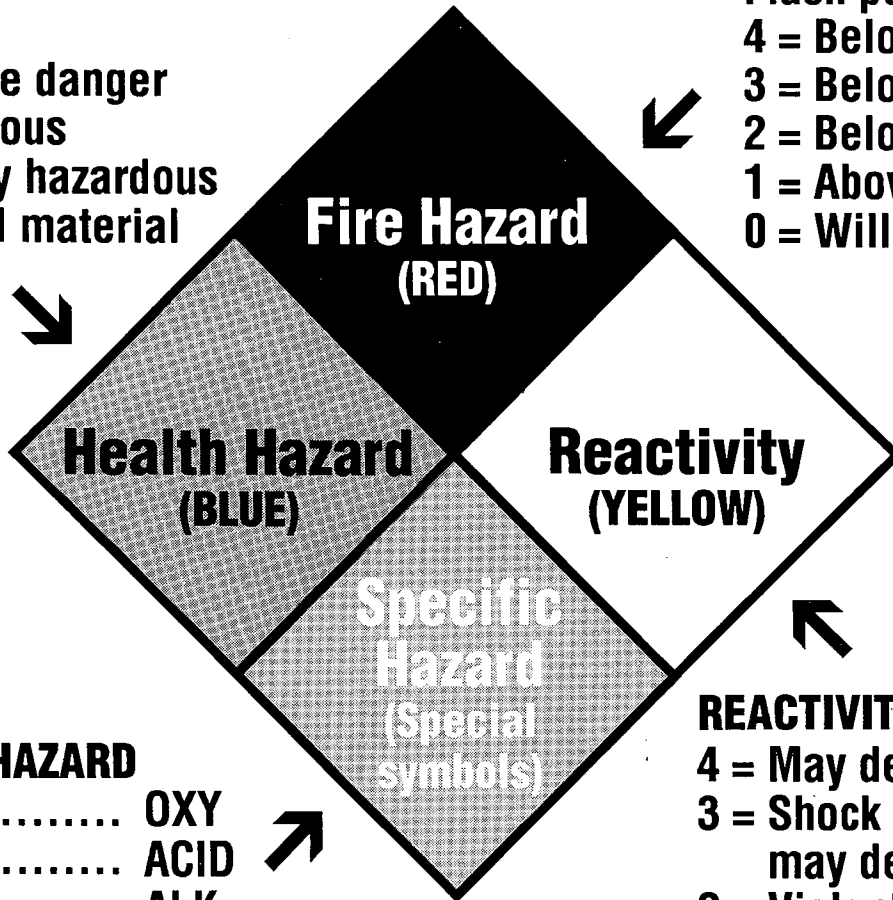
Perform a death-defying act...

HEALTH HAZARD

- 4 = Deadly
- 3 = Extreme danger
- 2 = Hazardous
- 1 = Slightly hazardous
- 0 = Normal material

FIRE HAZARD

- Flash points
- 4 = Below 73° F
 - 3 = Below 100° F
 - 2 = Below 200° F
 - 1 = Above 200° F
 - 0 = Will not burn



SPECIFIC HAZARD

- Oxidizer OXY
- Acid ACID
- Alkali ALK
- Corrosive COR
- Use no water ~~W~~
- Radiation hazard ☢

REACTIVITY

- 4 = May detonate
- 3 = Shock and heat may detonate
- 2 = Violent chemical change
- 1 = Unstable if heated
- 0 = Will not burn

Fire diamond crucial for firefighters

The National Fire Protection Agency developed the 704 fire diamond to aid firefighters responding to fires where chemicals are present. These chemicals may be a health or fire hazard to the firefighters and to the public. The fire diamond may cover one chemical stored in a barrel or it may represent the cumulative effects of all the chemicals stored at a site.

The fire diamond is divided into four quadrants. These four quadrants represent the different hazards presented by the chemicals which are health hazards, fire hazards, reactivity hazards, and special hazards. Each quadrant is colored differently to be distinguishable from the others.

The health diamond is on the left side and is colored blue. The top diamond is red and represents the fire hazards within. The reactivity diamond is yellow and is on the right side of the 704 diamond. These three diamonds each contain a number at the center of them. This number varies from 0 to 4. A "0" represents minimal hazards while a 4 represents severe hazards.

The fourth diamond quadrant lists special hazards. These hazards are represented by letters or symbols rather than numbers.

Reprinted from the January 1994 issue of the Arizona State Mine Inspector's Health and Safety News.

Holmes Safety Association monthly safety topic



Fatal powered haulage accident

GENERAL INFORMATION: A 49-year-old master electrician, with 19-1/2 years of mining experience, received fatal injuries when the pickup truck in which he was sitting was run over by a 170-ton haul truck.

The mine is a large surface coal mine containing several seams of coal and employs 317 persons, producing 14,500 tons of coal daily.

DESCRIPTION OF ACCIDENT: The shift started at midnight and mining operations continued without incident until about 2:15 a.m. The driver of a 170-ton series 310 Euclid electric drive hauler, while traveling up the south ramp of the 1-UD pit, lost propulsion and stopped the hauler. The ramp is 90 feet wide, measured from highwall to the inside of the berm, and is at an 8.3 percent grade. The hauler was parked about 500 feet from the bottom of the ramp.

The driver noted that as the propulsion system failed, he applied both the dump and park brake systems to hold the hauler in place. He reported the breakdown by radio and remained with the hauler until the victim arrived to work on the hauler. The victim made a number of checks before he apparently found the problem in the rear axle box housing located between the rear wheels. He then left the area in his pickup truck to get the parts to repair the electrical system.

The supervisor arrived at the site and he and the driver installed chocks behind two of the rear wheels. The hauler was left with the engine running and the dump brake set.

The park brakes were also set, and the rear wheels chocked with 14-inch blocks. The front wheels were not turned toward the highwall.

Between 2:30 a.m. and 3:50 a.m., the victim was seen working on the hauler. Another driver saw the victim's pickup truck backed up under

the rear of the hauler by the doghouse. Apparently, the he was using the bed of the pickup truck as a platform to enter the 2-foot by 2-foot opening into the doghouse. The victim had told the miner that a wire had burned off at a wheel motor inside the doghouse and he had to replace the wire terminal.

At about 3:50 a.m., a driver, coming up the ramp, saw the victim sitting in his pickup behind the hauler. The front of the pickup faced down the ramp. When his hauler drew even with the pickup truck, he saw the hauler move from the parked position rapidly down the ramp, over the pickup truck, and into the highwall. He saw the maintenance mechanic stop to investigate.

The maintenance mechanic was following the other hauler up the ramp and saw the hauler hit the highwall. He stopped and could see that no one was in the hauler's cab. He then walked to the pickup wreckage and found The victim's body. He immediately radioed the supervisors and reported the accident.

The victim's body was removed from the crushed pickup truck by the fire department.

CONCLUSION: Information obtained during the investigation indicated that the accident occurred when the unattended 170-ton hauler's park brake system failed to hold the truck while parked on the ramp. The accident occurred when the park brake system failed due to worn, misaligned, and damaged parts. Contributing factors to the cause of the accident were: the chocks placed behind the wheels were not adequate to hold the truck on this grade; the front wheels were not turned toward the highwall face; and the victim had parked his pickup truck directly behind the hauler down the ramp.

Question & Answer

Lab Safety Supply's Safety Techline provides answers to their most often asked questions

Does OSHA have regulations for respirator cleaning? Where are they located in the CFR?

Yes, OSHA recommends regular cleaning in 29 CFR 1910.134 (3), (b), (5). Check manufacturer specifications for the suggested types of disinfectant and cleaners for your respirator. Remember, wiping down respirators after every use and storing them properly in sterile plastic bags enhance your regular cleaning program.

What is a PAPR and when would I need one? How does it actually work?

A Powered Air-Purifying Respirator (PAPR) is used mainly for protection against asbestos, but some manufacturers have cartridges for other uses as well. A PAPR has a battery-operated blower that draws air in through the cartridge or filter and then blows it into a mask or hood for the wearer to breathe.

What is the difference between an open-circuit and closed circuit SCBA?

An open-circuit system releases exhaled air into the atmosphere. A closed-circuit SCBA reuses exhaled air by adding oxygen and scrubbing out carbon dioxide.

When would I choose an airline respirator over an air-purifying respirator?

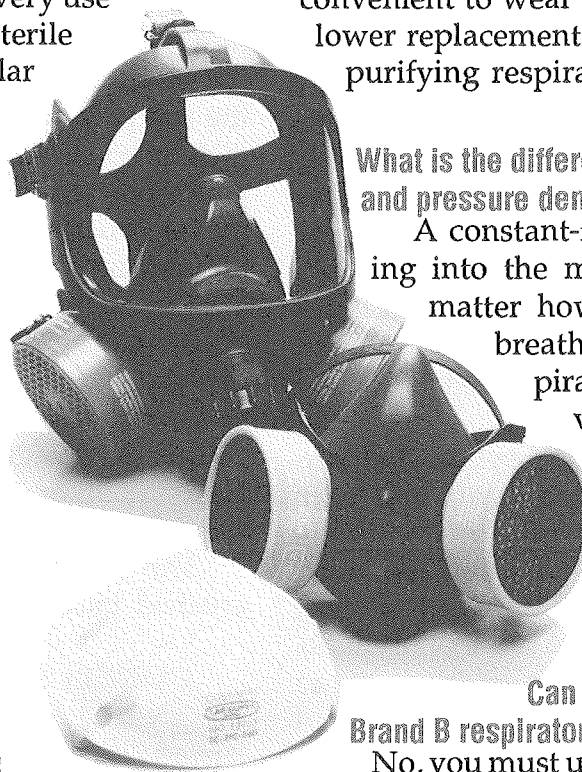
Use an airline respirator when: 1) The chemical you're working with has poor warning properties or none at all; 2) no cartridge is available to filter out the chemical; 3) it's more comfortable or convenient to wear an airline or; 4) you'd like to lower replacement costs of the less durable air-purifying respirators.

What is the difference between constant-flow and pressure demand airline respirators?

A constant-flow respirator has air blowing into the mask at a constant flow—no matter how strenuously the worker is breathing. A pressure-demand respirator has a regulator which provides more air when the wearer demands more—such as during more strenuous work—and still maintains a constant positive pressure in the mask.

Can I use Brand A cartridges with a Brand B respirator?

No, you must use only cartridges/filters from the same manufacturer of your respirator—because they are the only ones that offer a true fit, and mixing brands negates NIOSH approvals. Components for supplied-air respirators (hoses and hoods) also work the same way. Mixing brands could create an improper seal or leak and render your respirator ineffective.



*Article and photo submitted by
Lab Safety Supply, Inc., Janesville, WI*

Kansas shoot-out regional mine rescue contest

Mark your calendar for May 18-19, 1994; Kansas Small Mine Safety has set the date for the 6th Annual Kansas Mine Rescue contest. The "Kansas Shoot-out" contest will be held at the Practice Field on the Hutchinson Community College (HCC) campus.

A \$100.00 entry fee will be charged for the Mine Rescue Contest. A \$25.00 entry fee will be charged for the Benchman Contest. Fees need to be paid by April 30, 1994. Checks may be made payable to Kansas Small Mine Safety. Send registration requests (indicating: company; address; city, state, and zip; and name of participants—limit of two benchmen per team at \$25.00 per person) to:

*Kansas Small Mine Safety
Hutchinson Community College
1300 North Plum
Hutchinson, KS 67501*

Registration will be limited to 12 teams.

The contest will be held outside on courses staged at the Practice Field in the 500 block on East 11th Street.

A barbecue will be held the evening of Wednesday, May 18, at the HCC Student Union. The banquet will be Thursday, May 19, at the Gallery Theatre in the Fine Arts Center, 600 East 11th Street in Hutchinson. Reservations may be made for additional guests for each function for an additional fee of \$8.50 per guest per function.

Lee Graham, Coordinator

The four times you're most likely to slip...

One secret to keeping New Year's diet resolutions is to remember the word "HALT"—which stands for hungry, angry, lonely, and tired.

These are the four times when a person is most likely to fall back into bad eating habits.

PLAN AHEAD...

HUNGRY—*Plan something healthy to eat or drink the next time you get hungry between meals.*

Drink a glass of water. Enjoy some low-fat cocoa. Keep fruit juice or fruit on hand at work and home. A satisfying glass of 2% chocolate milk can keep you from downing a bag of cookies or a pint of ice cream.

ANGRY—*Plan something to do (besides eating) the next time you feel angry.*

Climb some stairs or take a walk. Write a scathing letter to the person you're angry at

(there's no need to mail it). Play with your dog. Watch a comedy program on TV. Beat on a pillow.

LONELY—*Plan something to do (besides eating) the next time you feel lonely.*

Go to the Y. Phone a friend. See a movie. Go to a place where there are lots of people (a mall, club, etc.).

TIRED—*Plan something to do (besides eating) the next time you feel tired.*

Go for a brisk walk. Take a quick, hot shower. Take a nap. Curl up with a good book.

Reprinted from the February 1994 issue of Arch of West Virginia Health Letter.

Remotely installed roof support canopies

Recently, Roy Lucas, a coal operator in the Mount Carbon area with a one section mine employing 24 miners, encountered an unstable area of mine roof of which part had fallen. This area of the mine has a life expectancy of over 10 years and the operator wanted to clean up the fall areas in three en-



tries and resupport the mine roof in a manner that would last the life of the mine and would not expose miners to an area of unsupported mine roof.

The operator decided to clean up the roof falls by using a remote control continuous miner to cut and load the rock into shuttle cars, thus eliminating any exposure to miners. He devised a canopy that was put together underground in sections and placed in the unsupported areas with a scoop without any miners being exposed to the unsupported areas. The canopies were constructed of steel I-beams welded on 4-foot centers onto steel skids. The canopy was also floored to prevent

rock from falling from between the I-beams. This operator took measurements and contracted Trojan Steel of Charleston, West Virginia, to cut the steel to his specifications. The operator then welded the I beams on to skids. The operator stated he spent \$23,000 on the materials, not including labor.

The photograph indicates what a substantial structure is now in place to protect these entries for the duration of the mine.

In a time when all small mine operators have been criticized for operating unsafe mines, we feel it is very important to recognize a small mine operator who goes above and beyond what is expected to promote mine safety, and in the process invent new ways to support the mine roof and eliminate the need for exposure to unsupported mine roof.

*Submitted by: John W.H. Baugh and Mike Hess
MSHA Coal Mine Safety and Health Inspectors*

Tailgate topic—Hard hats

Have you ever walked under a low pipe or railing and had it hit you on your hard hat. Look at your hard hat: See all those nicks and scratches? They could all be in your head.

MSHA Rule: 56.15002 Hard Hats

All persons shall wear suitable hard hats when in or around a mine or plant where falling objects may create a hazard.

Added to this rule in the hand book is another one in the MSHA Policy Manual which states that "all hard hats must be of an A.N.S.I. (American

National Standards Institute) approved design". This is noted by a sticker in the hard hat when it is new. *No metal hard hat is approved by MSHA.* These types must be replaced by an impact plastic or fiber composition hard hat.

Make sure that your hat is not cracked or broken and that the liner is in a good condition. If they are not in good condition, *replace them.*

By always wearing your hard hat, all those scratches and bumps will not be in your head.

***SAFETY IS YOUR RESPONSIBILITY,
SO DO IT***

JAHSA and HSA to hold annual meeting

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. Our agenda includes many timely safety topics which we feel will be of great interest and well worthwhile to participants. Mark your calendar and make your reservations today.

Lodging at the Radisson will be \$52 SINGLE—\$62 DOUBLE. Make your own lodging reservations directly with the Radisson by calling 606-231-9000 or 1-800-333-3333. It is highly recommended that all reservations be guaranteed either

by advanced deposit of one night's lodging or by credit card. We have reserved a block of 150 rooms 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.* Guests and spouses not attending the conference meeting but who will attend the evening meals will be required to pay a \$35 fee to cover banquet costs. *Please complete the registration form on page 22.*

AGENDA

Tuesday, June 7, 1994

- 9 am–4:30 pm ... Registration
- 1:00 pm Emergency Medical Techniques Demonstration
- 3:00 pm Executive Committee Meeting

Wednesday, June 8, 1994

- 8:00 am Keynote Speaker
J. Davitt McAteer
MSHA Assistant Secretary
- 8:45 am Council Reports
- 9:15 am MSHA Assessments
Innovative Techniques for
Part 48 Training
New Technology
Roof Falls
- 10:15 am Coffee Break
- 10:30 am Latent Image and 3-D
Diesel Technology
HIV—Blood Borne Pathogens
Ventilation
- 11:30 am Lunch (on your own)
- 12:45 pm Electrical Grounding

- 12:45 pm Stress Management
Stockpile Safety
Wire Rope
- 2:00 pm Small Mines Training Initiative
Panel Discussion
Elevator Safety
Dealing with the Public
Hazard Communication
- 3:15 pm Coffee Break
- 3:30 pm Highwall Safety and Stability
New Technology—
Dust and Noise
Human Resource Program
Wellness
- 4:30 pm Adjourn
- 6:00 pm Cash Bar
Theme Dinner

Thursday, June 9, 1994

- 8:00 am Ergonomics
Haulage Accident Information
Fire Brigades
Abandoned Mines (video)
Golf outing

(All interested in golf outing should call Paris Charles at (606) 432-0307)

Thursday, June 9, 1994 (continued)

9:30 am Safety Through Cooperative Effort
 Legal Responsibilities of Supervisors
 Diesel Contamination
 Loss Prevention

11:30 am Lunch (On your own)

2:00 pm Joseph A. Holmes
 General Meeting

3:00 pm Break

3:15 pm Holmes Safety Association
 General Meeting

7:00 pm Annual Awards Banquet
 Dinner Speaker—
 Dr. Jack Hurley



REGISTRATION FORM

Name: _____ Telephone (include area code): _____

Company: _____

Address: _____

City: _____ State: _____ Zip Code: _____

Meeting Registration Fee of \$ _____ is enclosed for _____ persons (\$50 a person)
 (Late registration fee—after April 30—\$65) Guest Fee of \$ _____ is enclosed for _____ persons (\$35 a person)

Number of persons that will be attending following sessions is indicated (mark one in each group for each person):

Group 1
 Emer. Medical Techniques Demo.

Group 2
 Special Assessments
 Innovative Techniques Part 48 Tng.
 New Technology—General Overview
 Roof Falls

Group 3
 Latent Image and 3-D
 Diesel Technology
 HIV Blood Borne Pathogens
 Ventilation

Group 4
 Electrical Grounding
 Stress Management
 Stockpile Safety
 Wire Rope

Group 5
 Small Mines Tng. Initiative—Panel
 Elevator Safety
 Dealing with the Public
 Hazard Communication

Group 6
 Highwall Safety and Stability
 New Technology—Dust and Noise
 Human Resource Program
 Wellness

Group 7
 Ergonomics
 Haulage Accident Information
 Fire Brigades
 Abandoned Mines (video)
 Golf Outing
 (call Paris Charles—606/432-0307)

Group 8
 Safety Through Cooperative Effort
 Legal Resp. of Supervisors
 Diesel Contamination
 Loss Prevention

Send registration form to:
 Irmadell Pugh
 MSHA
 5012 Mountaineer Mall
 Morgantown, WV

Early registration (before April 30, 1994) \$50.
 Late registration (after April 30, 1994) \$65.
Make checks payable to: Holmes Safety Association

Clearfield District Council receives award



Safety award—Officers were elected and awards presented at a recent meeting of the Clearfield District Council of Holmes Safety Association (CDCHSA). From left are Harlan Winters, second vice president; Floyd Schrader, secretary; Roger Thurston, president, accepting the safety award for the CDCHSA; Thomas J. Ward Jr., president of the Pennsylvania HSA and director of Pennsylvania's Bureau of

Deep Mine Safety; Ken Hewitt, treasurer; and Larry Kanour, program coordinator. The CDCHSA received the award for achieving the lowest injury-incident rate among district councils reporting one to two million work hours for 1992.

Reprinted from the November 24, 1993 issue of the Clearfield, Curwensville, Philipsburg, and Moshannon Valley Progress

Tailgate topic—Trains

Have you ever noticed that when you need to cross a railroad track at quitting time there is always a train on it? It seems that when you are in a hurry you are faced with a 30 car train doing 5 miles per week.

MSHA RULE: 56.9319 Going Over, Under or Between Rail cars Western Maryland District Council active locally

Persons shall not go over, under or between rail cars unless—

- (a) the train is stopped; and
- (b) the train operator, when present, is notified and the notice acknowledged.

Impatience while waiting for a train to clear the track can be fatal.

Make sure that you wait or go *only* if the engineer signals you to go. Do not assume they must see you. In major cities, trains kill or maim an alarming number of people each year. In any challenge, *the train always wins.*

SAFETY—JUST DO IT!

Western Maryland District Council active locally



HSA Donates to Big Brothers/Big Sisters—The Western Maryland District Council of the HSA recently presented \$400.00 to the local Big Brothers/Big Sisters programs in Allegheny and Garrett Counties, with each organization receiving \$200.00. Pictured above are Dave Berry (left), President of Bear Safety Consulting, and Council Treasurer, Richard Umble, (right) Safety Director for Wolf Welding and President of the District Council. Accepting on behalf of Allegheny and Garrett County Big Brothers/Big Sisters program is Dan Sieh. All active surface mines in Garrett and Allegheny counties are presently members of the HSA.



The Western Maryland District Council of Holmes Safety Association recently presented a new shotgun to James K. Hanline (center), an employee of Buffalo Coal Company. The Holmes Safety Association represents the mineral and allied industries with the main objective of preventing fatalities and injuries, and the improvement of the health condition of all mineral industry employees. Also shown are, Richard Umbel (right), Safety Director of Wolf Welding and District Council President; and Dave Berry, President, Bear Safety Consulting and council treasurer.

Tailgate topic—Stacking and storage of material

In the movies it was funny when a tall stack of boxes fell over on the "bad guy." In real life it is not very funny to have material fall on you. The fall of material on people is one of the leading causes of injury and death in industry.

MSHA RULE 56.16001—Stacking and Storage of Materials

Supplies shall not be stacked or stored in a manner which creates tripping or fall-of-material hazards.

Have you really noticed how material around you is stored? You should. If something is stored that could fall from a high shelf or even another floor, you might be the target. Storage of material should be such that it is handy for you to use or find, and it is safe.

Follow some simple rules about storage.

1. Store loose objects, such as bolts, in bins designed to keep them from falling out.

2. Objects that can roll must be blocked so that they can not move; that way they won't roll off and cause someone an injury.

3. Stack pallets or boxes on shelves designed to hold them. Never use the top of cabinets as storage areas.

4. Do not stack boxes or crates so high that they become unstable and fall over.

5. Make sure that boxes, crates, or pallets do not extend past the front or rear edges of what they are stacked on unless there is some means to secure them.

6. Keep stored or stacked material neat and litter free. Clean out the unused pallets and the empty boxes.

You may never think of yourself as the "bad guy" but a stack of material can fall on you if you let it and it won't be funny.

"THE BEST WAY IS THE SAFE WAY"

Tailgate topic—Housekeeping

Try to imagine that you are a soldier sneaking through an enemy mine field, or that you are walking through a dark room that is full of chairs and toys. Your next step could hurt. It might even be your last.

MSHA RULE 56.20003—Housekeeping

At all mining operations—

(a) work places, passageways, store rooms, and service rooms shall be kept clean and orderly;

(b) the floor of every workplace shall be maintained in a clean and, so far as possible, dry condition. Where wet processes are used, drainage shall be maintained, and false floors, platforms, mats or other dry standing places shall be provided when practical; and

(c) every floor, working place, and passageway shall be kept as free from protruding nails,

splinters, holes or loose boards, as practicable.

When we fail to clean up after ourselves, we leave a trap for everyone who must walk or work in that area. That broken part, shovel or hose that is left in the walkway becomes a potential injury for someone, maybe even you.

It is bad enough when someone else leaves a mess in the walkways of our work area, but it becomes worse when we don't clean it up. Just because you didn't leave it there doesn't mean it won't hurt you.

Clean up your work area and expect everyone else to do so also.

Can an object in the walkway be compared to a mine field? Ask the person who fell over the object and broke his or her leg.

"CLEAN UP IS EVERYONE'S RESPONSIBILITY"

Tailgate topic—Tag and lock out

Do you know why so much is said and done about tag and lock out procedures? Because no one planned to get caught in a moving conveyer belt or pulled through a crusher, but it happens. Why? Because the machinery started unexpectedly or someone tried to work on a moving piece of equipment. This is one of the leading causes of injury and death in industry.

MSHA RULE: 56.12016—Work on Electrically Powered Equipment

Electrically powered equipment shall be de-energized before mechanical work is done on such equipment. Power switches shall be locked out or other measures taken which shall prevent the equipment from being energized without the knowledge of the individuals working on it. Suitable notices shall be posted at the power switch and signed by the individuals who are to do the

work. Such locks or preventive devices shall be removed only by the persons who installed them or by authorized personnel.

Most equipment must be locked out at the power source with your personal lock and tag. The lock should only have one key and you should have the key. The tag on the lock should have your name and the correct date. Make sure that all equipment which could effect your safety is locked out also. Try to start the equipment after it is locked out to make sure it won't start. *You may have locked out the wrong thing!!*

If you are going to work on some small motor or hand tool, unplug it. This will do the same as a lockout if, and only if, you control the plug.

Apply the lock out rule to high pressure air, water, steam, or hydraulic lines. *Anything that can start or move should be locked out.*

IF IT'S NOT SAFE, DON'T DO IT.

Health care—Focus on prevention

How to assess your health habits and motivate yourself to adopt an even healthier lifestyle.

Pick up any article these days about health care, and one thing becomes instantly crystal clear. A renewed interest in prevention is in the air.

The prevention message

The idea behind preventive medicine is that if you can identify factors that accelerate disease and intervene early enough, you may be able to delay or even stop the disease process. Does it work? It looks very promising.

For example, most heart attacks do not develop instantaneously. Certain conditions "set the stage." One is the slow, steady, clogging of arteries. We know now that even though build-up may be accumulating inside arteries, it may be years before any sign indicating a problem occurs. Studies now suggest that many people with clogged arteries can clear out at least some of the build-up deposited inside their arteries by following a low fat diet and exercise regularly.

Assessing your health habits

Perhaps you've never thought about the impact your day-to-day habits have on your health. If so, take a few minutes to complete the *Quick Quiz* on this page.

If you answer YES to every question, give yourself a pat on the back. You are doing your part in keeping yourself well. If you have one or two NO answers, improve your health-promoting behavior by correcting them now. If most of

your answers are NO, your destructive behavior may place you at great risk for chronic disease. Decide now to do all you can to adopt health promoting habits.

Quick Quiz

- ✓ I have regular check ups.
- ✓ I have discussed my health history and my health risks with my doctor.
- ✓ I know my cholesterol, HDL and LDL levels.
- ✓ I stay at, or very near, my ideal weight.

For women only

- ✓ I do monthly breast self-examination.

For men only

- ✓ I do monthly testicular self-examination.
- ✓ I exercise at least 3 times per week.
- ✓ I am a non-smoker.
- ✓ I eat at least 5 items each day from the grain, vegetable and fruit food groups.
- ✓ When eating out, I choose low-fat meats and plenty of vegetables.
- ✓ I use seat belts 100% of the time.
- ✓ I have my blood pressure checked at regular intervals
- ✓ I have annual stool tests for colon cancer.

For women over 50 only

- ✓ I have Pap smears at the recommended intervals.
- ✓ I have mammograms as recommended.

Cigarette smoke...

Leading cause of childhood ear infections

New evidence indicates that children of parents who smoke are far more likely to develop *chronic ear infections* than children of parents who do not smoke.

Surgery to drain ears of infected fluid is the most common childhood operation in the U.S.

Ear infections can lead to hearing loss and

lifelong learning problems. Treatment costs add up to an estimated \$2 billion a year.

Approximately 12 million American children under age five are exposed to second-hand smoke at home.

Reprinted from the February 1994 issue of Arch of West Virginia Health Letter.

WE NEED... Less speed, more exercise

Dr. Dale E. Turner

Many people, who would not think of putting too much air pressure in their car's tires, constantly put too much pressure on their hearts and arteries by living each day at a hectic pace.

They "catch" a bus, "grab" a bite to eat, "dash off" a letter, "run" to the store, and "contact" a client.

They are so *continually* on the go that they miss a lot along the way. They live their lives in a constant state of physical, mental, and emotional exhaustion.

It was Gandhi who reminded us that there is more to life than increasing its speed.

On the other hand, there are those people who are plagued by inertia. The only thing *they* exercise is caution.

If they slowed down anymore they'd back into someone.

They need to get up—and get moving.

Bud Wilkinson, famed football coach of the Oklahoma "Sooners" and the St. Louis Cardinals, was once asked, "Mr. Wilkinson, what would you say is the contribution of football to physical fitness?"

Wilkinson responded immediately, "Absolutely nothing."

The startled interviewer asked, "Absolutely nothing? Would you elaborate?"

"Certainly," replied Wilkinson.

"I define football as 22 men on the field desperately in need of rest, and 40,000 in the stands, desperately in need of exercise."

Reprinted from the February 1994 issue of Arch of West Virginia Health Letter.

Tailgate topic—Power tools

We become so used to using power hand tools both at work and at home that many times we overlook potential safety hazards. Power tools make our work easier but anything which runs by electricity can also become dangerous.

MSHA RULE: 56.14116 Hand-Held Power Tools

(a) Power drills, disc sanders, grinders, and circular and chain saws, when used in the hand held mode shall be operated with controls which require constant hand or finger pressure.

(b) Circular saws and chain saws shall not be equipped with devices which lock-on the operating controls.

Inspect powered hand tools before use. Make sure the power cord is in good condition and

there is no exposed wiring where it enters the tool case or at the plug. Make sure the tool, such as a surface grinder, has guards that are in place and in good repair. Check to see if there is a lock-on button or switch. If there is a lock-on device, *B.O. the tool.*

Any new or newly rebuilt power tool will have a lock-on device. However, under MSHA law, they are illegal and must be removed or disabled. MSHA believes that a hand tool which can run continuously is a hazard.

A good rule to remember is that any safe tool can be used unsafely.

YOU ARE THE DIFFERENCE!

Reminder! Canadian Health and Safety Conference

The Mines Accident Prevention Association of Ontario, Canada, will hold its Mining Health and Safety Conference and 63rd Annual Meeting in Toronto at Holiday Inn Crowne Plaza on May 5th and 6th, 1994.

To reserve a room FAX or phone before April 8, 1994—FAX (416) 597-8128 or 1-800-HOLIDAY.

MAPAO, P.O. Bag 2050, 690 McKeown Ave., North Bay, Ontario, Canada P1B 9P1 Telephone: (705) 474-SAFE Fax: (705) 472-5800

THE LAST WORD...

"He who hesitates is not lost, but miles from the next exit."

"Absence makes the heart go yonder."

"The cloning of humans is on the list of things to worry about from Science, along with behavior control, genetic engineering, transplanted heads, computer poetry, and the unrestrained growth of plastic flowers."

"Our national flower is the concrete cloverleaf."

"The young man who has not wept is a savage, and the old man who will not laugh is a fool."

"Howard Hughes was able to afford the luxury of madness, like a man who not only thinks he is Napoleon but hires an army to prove it."

"The learned are seldom pretty fellows, and in many cases their appearance tends to discourage a love of study in the young."

"When ideas fail, words come in very handy."

"We can't all be heroes because somebody has to sit on the curb and clap as they go by."

"The advantage of the emotions is that they lead us astray."

"If you look like your passport photo, you're too ill to travel."

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
Falls Church, Virginia 22044-0187**

Phone: (703) 235-1400

