



HOLMES SAFETY ASSOCIATION
BULLETIN

October 1999

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McAteer Announces New Health Standards*

*Teams from Ukraine, Illinois, West Virginia
Take Top Honors in International and
National Mine Rescue Contest*

Winter Alert Season is Here!



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The **Holmes Safety Association Bulletin** contains safety articles on a variety of subjects: fatal accident abstracts, studies, posters, and other health- and 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. For more information visit the **MSHA Home Page** at www.msha.gov.

PLEASE NOTE: The views and conclusions expressed in Bulletin articles are those of the authors and should not be interpreted as representing official policy or, in the case of a product, represent endorsement by the Mine Safety and Health Administration.

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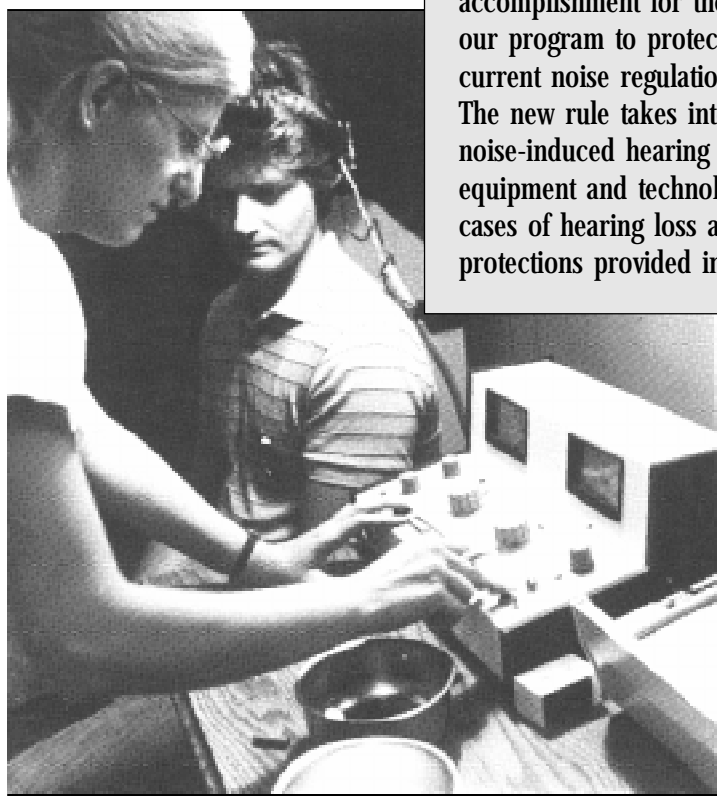
KEEP US IN CIRCULATION--PASS US ALONG

McAteer Announces New Health Standards to Protect Miners from Hearing Loss



This is a diagram of the inner ear where exposure to excessive noise can lead to deafness

I am very pleased to announce the publication of new health standards to protect miners from hearing loss. The “noise rule” was published in the Federal Register in September of this year, and will take effect on September 13, 2000. This is a significant accomplishment for the agency and a critically important part of our program to protect miners’ health. As many of you know, the current noise regulations have been in place for nearly 30 years. The new rule takes into account today’s health science about noise-induced hearing loss and reflects the current state of equipment and technology. We estimate that more than 23,000 cases of hearing loss among miners will be prevented by the protections provided in the new standards.



***J. Davitt McAteer,
Assistant Secretary of
Labor, Mine Safety and
Health Administration***

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Rescue Team from the Ukraine in Action.

Teams from Ukraine, Illinois, West Virginia Take Top Honors in the International and National Mine Rescue Contest

In the International competition, the U.S. team represented by MSHA's Mine Emergency Unit finished first, followed by Ukraine, Russia, Canada, and Poland. This is the first year in the contest's 88-year history to feature foreign teams.

Peabody Coal Company of Marissa, Illinois, took top honors at the 1999 National and International Mine Rescue, First Aid, EMT and Bench Contest held on September 21-24 in Louisville, Ky. Eastern Associated Coal Corporation's Federal No. 2 of Fairview, WV, and Southern Appalachia Operations of Wharton, WV, finished second and third, respectively.

Mine rescue competitions are designed to test the knowledge of miners who might be called upon to respond to a real mine emergency. The contest requires six-member teams to solve a hypothetical mine emergency problem -- such as a fire, explosion or cave-in -- while judges rate them on their adherence to mine rescue procedures and how quickly they complete specific tasks. Forty-five teams from 11 states participated in this year's contest.

"When you watch a mine rescue contest, you cannot help but marvel at the physical and



emotional effort these men and women expend," said Davitt McAteer, Assistant Secretary of Labor for Mine Safety and Health. "Never mind that it's a staged emergency. These contests are treated like the real thing, because mine rescue teams never know when they'll be called upon to rescue their colleagues who have become injured or trapped underground."

"The mining industry all around the globe faces safety and health challenges," McAteer said. "These challenges are more difficult in some parts of the world than in others. As all of us struggle to find ways to prevent mining disasters, MSHA welcomes this opportunity to share our technical expertise with other countries."

In other phases of the competition, benchmen -- those individuals charged with maintaining rescue equipment-- must thoroughly inspect breathing devices that have been purposely tampered with and must correct those defects as

quickly as possible. In the Emergency Medical Technician contest, a primary and secondary EMT tackle real-life scenarios. EMTs are certified and provide medical care until the patient arrives at the hospital. In the first aid contest, participants must demonstrate the correct method of caring for an injured miner.

First-place winners in these categories are listed below:

Bench -- Energy West Mining, Silver Team, Huntington, Utah

EMT -- Lodestar Energy, Inc., B Team, Clay, Kentucky

First Aid -- Eastern Associated Coal, Southern Appalachia Operations, Wharton, West Virginia

Mine rescue training began in the United States in 1910, the year the U.S. Bureau of Mines was created. Joseph A. Holmes, the Bureau's first Director, sought a training vehicle that would provide the mining industry with a cadre of mine rescue specialists who would be prepared to respond to mine disasters. The training efforts evolved into local and regional competitions and a year later, a national contest.

For a complete listing of mine rescue teams and their standings, visit MSHA's web site at www.msha.gov.

1999 International Mine Rescue Contest Team Standings

**First Place
United States**



**Second Place
Ukraine**



**Third Place
Russia**



**Fifth Place
Poland**



**Fourth Place
Canada**



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1999 National Mine Rescue Contest 1st Place Team Standings

1st Place
Bench Team



Energy West Mining
Silver Team

1st Place
Combination Team



Eastern Associated Coal Corporation
Southern Appalachia Operations Team

1st Place Champions
Mine Rescue



Peabody Coal
Marissa Team

1st Place
First Aid Contest



Eastern Associated Coal Corporation
Southern Appalachia Operations Team

1st Place
EMT Contest



Lodestar Energy, Inc.
B Team

Winter Alert Season is Here!



Winter Alert is the Mine Safety and Health Administration's (MSHA's) annual safety campaign that emphasizes increased hazards -- primarily explosions -- in underground coal mines during the colder months. Historically, the Nation's most devastating mine disasters have occurred between October and March, the worst in December 1907, when an explosion in Monongah, West Virginia, killed 362 miners.

REMEMBER!

- 1. GAS TEST***
- 2. VENTILATE***
- 3. CLEAN-UP***
- 4. ROCK DUST***

Misfires Continue as Major Safety Threat Underground

Article from Canada's Newsletter of Mines and Aggregates Safety and Health Association

Working with explosives is one of the riskiest jobs miners face, both underground and on surface. One of the highest-risk tasks has always been dealing with misfires.

In the past 12 years, Mines and Aggregates Safety and Health Association's (MASHA's) member firms reported 31 lost-time and fatal injuries related to explosives. Eight of these, including three fatalities, were due to misfires or delayed blasts.

While changes to the technology, such as eliminating tape fuses have cut the numbers of accidents and incidents, the reality is that misfired explosives still pose a major threat.

"The safety fuse-cap system was used for 80 years at least," says David Joyce, a consultant on explosives. "It was very old technology." The newer shock tube systems now used in 95 percent of underground and surface blasting are safer, but they can still have misfires. Nonels and EX#LS can still become damaged; explosives can become desensitized; things can go wrong.

"If it has misfired, there's no way of knowing right away what went wrong, or what's left

in the hole," Joyce says. "There's all these questions that you cannot answer very easily, so it brings an unknown level of danger to the situation."

The Regulations for Mines and Mining Plants require that any explosive charge that misfired or cut off be blasted "without undue delay at a safe and suitable time." But preparing for that re-blast, or working near misfired explosives, poses a number of hazards. One of them, Joyce says, is cleaning out holes that can't be re-primed and blasted immediately. The explosives in a misfired hole could have been deadened, or a shock tube damaged, but the detonator at the bottom could still be live. Explosives companies recommend washing the hole out gently with water, or a mixture of air and water. The hose used must be plastic or rubber, with no metal fittings on the part that goes into the blasthole.

Drilling near the misfired holes is another major hazard miners face. Section 136 of the Regs requires minimum distances for drilling of 160 millimetres (six inches) from a blasted hole or bootleg, and one metre (three feet) from any hole containing explosives.

Since the turn of the century, there have been 361 fatalities underground in Ontario related to explosives use. "Sixty-eight of those workers drilled into holes containing explosives or bootlegs," says the Ministry of Labour's John Vergunst, a provincial mining specialist involved in a committee looking at the regulations for explosives misfires.

Accidents related to bootlegs have occurred both during drilling to reblast, and during routine production tasks. To prevent them, the entire face must be inspected both before and after every blast to locate all misfires and bootlegs. Communication between shifts is absolutely vital to avoid accidents.

Despite the minimum distance requirements for drilling set out in the regulations, dangerous situations still happen, Vergunst says. The last five years have seen no critical accidents related to bootlegs, but the Ministry of Labor has issued 14 orders for drilling within six inches of a bootleg, and three for drilling within three feet of a loaded hole. There were another 13 orders

(Continued next page)

related to cleaning and examining the face, six related to marking the face, and one for abandoning an unchecked face following a blast.

Technology has made explosives safer, and the regulations provide a framework of rules. Most operations also have solid procedures in place for blasting, David Joyce believes. These should be enough to prevent most accidents related to misfires. "In my mind, the first thing always is to get people to use the equipment, materials and procedures as they should," he says. "All these things work well if they're done right."

While hazards are gradually being engineered out, when accidents do happen, Joyce believes the gap may be in education and training about the danger of working with explosives.

"I think a lot of people really don't understand the energy and the power that's there," he says. "It's like standing in front of a cannon or a big gun. And you don't know if it's going to go off or not." □

This article taken from the MASHA Safety Focus, The newsletter of Mines and Aggregates Safety and Health Association, July 1999 - Issue #3-99

Colorado Aggregate Producers Form a New Holmes Safety Association District Counsel

The Colorado Aggregate Producers announced the formation of their new Holmes Safety Association District Council in Denver, which they call the "Colorado Aggregate Producers District Council." The new council was formed at the June 15, 1999, meeting of the Colorado Ready Mix Concrete Association/Colorado Rock Products Association's Safety Committee in Denver. "Our goal is to bring the industry and MSHA together in a cooperative and supportive atmosphere where safety concerns can be addressed and solutions can be found and implemented" said Bill York-Feirn, President of the District Council and also Program Coordinator of the Colorado Division of Minerals and Geology's mine safety and training program. In addition to Bill, the following officers were selected: First Vice President, Claude "Bud" Narramore, MSHA Rocky Mountain District Manager; Second Vice President, Garry Day, MSHA Educational Field Services, Western Region Team Leader; Third Vice President, Rod Stewart, President, Colorado Ready Mix Concrete Association/Colorado Rock Products Association; Treasurer, Alan Michaels, LaFarge;

and Secretary, Richard Holmes, Golden's Companies and Chairman of the CRMCA/CRPA Safety Committee.

The first official meeting of the new HSA District Council is set for Thursday, October 28, 1999, 11:30 a.m. - 1:30 p.m., at the Colorado Contractors Association Offices located at 6880 South Yosemite Ct., #150, in Denver. This will be a luncheon meeting that will feature Bud Narramore, MSHA Metal/Nonmetal Rocky Mountain District Manager, and Garry Day, MSHA Educational Field Services, Western Region Team Leader. Bud will provide timely information and assistance to the participants concerning the new Part 46 training regulations and the new Noise Rule requirements. Garry will provide training information including a generic training plan and compliance and assistance to operators in complying with the provisions of the new regulations. Rod Breland, MSHA Educational Field Services, Western Region Director, is planning to attend and share his perspective on how EFS can assist the mining community. The new District Council will provide an excellent forum for bringing MSHA officials and industry representatives together to discuss safety issues and concerns that may be unique to the western region. ■

For more information on the "Kick-Off Meeting" and the new Holmes Safety Association District Council, please contact Bill York-Feirn at 303/866-3650 or bill.york-feirn@state.co.us

1998 Sentinels of Safety Award Recipients

*Presented by the
Department of Labor
Mine Safety and Health Administration*



Underground Coal Group

Kingston No. 1
Kingston Mining, Incorporated
Hours Worked: 138,038

Surface Coal Group

Cordero Mine
Cordero Mining Company
Hours Worked: 716,243

Underground Metal Group

Fletcher Mine & Mill
Doe Run Company
Hours Worked: 178,844

Underground Nonmetal Group

Mississippi Potash, Incorporated
Mississippi Potash, Incorporated
Hours Worked: 228,811

Open Pit Group

Tyrone Mine
Phelps Dodge Tyrone, Incorporated
Hours Worked: 937,318

Quarry Group

Fec Quarry
Rinker Materials Corporation
Hours Worked: 194,973

Pit and Bank Group

Puddledock Sand & Gravel
Tarmac Mid-atlantic
(Tarmac America, Incorporated)
Hours worked: 98,399

Dredge Group

Bridgeburg Dredge & Mill
Glacial Sand & Gravel Company
Hours Worked: 78,382

Educational Field Services: "A New Focus in MSHA"

by Rodric M. Breland,
Western Region Manager, Educational Field Services

In July 1998, J. Davitt McAteer, Assistant Secretary of Labor for Mine Safety and Health, announced the launch of Educational Field Services (EFS), promising "A New Focus in MSHA" on education and training, "with new materials, new outreach efforts, and a new structure." MSHA realigned some existing resources and created the Educational Field Services with regional offices located in Denver, Colorado, and Beckley, West Virginia. EFS played a significant role in the Assistant Secretary's efforts to get useful information to miners, mine operators, state organizations, and labor and trade associations. Now that a year has passed since the launch, the time has come to assess how successful we have been in implementing the new focus, and to discuss our plans for the future. The recent appointment of Jeff Duncan as Director of Educational Policy and Development (EPD) brings a fresh perspective to MSHA's new focus and will be a valuable asset to EFS outreach efforts. The production of new



training and information materials by MSHA's National Mine Health and Safety Academy has been closely linked to our outreach efforts. "Best Practices" cards, catalogs, videos, safety manuals, instruction guides, fatality abstracts, hazard alerts, fact sheets, and material designed to help operators conduct their own safety audits have been distributed by EFS personnel in on-site visits, refresher training sessions, seminars, and workshops. Most of the new materials were created with industry and labor assistance to ensure information was created, which met the needs of miners and the industry. EFS has distributed more health and safety information to a greater number of miners at more mines in the past year than at any other time in the history of the Mine Safety

and Health Act. This is a result of the following three initiatives: Kick-off Sweep in the summer of 1998, the Independent Contractor Initiative for Coal and Metal/Nonmetal Mines (MNM) in the fall and winter, and the Safety Initiative for Small Metal and Nonmetal Mines held in the spring of 1999.

As of June 1999, EFS has contacted approximately 30,000 miners at more than 4,400 mines. Additionally, EFS has contacted nearly 600 independent contractors during these mine site visits. Many of the contacts were made by training specialists from the Eastern Region on temporary duty in the Western Region. While both the EFS Western Region and the mines visited have benefitted from the information exchanged through these contacts, increased hiring in the west has reduced the need to import specialists from Appalachia to assist with special projects. As realignment toward the west continues, EFS, in partnership with the enforcement districts

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and other members of the mining community, will be able to apply more systematic and comprehensive techniques to identify and solve safety and health problems.

A Review of Current EFS Activities

Sharing Information.

Specialists throughout the country have spread the word about the availability of new training materials in mine visits, seminars, Holmes Safety Association meetings, and many other venues. One of their most important goals is to talk to as many miners as possible and share information directly with them.

Preventing Accidents and Reducing Violations at Targeted Mines. District Managers have recognized EFS can be a valuable resource for mine managers who are serious about improving safety and health. All of the 17 enforcement districts for Coal and Metal and Nonmetal have provided EFS with lists of mines that could benefit from EFS assistance.

Developing and Promoting Education and Training Programs and Materials. Training specialists in EFS have worked with MSHA's National Mine Health and Safety Academy, state grantees, and representatives from industry and labor to develop instructional materials to meet identified needs.

Improving Quality of Training. Specialists stress the importance of quality training and work with trainers at mine sites to help them evaluate training programs.

Reviewing and Helping to Develop Effective Training Plans. Training specialists in EFS continue to review training plans submitted for approval and to assist operators in developing plans. To the extent possible, specialists will follow up their review of plans at mine sites to evaluate how well training plans are being implemented.

Recognizing Best Practices in Safety and Health. EFS has taken a very active role in the Holmes Safety Association (HSA) by presenting awards for outstanding safety records, writing articles in the Bulletin, and spreading the word to others who could learn by example.

Promoting Mine Emergency Readiness. Training specialists from EFS continue to work with Coal, Metal/Non-metal, MSHA's National Mine Health and Safety Academy, and industry associations to provide mine rescue training and to conduct mine rescue contests.

What's Next for EFS?

Completion of Resource Realignment. Positions will continue to be shifted to existing field locations in the Western Region and to the north and south in the Eastern

Region.

Mine Visits. EFS will continue to focus on visiting mines as frequently as possible.

Customer Feedback. EFS wants to provide miners and operators with an additional avenue for feedback to MSHA and others in the mining community. We want to develop a means to ensure responsiveness to training needs for miners.

Part 48 Exempted Mines. The expected new regulation, 30 CFR Part 46, will require a concerted effort by everyone involved with MNM mining operations. As new training standards go into effect at mines that are currently exempt from Part 48 enforcement, EFS people will, to the extent possible, provide training assistance to mine operators and independent contractors.

Electronic Training Plans. Soon, "electronic" training plans will be available to the mining community through the Internet. Smaller mine operators are more likely to need both assistance with completing the plans and help with the submission of plans. EFS specialists will be able to assist mine operators in the use of a new electronic submission system.

Standardizing/Centralizing Training Plans, Instructor Approvals, and Qualification and Certification. Streamlining the approval process and requirements during reviews will provide for consistent applica-

tion of requirements for training standards. Part 46 is proposed to require training plan reviews by EFS when requested by either the mine operator, independent contractor, or miners' representatives.

Material Development and Distribution. EFS will continue to assist MSHA's National Mine Health and Safety Academy, Coal, MNM, Technical Support, state grantees, mine operators, labor organizations, and trade associations in developing and distributing information to miners and mine operations.

Recognizing Outstanding Safety and Health. EFS will actively participate in as many local health and safety organizations as possible.

Partnerships. EFS specialists will continue to develop new partnerships.

As you can see, EFS has been busy in the past year, and as our staffing and resources are realigned to accommodate more of the west, we expect to get even busier. But for our efforts to succeed, we need the active participation of everyone in the mining community. Educational Field Services is about continuous communication in the interest of mine safety and health. To communicate effectively we need to spend more time listening to each other's concerns. Our activities in the future are expected to be increasingly demanding as the need for assistance to "exempted" operations will be extensive.

Join Assistant Secretary McAteer in MSHA's "new focus" to reach out to mine operators and miners to ensure America continues to have the safest and best trained miners in the world.■

Quarries Help Farms

Five Washington County, Maryland quarries and 15 fire companies are devising a plan to deliver water to drought-stricken farmers whose wells have gone dry or crops need irrigation.

But a state agriculture official said on August 18 the novel plan, while well-intended, probably won't help ruined crops.

"The drought is severe and it's having a tremendously negative impact on crops. Water that anybody's going to get is not going to have any impact on that whatsoever," said Harold Kanarek, spokesman for the Maryland Department of Agriculture. Nevertheless, those coordinating the effort said they want to do what they can to help Washington County farmers, who had lost 60 percent of their corn and 30 percent of their soybeans as of August 2. Crop conditions have wors-

ened since then.

"Everybody just wants to get through this," Washington County Administrator Rodney Shoop said on August 17.

The county established a hotline for farmers to call. The county would then ask the nearest fire company to haul water donated by the quarries.

The quarry companies agreed to give water to farmers, as long as no logistical problems occur, said county Farmland Preservation Administrator Eric Seifarth.

Many quarries routinely pump from their working pits into creeks and other surface waterways. "We just want to make sure we are doing the right thing," said Bronwyn Weaver, spokeswoman for one of the quarry companies, H.B. Mellott Estates.

Seifarth said he couldn't estimate the volume of water needed. Most of the fire company tankers can carry just 1,500 to 2,000 gallons.■

Article from the Mine Safety and Health News, Vol. 6, No. 17, September 3, 1999



Stress On The Job -- Part II

by Charlotte Richardson,
Bulletin Staff Writer

Job Stress and Health

Health care expenditures are nearly 50 percent greater for workers who report high levels of stress.

Journal of Occupational and Environmental Medicine

Stress sets off an alarm in the brain which responds by preparing the body for defensive action. The nervous system is roused, senses become sharper the pulse quickens, respiration deepens, and muscles tense up. Sometimes called the "fight or flight syndrome," this biological response is important because it helps us prepare to defend against threatening situations. All of us respond in much the same way, we have been pre-programmed to do so.

Infrequent or short-lived episodes of this nature pose little risk. But when stressful situations go unresolved, our bodies are kept in a constant state of activation which increases the rate of wear and tear to biological systems. Ultimately, fatigue or damage

results, and the body's ability to repair and defend itself can become seriously compromised. Risks of injury and even disease are increased as a result. In Part I, the histories of the two workers -- Marty Miner and Benny Buyer -- showed what they were experiencing on a routine basis and early warning signs of job stress.

Many studies over the past 20 years have looked at the relationship between job stress and a variety of ailments. Marty had trouble sleeping, he was snapping at his coworkers, he felt exhausted constantly, and his marriage was in trouble. Benny was getting headaches (which may or may not have been related to the lack of air conditioning), and his blood pressure was climbing.

What isn't as easy to document are the effects of job stress on chronic diseases that take a long time to develop and may be influenced by factors other than stress. Nonetheless, evidence is rapidly accumulating that suggests stress plays a critical role in several types of chronic health problems.

Some employers assume that stressful working conditions are a necessary evil. Keeping the pressure on workers to remain productive is equated with "challenge." But research findings are disputing this assumption. Studies show that stressful working conditions are actually contributing to increased absenteeism, tardiness, and intentions by workers to quit their jobs -- all of which have a negative effect on the economic bottom line.

Marty related that his coworkers call in “sick” -- and indeed, they may be closer to being sick than he realizes -- just to have a break.

What Research Tells Us

Cardiovascular Disease. Many studies suggest that psychologically demanding jobs that allow employees little control over the work process increase the risk of cardiovascular disease.

Musculoskeletal Disorders. On the basis of research by NIOSH and many other organizations, it is widely believed that job stress increases the risk for development of back and upper-extremity musculoskeletal disorders, such as Cumulative Trauma Syndrome.

Psychological Disorders. Several studies suggest that differences in rates of mental health problems (such as depression and burnout) for various occupations are due partly to differences in job stress levels. Economic and lifestyle differences between occupations may contribute to some of these problems.

Workplace Injury. Although more study is needed, there is a growing concern that stressful working conditions interfere with safe work practices and set the stage for injuries at work.

Suicide, Cancer, Ulcers, and Impaired Immune Function. Some studies indicate a relationship between

stressful working conditions and these health problems. However, more research is needed before firm conclusions can be drawn.

One of the most frequent injuries reported by mining operations to MSHA is back injuries suffered by heavy equipment operators and truck drivers. These could be caused by poor ergonomic designs which can be worsened by long work shifts.

Characteristics of a ‘Healthy’ Company

Definition of a Healthy Organization
 Recognition for good work
 Career development chances
 Every individual is valued
 Actions consistent with organizational values
 Low rates of illness, injury, and disability
 Competition in the marketplace

NIOSH research has identified organizational characteristics associated with both healthy low-stress work, and high levels of productivity. Examples of these positive characteristics and how Marty’s and Benny’s employers could benefit from them are:

Recognition of employees for good work performance

Example: Marty’s company could start listening to and implementing employee suggestions. Both Marty’s and Benny’s employers could introduce a work-incentive program that periodically rewards employees.

Opportunities for career development

Example: As it is, neither Benny nor Marty has much hope of furthering himself where he works. Marty’s company should consider filling high-paying and high-status positions from within. Benny works for a very small company whose organizational structure restricts moving up as a career advancement, but training opportunities need to be provided as a job enhancement with the possibility of increased salary or other bonus.

An organizational culture that values the individual worker

Example: Marty is experiencing a lack of job security; no matter how hard he works, he is afraid he could be laid off or terminated tomorrow. Marty and Benny both feel unappreciated and overworked. Both employers need to praise and reward them more, and Marty and Benny need more control over their duties.

Management actions that are consistent with organizational values

Example: Both companies need to realize that “challenging” their workers is stimulating, healthy, and productive; while “demanding” without relief introduces job stressors that can have long-term negative effects not only on the employees but on the economy of the organization.

Nearly one-half of large

(Continued next page)

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companies in the U.S. provide some type of stress management training for their workforces. These programs teach workers about the nature and sources of stress, the effects of stress on health, and personal skills to reduce stress. For example, employees learn such subjects as time management and relaxation exercise. Stress management training has been shown to rapidly reduce stress symptoms such as anxiety and sleep disturbances; it also has the advantage of being inexpensive and easy to implement.

However, stress management programs have two major disadvantages:

- The beneficial effects on stress symptoms are often short lived,
- Training often ignores important root causes of stress because it focuses on the worker and not the worker's environment.

Some employers will bring in a consultant to recommend ways to improve working conditions. This approach is the most direct way to decrease stress at work. It involves the identification of stressful aspects of work (e.g., excessive workload, conflicting or unrealistic expectations) and the design of strategies to reduce or eliminate the job stressors. The advantage to this plan is that it deals with the root causes of stress.

However, managers are sometimes uncomfortable with this type of program because it can involve changes in work routines or production schedules. This approach could also indicate the need for other types of training which take employees away from their duties further interrupting routines, schedules, and productivity.

Marty and Benny Meet Again

Marty's and Benny's employers have recognized they have employees suffering from job stress, and are setting out to do something about it. Let's see what has been happening with them. Again, these two old friends have met in the diner over coffee and are relating the recent events. Benny begins the conversation with obvious enthusiasm.

Marty;

I think things are changing at the office! Monday morning, bright and early, the boss says we're enrolled in stress management training, which starts that same day. The guy gives Dan and me, since we're the only two in the office now besides the boss, some real insight and steps to take when I'm stressed out. I've been listening to these relaxation tapes, doing some deep breathing...boy, is that helpful when SHE drops another stack of requisitions and invoices on my desk! Somebody fixed the air conditioner, finally,

but by quitting time I have a headache, more often than not...maybe it's the ventilation system....or it could be that rotten computer monitor. My mother isn't improving any, and the boss says no vacations for awhile since this is our busiest season. I just don't know how much more of this I can take. If I didn't need the money and the benefits..." Benny pauses and drops his head. Marty starts talking:

"Looks like the mine is up to SOMETHING, I'm not sure what. Last week, they passed around this questionnaire, told us to take it home and fill it out. It asked things like 'do you feel qualified for your job?', 'is your job fulfilling?' and -- get a load of this! -- they wanted to know MY opinion about my coworkers' job satisfaction! Tell you the truth, Benny, those questions scared me; if I say I don't feel qualified or fulfilled, can they fire me? And I sure don't want to rat out the other guys..." Benny interrupts him; "So what did you do?"

Marty sighs and answers: "Well, I just put down what I thought they wanted to hear. There have been some rumors about everything from more training to more layoffs to a big management shake-up. You just don't know what to believe anymore. Some days it's all I can do to drag myself up to the time clock -- at starting time! Don't ask me my name by the end of the

day; I might not be able to tell you, or I might beat you up for asking.”

Both companies are well intentioned, but they might be going about job stress intervention the wrong ways.

In Marty's case, the company hadn't publicly acknowledged either that stress was a problem there or that they

**STRESS
MANAGEMENT
TRAINING**

Advantages

**Focuses on the worker
Workers find immediate
relief**

Disadvantages

**Relief is short-term
Ignores root causes of
stress**

planned to gather information with the purpose of finding ways to reduce or eliminate it. Their questionnaire gives the impression that it could be “a trap,” so Marty has not answered the questions truthfully. Without all the facts, the employer might develop a plan that doesn't meet the proper needs of employees, or they may think there's not even a need to plan any type of intervention!

Benny's employer didn't ask for employee input or give them notice either, but they did bring in a presentation on stress management. Benny sounded enthused and notes that some of the tips are

helping him cope with the stress load. But by the end of his account, he still sounds as stressed as he did in Part I.

The employer who finds ways to balance the needs of the employees with the company's need to be economically sound will experience greater productivity due to higher job satisfaction and morale. Does your company meet this definition of a “Healthy Organization” or could it be improved?

Part III will offer a set of detailed guidelines that could help prevent and reduce job stress. ■

**Need more information
about job stress?**

NIOSH
4676 Columbia Parkway
Cincinnati, OH 45226-1998
1-800-35-NIOSH
<http://www.cdc.gov/niosh>
The Encyclopaedia of Occupational
Health and Safety, 4th Edition
1995 Workers' Compensation Year
Book
American Psychologist
Bureau of Labor Statistics,
([http:// stats.bls.gov](http://stats.bls.gov))
Families and Work Institute
Journal of Applied Psychology
Journal of Occupational and
Environmental Medicine

**Forget This
Guy -- He's
Dead!!!**

A guy named Carl told me of an accident in the mine where six men were left unconscious following an explosion. He and another fellow I'll call “Jim” were going from one to another, applying first aid and performing artificial respiration, trying to save as many as possible. Carl had found one with no pulse, so he told the other rescuer: “Forget this one, and work on another guy; this one is dead.”

Jim had brought another fellow around, and five men were definitely alive, so he decided to go back to the dead guy and start working on him. The dead man was a medical student who had been working at the mine over the summer while attending college. Well, after working on him for a long while, Jim finally did bring him around!

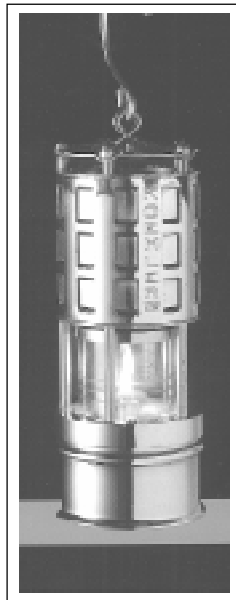
After that Carl said every time he saw that doctor, which the student went on to become, the doctor would gravely intone: “Forget this one, he's dead.” Carl said he swore he would never make a hasty judgment like that ever again!

*Written by **Dave Anspach**, retired
MSHA M/NM Supervisor who lives in
Pennsylvania, and is the author of
The Funny Side of Mining*

The History and Principle of Operation of the Flame Safety Lamp

Article submitted by Steve Lipe
President, Holmes Safety Association

Three hundred years ago miners were dying in methane gas explosions by the hundreds



as they worked in the coal mines of England. Deaths in methane explosions were common because the men worked by the light of open candles, and the open flame

would often ignite the methane. There was no safe working light, and there were certainly no methane detectors to show if any of the dangerous gas was present.

There were methods used to detect gas during the early history of mining, but they seem almost funny to us today. They were certainly not funny to the miners who died because of them.

One of the old methods was holding a candle on the end of a pole and moving forward into the mine. If the methane was present in small amounts, the candle would be used to burn

off the pocket of methane. If methane was present in large amounts...Boom!

The man who did this was called the fireman or fire boss -- that's where the title came from. He was also very often called dead because he had walked into a large amount of methane. After many unfortunate experiences, these firemen learned that the flame on their candles would get longer just before they got into a dangerous amount of methane. It was at this time that the mines hired people who became known as candle watchers. Their job was just that -- they watched open candles for changes in the flame.

Another way the early miners used to detect methane was to take a caged canary into the working area with them. If the canary died, gas was present, and the men would leave the area. And another method that was used was to lower a dog into the mine shaft by means of a harness and rope. If the dog began to howl, it meant gas or black damp was present.

You can see that something had to be done. Some kind of light was needed, and some safe reliable way to detect gas was needed. Several inventors

and scientists began to work on the problem, and in the early 1800's things began to happen.

The first safety lamp was invented by a Dr. Clanny in England in 1813. His lamp was not much better or safer than the lights the miners had been using, so it was not very widely used -- but, it was a beginning.

Two years later, in 1815, another inventor named Sir Humphrey Davy made mining history. Davy had made an important discovery. He found that a flame would not pass through a certain type of wire gauze. This happens because the gauze conducts away the heat of the flame. In other words, the gauze cools the flame; it acts as a barrier to the flame.

This is the experiment that Davy did. He found that when he held a piece of wire gauze above a gas burner and lit the gas below the gauze, the flame did not go through the gauze even though the gas did.

As he studied this, he learned that the gauze actually soaked up the heat, and the temperature above the gauze was not high enough to ignite the gas.

If you're not sure what we mean by the metal gauze soaking up heat, take an example from your everyday

modern mining. You know what happens if you grab a piece of metal that is being welded! This happens because the metal soaks up heat from the weld, and this heat travels through the metal. In the flame safety lamp the heat from the flame is soaked up by the many strands of wire, and this heat travels through the wire away from the flame.

Here's something to remember -- when Davy allowed the gauze to get red hot, the flame did go through. This happened because the gauze could no longer cool the flame -- the gas was just as hot on one side as it was on the other.

Davy then used what he had learned and built a lamp in which the flame was completely enclosed in wire gauze.

When this lamp was taken into a mine where methane was present -- this is what happened: the mine air (containing methane) was able to go through the gauze and reach the flame. The flame would ignite the methane, and it would burn inside the lamp. The gauze would stop the flame from passing through, out into the mine air, and so prevent an explosion.

The Davy lamp was tested in Durham, England, in 1816, and it proved successful -- but, it still needed a lot of improvement.

Another man named George Stephenson, working at the same time Davy did, designed a different kind of safety lamp.

His lamp had the flame enclosed in a glass cylinder and that was in turn surrounded by an iron cylinder with holes punched in it.

Both the Davy lamp and the Stephenson lamp had one problem. They were meant to be used as working lights, but because the flames were shaded by the gauze and the iron cylinder, the lamps did not give a very bright light.

At this time, the man who invented the very first safety lamp, Dr. Clanny, comes back into our story. In 1842, he made a new flame safety lamp. But this time he enclosed the flame in a glass cylinder and put the wire gauze above the glass.

Dr. Clanny had given the miners a lamp which gave off a good working light because the flame was unshaded. It was also safe under certain conditions, but it was still not safe under all conditions. Some of the conditions that could make his lamp unsafe were:

- A strong air current could blow the flame against the wire gauze and cause it to get red hot. The flame could then pass through and the lamp would be unsafe.

- Since the gauze was unprotected, it could easily be bent inward against the flame and become red hot. Again, this would make the lamp unsafe since the flame could pass through the red hot gauze.

- Because the gauze was unprotected, it could easily be

damaged and a hole made in it. The flame could then pass through the damaged place.

The question then was could a lamp be made that would be safe in gassy mine air, safe in strong air currents, and not easily damaged? This question was answered by two inventors in Europe. One was Mueseler in Belgium.

He built his lamp in 1840, and it was somewhat safer than the earlier lamps because it had a metal chimney inside the wire gauze. The chimney provided protection against explosions inside the lamp.

The other inventor was Marsaut who lived and worked in France. His lamp, which he built in 1871, was the safest ever designed. It had a metal bonnet to protect the gauze from damage and to prevent a strong current from blowing directly through the gauze and across the flame. It was also the first lamp to have more than one gauze. This lamp is still used today in some European mines.

So, the miners now had a safe light to work by, but there was more to come because it was discovered that flame safety lamps could be used to detect methane gas that was present in very small quantities. Miners found that the flame would rise higher when methane was present. This method was improved until the flame safety

(Continued on next page)

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Dave Garfield
Explaining
Wheat Batteries

John Rilla,
Vice President
of Finance, with
J. Davitt
McAteer,
Assistant
Secretary of
Labor, Mine
Safety and
Health
Administration

Dave Garfield
Explaining Acid
Plant to
Mr. McAteer

lamp had two important purposes. It was a:

- Working light
- Way of testing for methane

When electric cap lamps and other kinds of lighting were introduced into mining, the safety lamp was no longer used as a working light. But, it became the most common way of testing for methane. Also, another use for the safety lamp developed, and that was testing for oxygen deficiency or black damp. Since the lamp burns with a flame, it requires oxygen -- so a decrease in the amount of oxygen in the mine air would cause a decrease in the size of the flame and a decrease in the brightness of the the flame.



And, if the oxygen level got so low that it would be dangerous for a man to work, the lamp would warn him by going out.

By providing a safe light and later a safe, reliable way to detect methane gas and oxygen deficiency, the flame safety lamp became one of the most effective and valuable additions to the safety of the mining industry.

There are two permissible flame safety lamps that have

been used in American mines, and both are directly related in design and construction to the



Marsaut lamp from France. They are the Wolfe lamp and the Koehler lamp. Of these, the Koehler was the most widely used.

In Summary

The two most important men in the early development of the flame safety lamp were Dr. Clanny and Sir Humphrey Davy.

Clanny invented the very first lamp and later built the first lamp using gauzes above a glass cylinder.

Sir Humphrey Davy discovered the principle that wire gauze would cool a flame, and he built the first lamp to use this principle.

The principle of the lamp is that wire gauze will conduct away the heat of a flame, and the flame will not pass through the gauze.

Flame safety lamps were first designed as working lights but later they were found to be a good way to detect methane and oxygen deficiency.

The two men who developed the flame safety lamp as we know it today were Mueseler in Belgium and Marsaut in France.

The two permissible lamps that have been used in American mining that are direct descendants of the Marsaut lamp are the Wolfe lamp and the Koehler lamp.

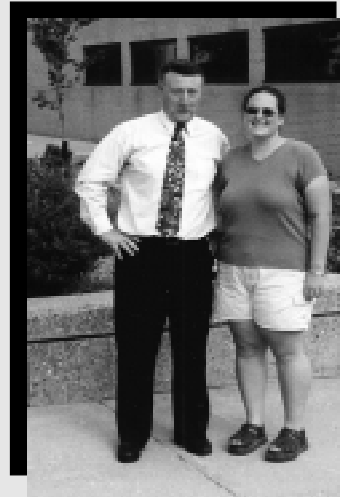


The flame safety lamp has won for itself a very special place in the history of mining and mine safety. It provided the mining industry with a much needed source of safe light and it provided a reliable way to detect dangerous gases. For these reasons, it can be credited with saving the lives of many miners throughout the world.■

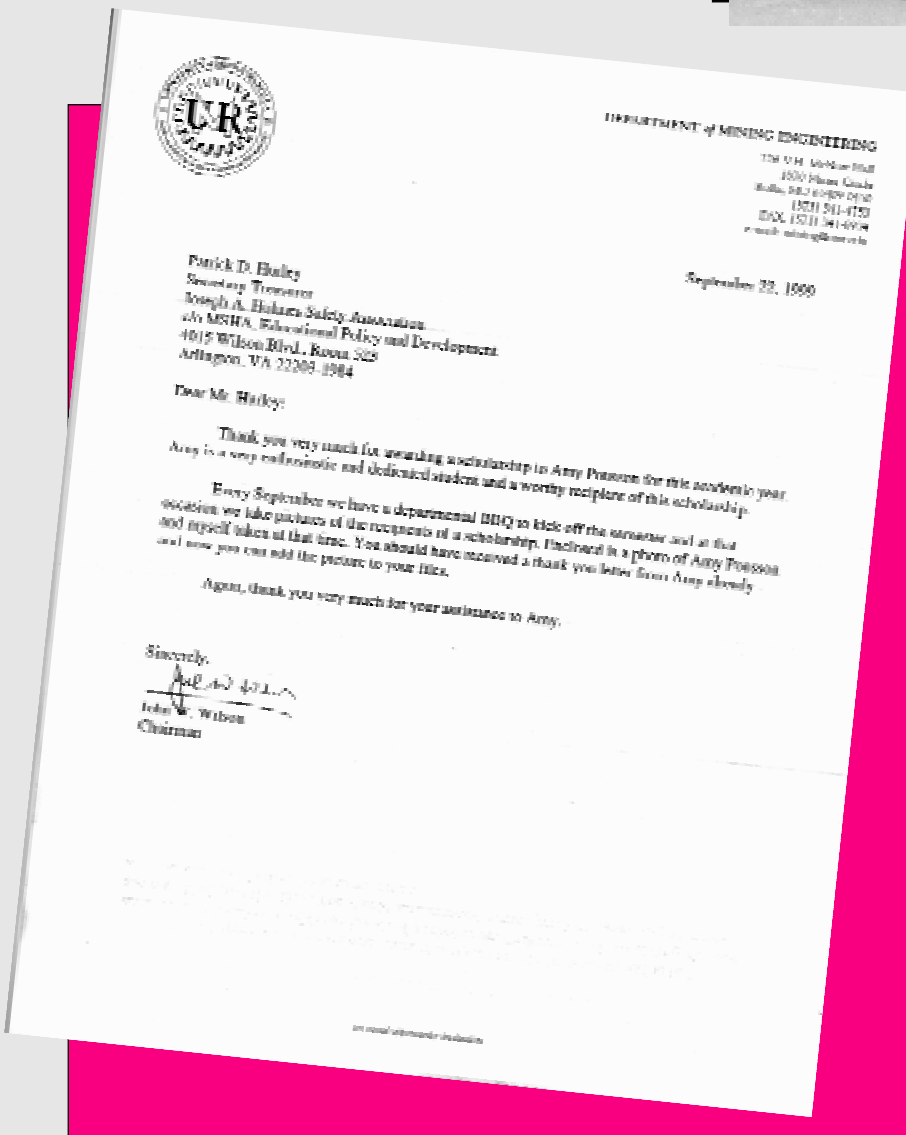
This article is from The History and Principle of Operation of the Flame Safety Lamp, developed by Mining Extension Service, West Virginia University

UMR Student, Recipient of Holmes Safety Association Scholarship

The Joseph A. Holmes Safety Association awarded University of Missouri-Rolla student, Amy Pousson, an academic scholarship for the 1999-2000 school year. Amy Pousson is enrolled in the Mining Engineering program at the university.



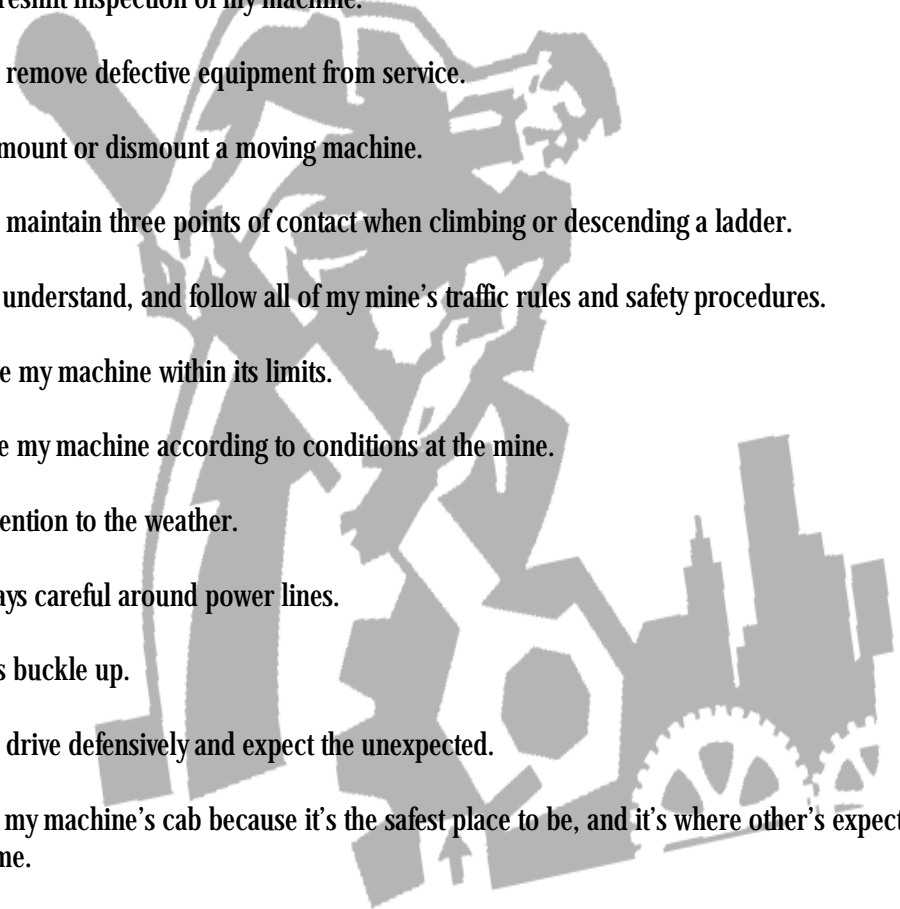
Amy Pousson with John W. Wilson, Department of Mining Engineering, University of Missouri-Rolla



Safety Reminders for Machine Operators

by Steve Hoyle,
Bulletin Staff Writer

If you can say “yes” to these statements, then chances are you’ll have a safe day at work.

- ✓ I do a preshift inspection of my machine.
 - ✓ I always remove defective equipment from service.
 - ✓ I never mount or dismount a moving machine.
 - ✓ I always maintain three points of contact when climbing or descending a ladder.
 - ✓ I know, understand, and follow all of my mine’s traffic rules and safety procedures.
 - ✓ I operate my machine within its limits.
 - ✓ I operate my machine according to conditions at the mine.
 - ✓ I pay attention to the weather.
 - ✓ I’m always careful around power lines.
 - ✓ I always buckle up.
 - ✓ I always drive defensively and expect the unexpected.
 - ✓ I stay in my machine’s cab because it’s the safest place to be, and it’s where other’s expect to find me.
 - ✓ I always pay attention to blind spots.
 - ✓ I signal before moving.
- 

Early Women in the Mines

by Melody Bragg,
Bulletin Staff Writer

In America, women were traditionally excluded from underground mining due to custom and superstition. Legend maintains that miners believed severe misfortune would come to any mine where women had traveled underground.

However, this was not the case in the early mines of other nations. The following excerpt from "History of Coal Miners of the United States," written by the first Ohio mine inspector, Andrew Roy, in 1907, paints a vivid mental image of a different set of customs in the early mines in Britain and Scotland.

This section begins with a discussion of the conditions in British mines immediately following the passage of a Parliamentary Act dealing with mining in 1775.

The miners began to gather around the pit as early as three o'clock in the morning, but were not allowed to go down until four, the first on the ground having the right of descent. The corves held four to six people. The father, his sons and daughters generally descended together; the youngsters sitting in the bottom of the corve, the father standing erect, with one leg outside, and one arm guiding the corve to keep it from striking the rope as the cage descended below the

platform, and clung to it in this manner, one above the other. Before going down, they stuck their picks on their left arm. When a miner carried a pick in any other manner it was proof that he was not a trained pitman.

In hauling, two women were usually employed - one behind the other in front; the forward one was hitched to the mine car, with a belt around her waist and a chain passed between her legs. In many parts of England, the women dressed like boys.

When the commissioners (appointed by Parliament in 1842 to inquire into the operation and results of female labor in the coal mines) made their report, they presented a picture of deadly physical oppression and systematic slavery which no one unacquainted with the facts would credit. The women worked twelve to fourteen hours a day in the damp and unwholesome air of mines, crawling on all fours, in the low veins, dragging the loaded cars along roadways, which in many places were covered with water a foot deep.

In Scotland, women were not only employed in hauling the coal along such roadways but at many mines they

carried the coal up the shaft on their backs, through a long winding stairway. The load being carried was in wicker cribs fitted to the backs of the women and held in place by leather straps passing around their foreheads. Mr. Robert Bald, the eminent coal viewer of Scotland who knew them well, stated that their day's work was equal to carrying a hundred weight from the sea level to the top of Ben Lomand; and Hugh Miller, the celebrated geologist, who in 1824 worked at his trade as mason at one of the mining villages near Edinburgh, states in his autobiography that he often saw the poor women coal-bearers toiling under their loads and crying like children along the upper rounds of the wooden stair that traversed the shaft.

If you wonder about the origin of the superstition early miners held against allowing women to work underground, this passage may provide a clue. It seems likely that the superstition originated with a very smart woman.■

Preregistration Notice



**SAFETY SEMINAR FOR UNDERGROUND STONE MINES
AND VENTILATION INFORMATION WORKSHOP**



December 7-8, 1999
Holiday Inn

Greater Cincinnati-Northern Kentucky Airport



YOU ARE INVITED to attend a free technology transfer **Safety Seminar for Underground Stone Mines** on December 8, 1999. It will be presented at the Holiday Inn-Cincinnati Airport Hotel. The event consists of an "early bird" workshop and reception on December 7, 1999, followed by the seminar on December 8, 1999 (ending at 4:00 p.m.). The morning session of this year's seminar will consist of presentations by experts on new topics such as blasting, equipment selection, mine development planning, and an MSHA update. Participants will then be able to attend one of three afternoon sessions:

- (1) *Customized Use of MSHA Accident Data to Identify Safety Focuses* presented by R. Larry Grayson, Ph.D., Associate Director for Mining, NIOSH. Includes downloading of the MSHA accident data using Excel and Access programs. (Target audience: mine management, superintendents, foremen)
- (2) *"NEW" Hazard Recognition Training*. This session will review a New NIOSH training module designed to improve the hazard recognition skill level of miners. The module identifies key concepts from examples using three-dimensional photography and offers suggestions to improve or avoid the hazards. (Target audience: Miners, foremen, superintendents, labor, safety officials).
- (3) *Engineering Techniques for Controlling Ground in Stone Mines* presented by Anthony T. Iannacchione, Ph.D., Deputy Director, Pittsburgh Research Laboratory, NIOSH. This session will also include an update on the Roof Monitoring Safety System (RMSS). (Target audience: mine engineers, mine management)

As an added bonus, we are offering an "early bird" **Ventilation Information Workshop** before the reception on December 7, 1999, from 4:00 to 5:30 p.m. Take advantage of this opportunity to learn more about ventilation.

We are asking you to preregister at this time by completing and returning by mail or by fax the bottom portion of this notice to assist us in planning. Please list the names of those people from your operation/organization and indicating which of the three afternoon workshop sessions they will attend and whether they will attend the Ventilation Information Workshop and/or the reception.

In order to accommodate and arrange the Workshops and reception we need an approximate count of the number of people expected to attend. The Workshops will be filled on a "first come, first serve basis." By registering now you will be assured a spot in the Workshop of your choice.

Fax or Mail

LIST NAME(S) OF ALL ATTENDEES for each event (attach extra sheet, if necessary):



	YES	NO
DECEMBER 7		
Ventilation Information Workshop (4:00-5:30 p.m.)	<input type="checkbox"/>	<input type="checkbox"/>
Reception (6:00-8:00 p.m.)	<input type="checkbox"/>	<input type="checkbox"/>
DECEMBER 8 (Afternoon workshops—please pick one)		
Customized Use of MSHA Accident Data	<input type="checkbox"/>	
New Hazard Recognition Training	<input type="checkbox"/>	
Engineering Techniques in Stone Mines	<input type="checkbox"/>	

Name _____
 Company/Organization _____
 Address _____ Phone _____
 _____ Fax _____

RETURN TO: Donna M. Opfer, NIOSH, Pittsburgh Research Laboratory, P.O. Box 18070, Pittsburgh, PA 15236-0070
 Phone: 412-386-6564 Fax: 412-386-6591

FOR MORE INFORMATION, CONTACT: Lou Prosser at: 412-386-4423, or e-mail at: lhp2@cdc.gov



Mining Our History

An Overview of Disaster Anniversaries

by Melody Bragg

115 Years Ago

Explosion
Youngstown Mine
Uniontown, PA
October 27, 1884

Fourteen men were killed in an explosion when the naked light of a mule driver ignited accumulated gas. Other miners who had been overcome by afterdamp were located by rescue crews and assisted to the surface where they recovered.

105 Years Ago

Boiler Explosion
Henry Clay Colliery
Shamokin, PA
October 11, 1894

This accident is recognized as one of the most disastrous boiler explosions in the history of mining. Twenty-seven of 34 cylinder boilers exploded, killing seven men and injuring two others. The cause of the disaster was never established

85 Years Ago

Explosion
Mulga Mine
Mulga, AL
October 5, 1914

There were 283 men underground when the explosion occurred. None were killed by violence or burns but 16 men died from afterdamp and 16 others suffered minor injuries. The explosion occurred when gas accumulated due to a short circuit of air and was ignited by an open light.

Explosion
North or Number One Mine
Royalton, IL
October 27, 1914

On this day, a miner's light ignited accumulated gas and resulted in a first blast, which was followed quickly by a second stronger blast of gas, dust, and black powder in kegs exploded by heat.

80 Years Ago

Mine Fire
Number Two Mine
Amsterdam, OH
October 29, 1919

Twenty miners lost their lives when an electric generator operating a fan exploded and set fire to the wood braces. The fire was about 200 feet from the elevator shaft and the men died of asphyxiation after being trapped underground. Twenty-three other men escaped from the burning mine by cutting their way through an abandoned entry and coming out of a side entrance three miles away six hours after the fire started.

72 Years Ago

Roof Fall
Quincy Mine
Hancock, MI
October 27, 1927

Seven men re-timbering a shaft of this mine, which had been damaged by a fire in July of 1927, were killed when an air blast caused a fall of rock in the shaft. It is believed that the explosions of rock or air blasts were caused by contraction of the rock, which had been heated and expanded by the previous fire.

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Words to think about...

October is the fallen leaf, but it is also a wider horizon more clearly seen. It is the distant hills once more in sight, and the enduring constellations above them once again.

Hal Borland

We learn geology the morning after the earthquake.

Ralph Waldo Emerson

Few great men could pass Personnel.

Paul Goodman

The seat of knowledge is in the head; of wisdom in the heart. We are sure to judge wrong if we do not feel right.

William Hazlitt

Fame is a vapor, popularity an accident; the only earthly certainty is oblivion.

Mark Twain

NOTICE: We welcome any materials that you submit to the Holmes Safety Association Bulletin. For more information visit the MSHA Home Page at www.msha.gov. We need color and black/white photographs suitable for use on the front cover of the 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**.

Please address any comments to:

Donald Starr

Holmes Safety Association Bulletin

MSHA—US DOL,

National Mine Health and Safety Academy

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Please call us at 304/256-3283 or

Fax us at 304/256-3524

REMINDER: The District Council Safety Competition for 1999 is underway—please remember that if you are participating this year, you need to mail your quarterly report to:

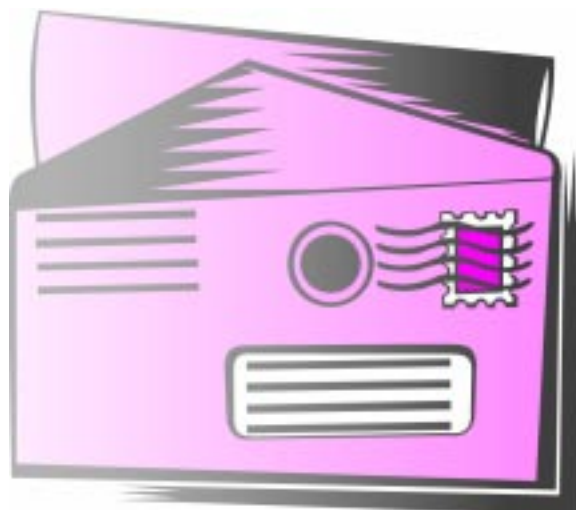
Mine Safety & Health Administration

Educational Policy and Development

Holmes Safety Association Bulletin

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- Kentucky Mining Institute 16th Annual Meeting, Nov. 18-19, 1999, Lexington, KY
- Northwest Mining Association, Nov. 28-Dec. 3, 1999, Spokane, WA
- National Stone Association Western States Conference, Dec. 2-3, 1999, Phoenix, AZ
- National Stone Association 16th Annual Convention, Jan 28-31, 2000, New Orleans, LA
- SME Annual Meeting and Exhibit, Feb. 28-Mar. 1, Salt Lake City, UT
- 31st Annual Institute on Mining Health, Safety and Research, Aug. 28-30, 2000, Blacksburg, VA
- Nevada Mining Association, Sept. (TBA) 2000, Lake Tahoe, NV (TBA)
- MINExpo 2000, Oct. 9-12, 2000, Las Vegas, NV