BULLETIN

HOLMES SAFETY ASSOCIATION

E PLURIBUS UNUM

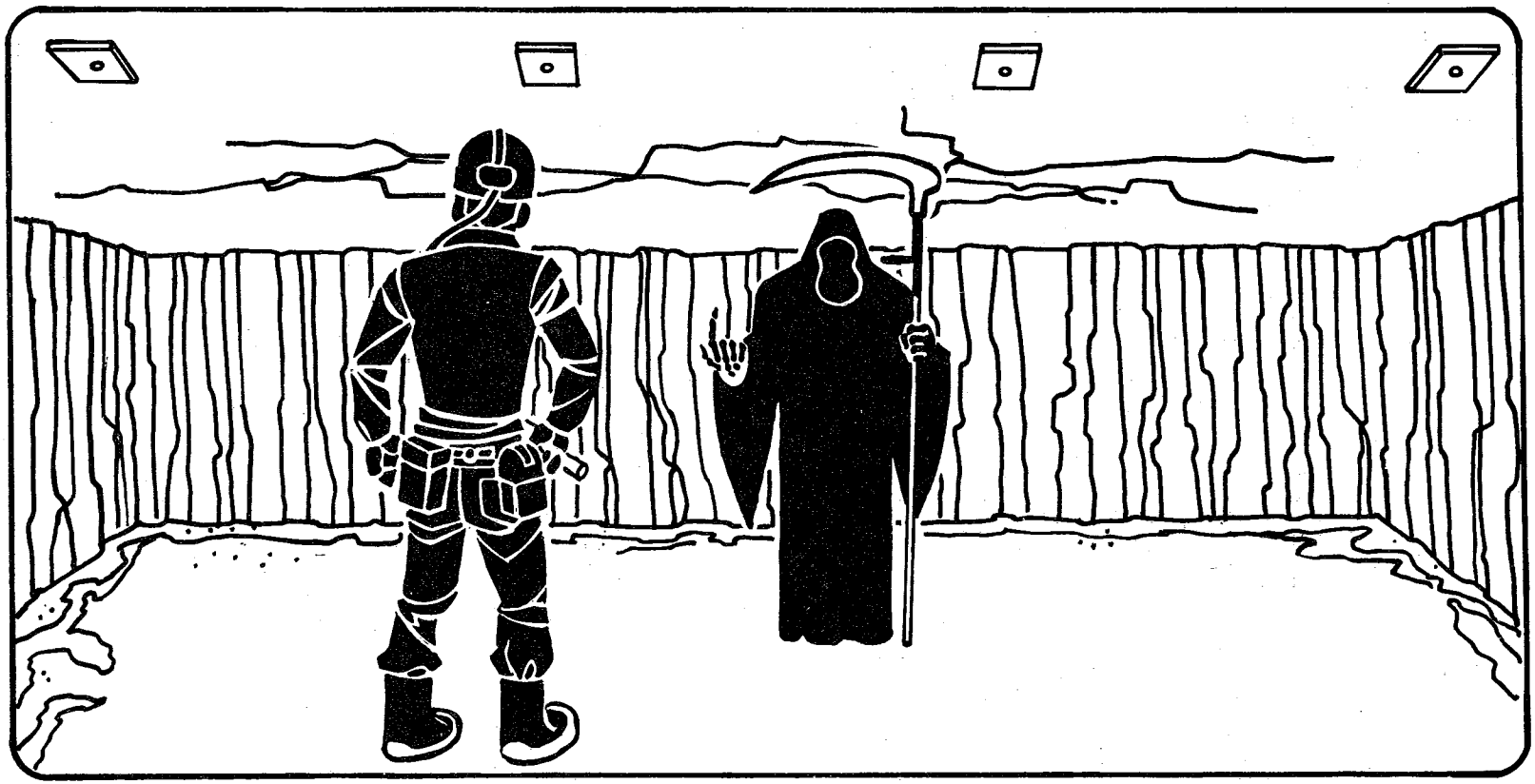
SAFETY EFFICIENCY

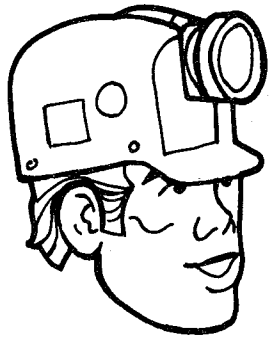
MINERAL INDUSTRIES

November 1987

Roof Evaluation — Accident Prevention

R.E.A.P. — a program developed to promote health and safety awareness in mining

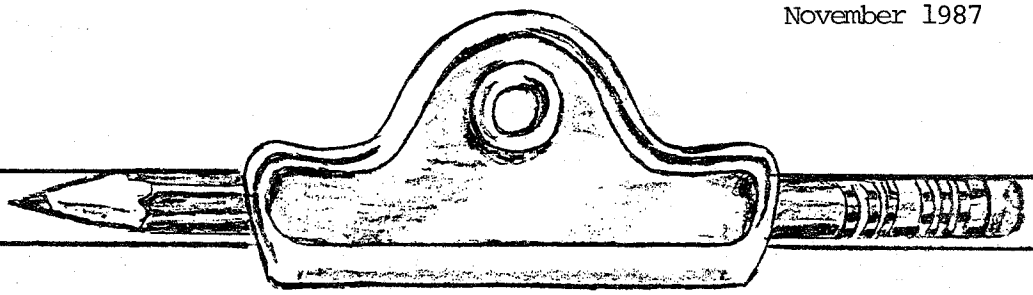




The first and final thing you have to do in this world is to last in it, and not be *smashed* by it.

SUPPORT THE REAP PROGRAM.

"INBY IS OUT"



IN THIS ISSUE...

THIS SAFETY BULLETIN CONTAINS SAFETY ARTICLES ON A VARIETY OF SUBJECTS, FATAL ACCIDENT ABSTRACTS, STUDIES, POSTERS AND OTHER SAFETY INFORMATION FOR PRESENTATION TO GROUPS OF MINE AND PLANT WORKERS IS PROVIDED FREE AS A BASIS FOR DISCUSSION AT ON-THE-JOB SAFETY MEETINGS.

PLEASE USE THE POSTAGE-PAID ENCLOSED GREEN MEETING REPORT FORM AND RETURN TO THE HOLMES SAFETY ASSOCIATION.

COMPANY	CHAPTER NO.	LOCATION
Linwood Mining & Minerals Corp.	7339	Davenport, IL
Ivy Branch Coal Co., Inc.	7340	Carbo, VA
Classic Corl Corp. No. 1 Mine	7341	Grundy, VA
Vencill Corporation	7342	Summersville, WV
Double R Coal Co., Inc.	7343	Carrie, VA
Marigold Docks	7344	Catlettsburg, KY
M&MB Coal Company	7345	Galveston, KY
Ashcamp Constructional Inc.	7346	Pikeville, KY
Twiga Cement Company	7347	DarEs Salaam-Tanzania
Somerset Coal Co., Inc.	7348	Floyd, KY
Coal Dust Coal Co., Inc.	7349	Elkhorn City, KY
C.L. And M Trucking Co., Inc.	7350	Cannelton, WV
Lick Fork Mining Co., Inc.	7351	Pikeville, KY
Big Bottom Coal Co., Inc.	7352	Ransom, KY
Clinchfield Coal Co., Inc.	7353	Trammel, VA
Douds Stone Inc.	7354	Douds, IA
Gardner Quarry	7355	Selma, IA
EMKO	7356	Salt Lake City, UT
Jacobsen Construction Co., Inc.	7357	Salt Lake City, UT
Star Mechanical Construction	7358	Salt Lake City, UT
Bardco	7359	Salt Lake City, UT
Blue Range Mining Co.	7360	Lewistown, MT
Blue Range Mining Co.	7361	Lewistown, MT
Spotted Horse Mine	7362	Lewistown, MT
Carolina Ceramics Inc.	7363	Columbia, SC
G & C Mining	7364	Aynor, SC
Lineberger Grading and Paving Inc.	7365	Lancaster, SC
Yogi Mining Co., Inc., Mine No. 5	7366	Grundy, VA
D&L Coal Co., Inc.	7367	Dante, VA
Amber Coal Co., Inc.	7368	Burnaugh, KY
Coal-ition Inc.	7369	Prestonsburg, KY
Larkk Mining Co., Inc.	7370	Gunlock, KY

HOLMES SAFETY ASSOCIATION

H.S.A. SAFETY TOPIC

COUNCIL NEWS

NORTHERN COLORADO SOUTHERN WYOMING COUNCIL HOLMES SAFETY ASSOCIATION NEWSLETTER

The quarterly meeting of the Northern Colorado-Southern Wyoming Council was held September 29, 1987, at the Log Inn in Rock Springs, Wyoming with 53 persons in attendance.

Election of officers for 1988 was held with the following persons being elected or retained:

PRESIDENT: Rob Stalder - Cyprus Empire, Craig, Colorado

V. PRES. : (UG Coal) - Joe Vendetti, Cyprus Shoshone, Hanna, Wyoming

V. PRES. : (M/NM) - Jim Salois, MSHA, Green River, Wyoming

V. PRES. : (SUR. Coal) - Frank Self, Trapper Mining, Craig, Colorado

SECY.-TREAS.: Ival Van Horne, MSHA, Denver, Colorado

William H. Hoover, National Secretary, Holmes Safety Association, gave an inspiring talk on motivation of chapter members towards more activity. He also announced that the National Council will be meeting at Evansville, Indiana, May 18-19, 1988, and the 1989 meeting of the National Council will be held in the northwest area of Colorado or southern area of Wyoming.

Vern Gomez, District Manager, Rocky Mountain District, Metal and Non-Metal Mine Safety and Health, Denver, Colorado, was the guest speaker. Mr. Gomez addressed: "Where We've (MSHA) Been and Where We're Going."

Plans are to be made for the next quarterly meeting to again be held in conjunction with the Colorado School of Mines Institute on Mine Health and Safety.

After a brief discussion on safety records, the meeting was adjourned.

H.S.A. SAFETY TOPIC

MATE FOR SAFETY

Make
A
Thoughtful
Effort for safety is a positive approach to involve the line supervisor——and indirectly the individual worker. A good idea for smaller plants.

A CURIOUS TITLE? Perhaps, but to **M**ake **A** **T**houghtful **E**ffort for safety is a positive action that must be made to eliminate accidents.

Thorough could be substituted for **Thoughtful**, but if the effort is a thoughtful one, it has been planned, and if well planned, it should be a thorough action. The extent of the planning will depend upon the job to be analyzed. A major shutdown or over-haul, for example, should have safety included at each step of the job and deserves considerable thought. Or, if operators are to be checked to see how safely they do a portion of their job, it should be known what they are expected to do, considering ways the task was done in the past that resulted in near-misses or accidents. In these two cases (shut-down and operator check) several levels of management are involved, and a number of employees should be affected. The real heart of a successful accident prevention is the individual employee.

Get each employee involved — get each one on the **TEAM** (**T**heory, **E**nthusiasm, **A**dvise, **M**otivate).

Theory

Since those closest to the job are the ones actually doing it, their theories or ideas are often worthwhile. In expressing them to a supervisor, the employee may feel more committed to safe performance--by expressing his ideas on how to act. The idea or discussion may lead to a more workable and safer method. If the supervisor has listened, other ideas will be forthcoming, and some of them may be valuable. Listening is important in itself.

Enthusiasm

If some enthusiasm can be imparted for doing a job safely, you can depend on these enthused employees doing a job to the best of their ability, even in the supervisor's absence. Enthusiasm can be generated by letting the employee know the importance of the job and the part that job plays in the total production and safety performance. An interested employee is a thinking employee, and thinking will often eliminate accidents. One study shows 45 percent of all accidents were attributable to inattention and poor judgment. Personal problems and the monotony of routine work will divert the attention needed for the job into other lines of thought, but if the employee has been given some recognition, these distracting thoughts will be reduced and the attention to the job will result in better work, done more safely.

Advise

From the ideas the employee advances, there may be detected some misconceptions about the method of doing a safe job or poor attitude displayed. When this happens, the supervisor has a clear cut duty to **advise** the employee about the proper and safe way to do the job. It must be done tactfully and in a positive way. The personality and attitudes of the employee must be recognized as the factors that will determine the most effective way (joking, firm, or step-by-step facts) to advise him or her. To advise is to counsel or inform, NOT COMMAND, ORDER, OR DICTATE. This is one reason why the first-line supervisor is the one person well enough informed to advise employees.

Changing someone's mind or correcting their ideas is a delicate operation. To do a skillful job, the supervisor must have a clear picture of the person and his/her relationship with the job, and understand the job as well. This face-to-face discussion is one of the most important methods of improving safety performance. The time taken to plan an approach to the employee, and the subject matter is well spent, if safety performance is improved. When an employee is observed doing a job in an unsafe manner, using improper or unsafe tools, or not wearing adequate personal protection, it is imperative that he be advised of the correct action. To pass over a single unsafe act is to invite more unsafe acts and the resulting accidents.

Some employees will see how much they can get by with, and others may not think about the consequences of unsafe action.

Motivate

All the advice and information is of little value if it does not result in desirable action. Motivation is the subject matter of hundreds of books and theories and years of research; it will be only lightly touched upon here. Each supervisor has a way that works best to motivate.

The following reminders may aid in improving motivation:

* Being a good example is important, because actions do speak louder than words;

* Using a positive approach is more effective than depending on anxiety or fear;

* If the only time an employee is talked to is to be corrected, he/she will soon put up a wall when the supervisor starts talking.

* Be sure that many contacts with employees bring good news, so that they are receptive listeners.

* Everyone wants to feel "needed", and praise is a powerful incentive to improve safety performance.

* If discipline is needed, it should be positive so as to help the employee rather than to punish.

Remember, motivation is an appeal to the emotions, rather than to the reasoning. All of us rate what is important to us or to our job in various ways. Several recent studies show that pay is several steps down in the factors listed by most workers. To motivate effectively, it must be known what the person we are dealing with considers most important-- such as social approval, security, achievement, and likes and dislikes.

Here, again, the first-line supervisor is usually the one who knows the person best. Every effective supervisor should periodically read material on motivation. Most safety supervisors have enough experience to look at the employee--machine--environment interaction and evaluate what can happen to cause an accident. The contact with the worker should concern the job, have a positive approach, and be made with a "prevent" idea rather than a hasty correction.

A **MATE**, as in a pair of gloves, means to us something that is not identical to the other, but similar and equal in value. Thus, when we consider **production** and **safety** as mates, we consider them as equals. When they are regarded and treated as equals, the job performance in both areas improves--partly from an increase in morale and partly because the employee is getting more attention.

Too often safety is "tacked on." Just as a ball team that ignores the fundamentals makes errors and loses games, so will any program to improve safety performance fail if the basic requirements of participation are not followed. Top management must have a sincere interest in the safety program, and the first-line supervisor must make a genuine effort to **MATE** (**M**ake **A** **T**houghtful **E**ffort) for safety each day, or the program ends up in **STALEMATE**.

A NEW FACE IN THE CROWD

The first few days on the job are tough for any new employee. There are new skills to master, names to learn and forms to fill out. The new worker also must find out about the firm's safety program. If you have someone new in your department, be sure you help him/her learn about your program and inform them that the crew is proud of its safety record and anxious to maintain it. Steer the new worker to the person who can provide full training in all aspects of the job, including the safety rules.

If you're the new face in the crowd yourself, take to heart your supervisor's reminder to "see me if you have any questions." The supervisor is as eager as you are to foster productive and safe work. And before you know it, you won't feel "New" any longer.

November 1987

ABSTRACT FROM FATAL ACCIDENT

*This fatality could be discussed at your regular on-the-job safety meeting.

Fatal Machinery Accident

GENERAL INFORMATION: A foreman was fatally injured when a derrick boom fell striking the ladder on which he was standing causing him to fall into the quarry.

The mine, an open-pit granite operation was mined by extracting large blocks from a quarry. Blocks were freed by cutting channels along the vertical sides with a jet piercing burner, and then drilling and blasting horizontal holes drilled along the base. The blocks were then subdivided into smaller blocks by drilling and wedging. The blocks of granite were lifted from the quarry by a stiff-leg type derrick, and then hauled by truck to a finishing mill.

The quarry was approximately 150 feet long and 60 feet wide. Two benches were being mined. The depth of the upper bench was about 28 feet, and the depth of the lower bench was about 72 feet. Access into the quarry was provided by two steel, stairway-type ladders which were provided with handrails. The ladder on which the victim apparently stood was approximately 40 feet long and extended from the top of the quarry to the upper bench.

DESCRIPTION OF ACCIDENT: At the time of the accident, a block of granite was being repositioned at the 28-foot bench level so that a hitch hole could be drilled in one end. The victim was apparently standing on the quarry access ladder giving hand signals to the derrick operator.

The derrick operator stated that he lowered the boom to a nearly horizontal position in order to reach the granite block that was being repositioned. After the lifting dogs were set into the hitch holes of the block, he began to lift the load with the boom. The friction clutch began to slip so he applied the brake but did not secure the boom by setting the pawl into the ratchet of the drum. He intended to raise the block with the main fall, when suddenly the boom began to fall, apparently when the brake adjustment bolt broke. He attempted to stop the falling boom by setting the pawl into the spinning ratchet of the drum but was unable to do so.

A witness stated that the victim was standing on the ladder signaling the derrick operator and was knocked into the quarry by the falling boom.

CAUSE OF ACCIDENT: The accident was caused by overloading the lifting capacity of the derrick. Failure of the boom brake band adjustment bolt and the victim positioning himself underneath the boom were factors which contributed to the severity of the accident.

ABSTRACT FROM FATAL ACCIDENT

*This fatality could be discussed at your regular on-the-job safety meeting.

Fatal Electric Shovel Accident

GENERAL INFORMATION: In this copper mine, ore was mined from an open pit on a multi-bench plan. Blasted rock was loaded with electric-powered shovels into haul trucks and transported to the primary crusher. The accident occurred while installing a new crowd cable on a Bucyrus-Erie electric-powered shovel, equipped with a 25-cubic yard bucket. The crowd cable had the function of lowering the dipper boom or stick, then as the dipper was hoisted toward the shovel, it pivoted or was forced forward digging and filling the dipper.

DESCRIPTION OF THE ACCIDENT: The victim, a shovel and drill mechanic, and several co-workers had begun to change out the old crowd cable and install a new cable on the Bucyrus-Erie electric-powered shovel.

The old cable was taken off, new cable unreeled and layed out on the ground, and a choker tied in the center of the new cable. The crane-hoist rope was hooked into the choker tied at midpoint of the new crowd cable, the crowd cable was hoisted and positioned into the groove of the boom sheave. The one end was socketed into the crowd-motor drum. The crane was hooked to the other end in preparation to pull the slack out when driven forward.

At this point, the victim was positioned on the platform of the shovel house in order to help feed the end of the cable around the crowd drum after the slack had been pulled out in preparation to socket the cable into the crowd drum. The signal was given for the crane to be driven forward. A loud snap sound was heard. The cable had fallen off the dipper-boom sheave wheel. No one could see the victim.

A co-worker went up on the shovel house and climbed down between the two shovel derricks where he saw the victim who had been knocked down and fell 10 feet landing on a cross member of the shovel derrick.

CAUSE OF ACCIDENT: The cause of the accident was the failure of company officials to recognize the hazardous procedures being used to install the crowd cable.

The sheave-wheel boom was on a 44-degree angle, and without securing the cable to the sheave wheel, it could fall and did fall. This was especially true in proportion to the size of the loop that was formed when the cable hung from the sheave wheel.

HOLMES SAFETY ASSOCIATION

REAP

Roof Evaluation - Accident Prevention

More than 50 percent of all fatalities in the mining industry each year are caused by fall-of-roof, face or ribs. This waste of human values -- not to mention the economic waste -- is needless. We have the know-how to control hazards -- all we need to do is apply it. The roof evaluation-accident prevention (REAP) campaign is designed to focus attention on the number one enemy of all underground mines -- **"falls of roof".**

The goal of this campaign is a reduction up to 50 percent or more in the frequency of roof fall injuries and fatalities. The ultimate goal is to eliminate all injuries from this cause.

Secretary, Holmes Safety Association

* *

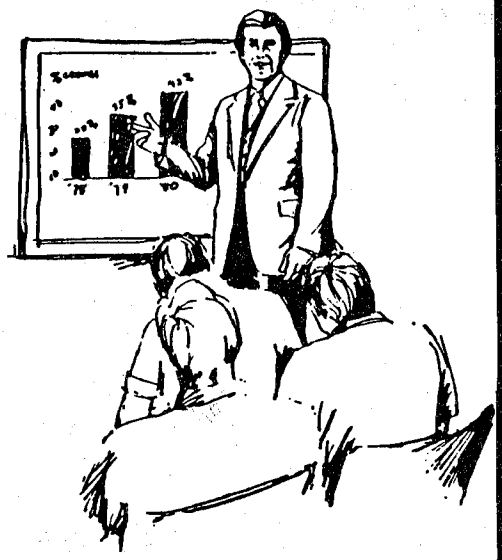
ELECTION TIME IS GROWING NEAR

District Councils are urged to report promptly to the National Council the officers elected for 1988. The information will help us update our records for the 1987 annual report as well as assure no interruptions of information from the National to the District Councils. All district council committees except the executive committee, are appointed by the president. Experience has indicated that three committees are necessary for the success of any council; namely, program, attendance and accident-prevention (accident clinic). Now is also the time to send in any council meetings that were held during the year and not reported. Please send all information to National Council Headquarters, HSA, 4800 Forbes Avenue, Pittsburgh, PA 15213. Let's get off to a good start. When the final accounting is made at year's end, the greatest reward possible would be the personal satisfaction of contributing to a no accident year.

PLAN AHEAD

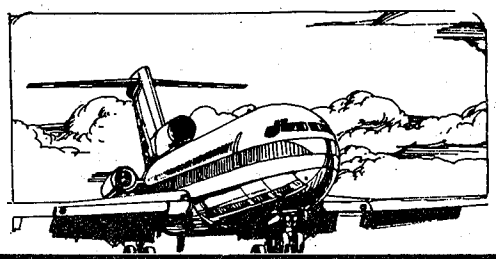
MARK YOUR CALENDAR!

FOR MAY 18-19. THIS IS THE DATE FOR THE 1988 ANNUAL MEETING OF THE HOLMES SAFETY ASSOCIATION TO BE HELD AT THE SHERATON INN, EVANSVILLE AIRPORT, EVANSVILLE, INDIANA. EVANSVILLE IS SITUATED IN THE SOUTHWEST CORNER OF INDIANA, APPROXIMATELY 100 MILES SOUTH OF TERRE HAUTE.



THE AGENDA INCLUDES A HOST SOCIAL HOUR ON WEDNESDAY EVENING AND THE EXECUTIVE AND REGULAR MEETINGS OF THE HOLMES AND JOSEPH A. HOLMES ASSOCIATIONS ON THURSDAY FOLLOWED BY THE SAFETY AWARDS BANQUET AT 6:30 P.M.

CONSULT LATER EDITIONS OF THE BULLETIN FOR FURTHER DETAILS.



HAZARD ALERT

SEASONAL WARNING
HEATERS

1. USE AN APPROVED HEATER
2. INSURE ADEQUATE VENTILATION
3. USE SAFETY PRECAUTIONS FOR REFUELING
4. GUARD AGAINST CONTACT

H.S.A. SAFETY TOPIC

W I N T E R A L E R T

WHY THE WINTER ALERT

Coal mining history is filled with reports of mine disasters (five or more killed). Most disasters resulted from explosions of methane gas and/or fine, dry coal dust and they occurred most often during the period between the first of October and the last of March. Much research has been conducted to determine the exact reasons why a majority of explosions occurred during this period.

Conclusions reached from this research show that the drier atmosphere and fine dry coal dust, sometimes coupled with methane liberated at the face or from abandoned areas, increase the mine's susceptibility to explosions in the late fall, winter, and early spring: hence, the WINTER ALERT.

BE ALERT TO DANGER SIGNALS DURING DROPS IN BAROMETRIC PRESSURE

When barometric pressure falls rapidly a storm is quite likely to follow.

Barometric pressures often drop more suddenly and slip lower, during fall and winter months. Low barometric pressures cause a corresponding drop in underground air pressures, including pressures in abandoned or gob areas.

When pressure is reduced, gases expand to fill a larger area. If bleeder systems malfunction or seals leak, this expansion can cause gases from abandoned and pillared areas to flow into the working places.

STORM FRONTS

Studies of atmospheric conditions and their effects on mine ventilation during storm fronts verify the hazards. At this time, we experience the greatest drop in barometric pressure.

NOTE: Explosions are more likely to occur not only immediately after a sudden drop in barometric pressure but also 1 to 3 days later.

Frequent thorough TESTS for METHANE ACTIVE WORKING places.

-MORE-

STAY ALERT FOR DANGER SIGNALS

When suspended in air, fine, dry coal dust will explode if ignited, even without the presence of methane. Factors governing the explosibility of coal dust are: size, composition, amount, ignition strength and moisture content.

Float coal dust (fine enough to pass through a No. 200 mesh sieve) is especially explosive.

REMEMBER: If ample moisture and/or rock dust is added to coal dust, it will not explode.

Moisture is not combustible. It helps to make coal dust stick together and not disperse as easily into the air.

The major source of moisture is water vapor in the air, but the amount of moisture in mine air varies widely from season to season. Warm air can hold more moisture than cold air.

MOIST SUMMER AIR

In summer, warm moist air enters the mine where the temperatures are usually much lower. In fact mine temperatures vary little from season to season. Cooler mine surfaces cause the entering warmer air to release its moisture on the roof, ribs and floor.

DRY WINTER MINE AIR

During the winter months, the reverse is usually true. Cold dry air enters the underground mine where it is warmed to the temperature of the mine surfaces. As the air is warmed, it picks up moisture from the mine surfaces and exhausts it to the outside. The result is drier air and drier surfaces in mines than is found in the summer.

ALERTNESS REQUIRES STATE OF READINESS

REMEMBER: COLD, WINTRY WEATHER creates these CONDITIONS in mines that CAN CAUSE an EXPLOSION.

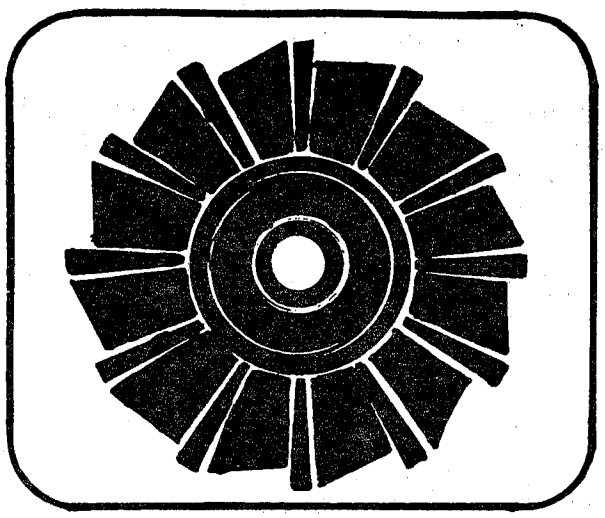
Drier mine surfaces, including dry coal dust on the surfaces; and sharp drops in barometric pressure in certain cases, may cause methane movement from pillared or abandoned areas to working places.

EXCESSIVE METHANE and/or COAL DUST + Oxygen + Ignition Source=

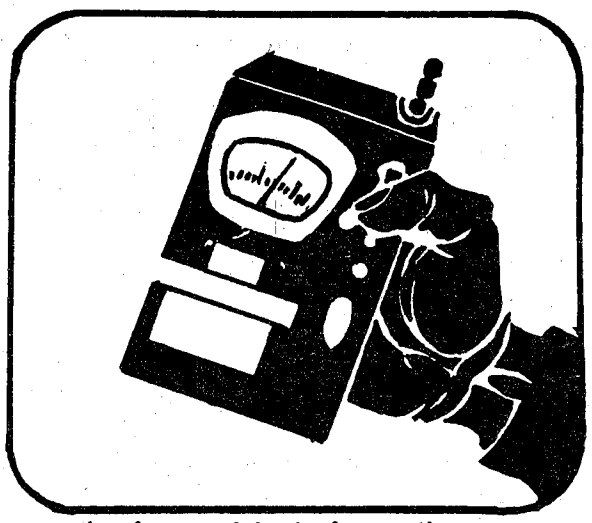
EXPLOSION

November 1987

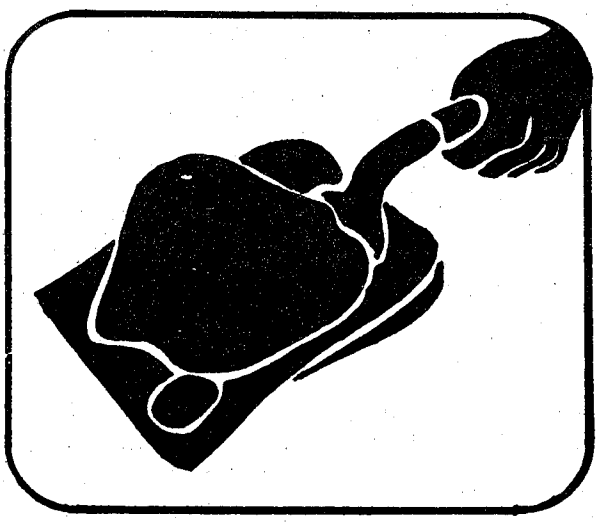
WINTER ALERT



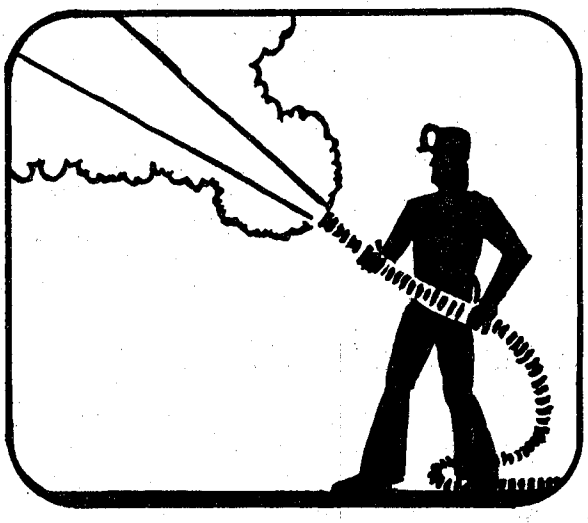
----maintain adequate ventilation;



----make frequent tests for methane;



----clean up loose coal and coal dust;



----apply rock dust liberally;

----test the mine roof often;

----and always stay under supported roof.

Please work safely so you can work again tomorrow.

H.S.A. SAFETY TOPIC

Shovel, Dragline, Crane and Derrick Accidents 1983—1986*

There were 917 injuries involving shovels, draglines, cranes, and derricks in surface coal operations from 1983-1986; six were fatalities. This report will discuss those factors which contributed to most of the accidents.

Analysis

Over 88 percent of the injuries occurred during the operation, maintenance, and repair of shovels and draglines. Approximately 12 percent occurred on cranes and derricks (Table 1). Data in Table 2, Class of Accident, show that slips and falls, followed closely by handling materials, combined to contribute over 55 percent of these accidents. Machinery and handtools contributed to 32 percent; all other accident classes, 13 percent.

Machine maintenance was the most prevalent activity being engaged in at the time of the accident (Table 3). Accidents occurring during machine maintenance span three classes of accidents, depending upon the particular situation at the time of the accident. If a gear, shovel tooth, cam, etc., is positioned, lifted or being removed when the injury occurs, it is classified as a handling materials accident. Typical of this type of accident would be straining the back or arm while removing a bolt; replacing a gear when it slips and smashes a finger; crushing hands or fingers while closing doors on equipment or when replacing manhole covers; slivers of metal entering the eyes or skin from hammering on bushings, bearings, or bucket teeth.

If the injury is incurred by the use of a wrench, hammer, sledge, grease gun, etc., it is then classed as a handtool accident. Accidents of this type would be: prying with a bar when the bar slips and strikes the body; hammering on pins, gearing races, chisels, etc., when the hammer misses and hits the fingers; or wrenches slipping off nuts or bolts causing strains to back or arms.

* Courtesy Mine Safety and Health Technology Center, Denver, Co.

Table 1
Machine Type
1983-1986

Machine	No. of Accidents	Percent of Accidents
Shovel, Dragline	813	88.66
Crane, Derrick	104	11.34
	917	100.00

Table 2
Class of Accident
1983-1986

Class	No. of Accidents	Percent of Accidents
Slip or Fall of Person	264	28.78
Handling Materials	248	27.04
Machinery	155	16.90
Handtools	146	15.92
All Other Classes	104	11.36
	917	100.00

Table 3
Activity of Miner
1983-1986

Activity	No. of Accidents	Percent of Accidents
Machine Maintenance	260	28.35
Getting On/Off Equipment	181	19.74
Handling Supplies	112	12.21
Non-Powered Handtools	83	9.05
Walking/Running	50	5.45
All Other Activities	231	25.20
	917	100.00

Let's all give thanks

Happy Thanksgiving

Table 4
Part of Body Injured
1983-1986

POB	No. of Accidents	Percent of Accidents
Fingers, Hands	187	20.40
Back	108	11.77
Multiple Injuries	78	8.51
Ankle	67	7.31
Knee	59	6.43
All Other	418	45.58
	917	100.00

Table 5
Occupation of Miner
1983-1986

Job Title	No. of Accidents	Percent of Accidents
Oiler/Greaser	202	22.03
Crane/Dragline Opr.	149	16.25
Welder	122	13.30
Mechanic, Repairman	112	12.21
Shovel Opr., Pitman	61	6.66
All Other Job Titles	271	29.55
	917	100.00

Finally, if during the use of a handtool (powered or nonpowered), or during the handling, removal or installation of parts, the miner is caused to slip, fall, or stumble, the resulting injury is classified as a slip and fall accident. Examples would be: wrenches slipping off nuts and bolts causing the miner to lose balance and fall; losing footing while installing or removing parts; falling into manholes while doing machine repair; slipping on slick machine surfaces while changing out cables, grease fittings, or doing machine repairs.

Associated with slip and fall accidents are those involved with getting on or off the equipment. Over 44 percent of the slip and fall accidents occurred during ingress to or egress from the machine. Typical injuries from these accidents are sprains and strains, primarily to the ankle and back, and fractures of the foot, leg and arm.

Ingress or egress from the machine by way of the track or shoe led to 22.1 percent of the slip and fall accidents, and from the ladder, 13.4 percent. The remainder (8.7 percent) involved slipping or falling on steps, boom, deck, bucket, or catwalks of the machine.

Dismounting accounted for 80 percent of the ingress/egress accidents. Both ingress and egress injuries occurred as a result of: (1) unsafe mounting and dismounting practices such as jumping or coming down frontward, (2) slipping on ladders and stairs due to wet, muddy, or oily, etc., surfaces, (3) stepping off ladders, etc., onto uneven surfaces resulting in sprained ankles, legs, backs, and occasional fractures, and (4) falling from the ladders or steps.

The handling of supplies on cranes, derricks, shovels, and draglines is usually limited to handling mechanical parts, supplies, rope, cable, bucket teeth, and other items peculiar to this equipment. Since the handling of supplies usually requires lifting from the floor or lowering from an installed level to the floor, the back is moved through a critical range that can cause back injuries. The back was involved in 11.77 percent of the injuries. Workng in close spaces can contribute to back injuries. However, improper lifting techniques also contribute, as well as other factors, such as age, fatigue, and physical condition.

While the hands and fingers incurred 20.40 percent of the total injuries (Table 4), 34.5 percent of these injuries occurred during handling of supplies activities. The closing of the equipment's doors on the hands or fingers occurred 13.8 percent of the time.

The use of non-powered handtools resulted in over 9 percent of the accidents, over half of them (5.4 percent) during repair work. Primarily, tools such as wrenches, pry bars, screwdrivers, and wedges can slip, and the hand and fingers are smashed between the tool and another object. Similar injuries occur when handling heavy items such as gears, motors, brake drums and cover plates, or when attempting to remove or install these same parts. The fingers are the most commonly injured parts of the body, 15.5 percent of all the accidents.

The handtool itself may not be the direct cause of the injury. As previously mentioned, when the tool slips, the miner may become unbalanced and slip or fall from the working surface. Standing on hazardous surfaces such as handrails or oily or otherwise slippery surfaces, contribute to the possibility of an accident, especially where good footing is necessary while performing a task. More serious injuries occur to the back, legs, and feet from accidents that result from these questionable work practices.

Walking or running around on the equipment resulted in 5.45 percent of the accidents. The accident reports indicate poor working surfaces (oily, greasy), careless habits (inattention to walking, jumping from one place to another), and stumbling or slipping, contributed to most of these accidents.

Persons involved in the operation or maintenance of the equipment were most frequently involved in the accidents involving these types of machines. Oilers, welders, and mechanics were involved in over 47 percent of the accidents (Table 5).

Six fatalities occurred during the 1983-1986 period. In one accident, the victim attempted to run between the tub and the moving walking-shoe of a dragline. There was approximately 2.5 feet of space. When the shoe came down on the edge of a spoilpile, it turned inward and crushed the victim. In another occurrence, a groundman was greasing the telescopic propel knuckle of a stripping shovel when a rock fell from the digging face and crushed him. A third accident occurred when a dozer operator drove his dozer in the swing radius of a dragline and was pushed over a highwall. Failure to wear seat belts contributed to the severity of the accident. In the fourth accident, a dump cable slid off of the arched hood of a dragline bucket during maintenance operations and killed a welder.

Two fatal crane accidents occurred during this time period. In one, the crane left the haul road, overturned, and trapped the victim underneath. In the other, the victim placed himself under a 60-ton counterweight to position cribbing to be used to support the counterweight. A C-link, which had been made from a modified drag link, broke and the counterweight fell and crushed the victim.

Conclusions and Recommendations

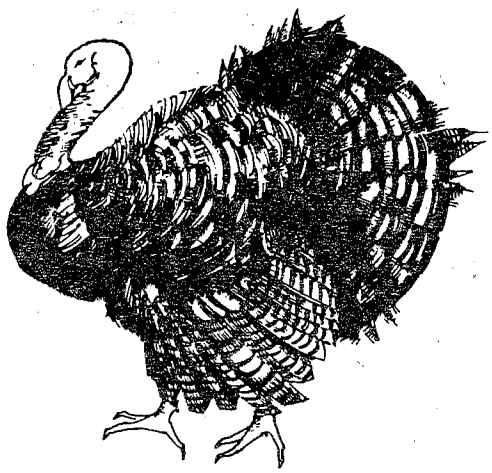
Accidents associated with the operation and maintenance of shovels, draglines, cranes and derricks are typical of those found with other types of surface mining machinery, except for those accidents peculiar to this equipment, such as rope and cable accidents, accidents involving booms, tracks and buckets, et al. Aside from the six fatalities (Degree 1), there were 21 Degree 2 accidents (permanent total or permanent partial disability). The remainder of the accidents were of lesser extent (days away from work, restricted activity, etc.).

Most of the accidents were the results of slips or falls, primarily occurring on ladders, tracks or steps. Slips and falls on the decks, catwalks, platforms or other walking surfaces were also prevalent.

Where possible, non-skid materials such as expanded, serrated, or perforated metal should be installed on walkways surfaces, ladders and steps. All walkway and climbing surfaces should be kept free of grease, oil, ice, mud and water. Unsafe mounting and dismounting practices such as carrying objects up or down ladders, and facing in the wrong direction when coming down ladders and steps should be discouraged. Ladder rungs, steps, and handrails must be kept in good repair. Manholes and other temporary access openings should be roped off or guarded with removable railings.

Handling materials accidents occurred mostly when handling supplies during machine repair activities. The primary problem appeared to be related to moving heavy parts such as hydraulic cylinders, gears, power cables, etc. The handling of heavy objects results in sprains to the back or arms due to over-exertion. The handling of lighter materials results in injuries to the fingers and hands, or to the feet if the object is dropped. Cuts, lacerations, and punctures to the hands and fingers can be eliminated or reduced in severity by wearing gloves, provided an additional hazard is not introduced by wearing them. Sharp edges or burrs on equipment should be eliminated, particularly on items that are handled extensively. Lifting electric power cables with tongs helps to reduce back injuries. Additionally, the possibility of electric shock is reduced. When lifting or carrying heavy objects, use the following guidelines:

1. **Don't do heavy lifting if tired.**
2. **Reduce work hours involved in heavy lifting tasks or rotate work assignments where possible.**
3. **Wherever possible, reduce weight and size.**
4. **Test and size up the load before lifting. Get help if needed.**
5. **Plan where load is to be placed.**
6. **Place feet so as to provide a stable lifting base.**
7. **Flex knees; use leg muscles to lift.**
8. **Keep the load close (arms close to body).**
9. **Don't twist at the moment of lift.**
10. **Pick up loads slowly.**



11. **Turn the feet, rather than the body, when turning.**

12. **When carrying, maintain a clear line of sight, particularly if going up or down stairs.**

13. **Avoid slippery surfaces.**

14. **Use lifting principles when shoveling.**

Handtool accidents indicate that most of the injuries were the result of: (1) using handtools (hammers, bars, shovels, wedges and wrenches) in an unsafe manner, (2) attempting to use tools in an awkward or unsafe work position, (3) missing the object being struck and hitting oneself or another person, and (4) striking hardened surfaces and causing metal pieces to imbed in the skin or eyes.

Handtools must be kept in safe condition. Chisels, hammers and wedges should be "dressed" and not used with mushroomed heads. Bars, wrenches and other tools that rely on torque action for their use should be used from a position of solid footing (clear of oil, grease, water, etc.) to prevent slipping. Pipe wrenches and open-end wrenches should fit snugly to prevent them from slipping. Sprung open-end wrenches should not be used. If a punch, chisel, or similar tool must be held by another person during striking, pliers or other "grasping" tool should be used as a holding device to prevent injury to the hands and fingers. Eye protection and other protective devices and clothing should be worn, where applicable, to reduce the chances of injury in case of flying pieces of metal when striking materials, such as bucket teeth, chisels and punches.

FALLING OBJECTS

When taking tools to a higher level, workers should also take precautions so those tools don't become falling objects. Don't carry the tools in your hand as you mount a ladder. Instead, use a hand line to raise a container or bucket and watch the load as it's hoisted, making sure that no one's under it.

Once you get to your workplace -- be it the top of a ladder, a balcony, platform, scaffold, roof, tank or piece of equipment -- be sure your tools (and materials) are placed where they cannot slip, roll or fall. Be particularly careful when the tools are placed on sloping or curved surfaces. And don't forget the effects of vibration — they can cause tools to move. Also keep in mind that when tools are laid down, they can become tripping hazards or be kicked onto a worker below.

It's a good idea to rope off the area beneath the overhead work and put up appropriate signs.

The following courses are available to MSHA and industry personnel:

1987 - 1988 SCHEDULE OF CLASSES

OCTOBER 1987

October 26-30
- Accident Analysis and Problem Identification (10/27-30)

NOVEMBER 1987

November 2-6
- Coal Mine Explosion Prevention (11/2-5)

November 16-20
- Accident Analysis and Problem Identification (11/17-20)
- Coal Dust Certification (11/17-18)
- Coal Noise Certification (11/18-19)

DECEMBER 1987

November 30-December 4
- Accident Analysis and Problem Identification (12/1-4)

December 7-11
- Coal Preparation (12/7-10)
- Accident Analysis and Problem Identification (12/8-11)

December 14-18
- Electricity and Permissibility for Non-Electrical Inspectors (12/14-17)
- Mine Disaster Procedures (12/14-17)

JANUARY 1988

January 4-8
- Accident Analysis and Problem Identification (01/5-8)
- Introduction to Mining (01/5-7)
- Basic Health Inspection Techniques and Procedures (01/5-14)
- Mine Electricity (01/5-14)

January 11-15
- Human Factors Engineering (01/11-14)
- Annual Retraining for Qualified Impoundment Inspectors (01/12)

January 18-22
- Mine Blasting Safety and Application Seminar (01/20-21)

January 25-29
- Health Hazard Recognition (01/26-02/4)

FEBRUARY 1988

February 1-5
- Accident Analysis and Problem Identification (02/2-5)
- Fundamentals of Human Factors Engineering (02/2-5)

February 8-12
- Courtroom Procedures (02/8-11)
- Refuse Impoundments (Qualification for Industry Personnel) 02/9)
- Instructor Training Workshop (02/9-11)

February 15-19
- National Mine Instructor Conference (02/17-19)

February 22-26
- Accident Analysis and Problem Identification (02/23-26)
- Boiler and Pressure Vessel Inspection Safety (02/23-26)
- Mine Electricity (02/23-03/03)

February 29-March 4
- Coal Fired Kilns (02/29-03/03)
- Electricity and Permissibility for Non-Electrical Inspectors (02/29-03/03)
- Mine Disaster Procedures (02/29-03/03)
- Overhead Crane Inspection (02/29-03/03)
- Haulage (Surface) (03/1-4)

MARCH 1988

March 7-11
- Accident Analysis and Problem Identification (03/8-11)
- Mobile Crane Inspection (03/7-10)

March 14-18
- Courtroom Procedures (03/14-17)
- Effective Writing (03/14-17)

March 21-25
- Coal Dust Certification (03/22-23)
- Accident Analysis and Problem Identification (03/22-25)
- Coal Noise Certification (03/23-24)

March 28-April 1
- Industrial Hygiene (03/28-31)
- Roof and Ground Control (03/28-31)

APRIL 1988

April 4-8
Electrical Permissibility (04/5-7)
Accident Analysis and Problem Identification (04/5-8)

April 11-15
Ventilation (04/11-14)

April 18-22
Roof and Ground Control for Industry (04/19-21)

April 25-29
Accident Analysis and Problem Identification (04/26-29)

MAY 1988

May 2-6
Electricity and Permissibility for Non-Electrical Inspectors (05/2-5)
Mine Disaster Procedures (05/2-5)

May 9-13
Coal Dust Certification (05/10-11)
Accident Prevention Techniques (05/10-12)
Accident Analysis and Problem Identification (05/10-13)
Effective Writing (05/10-13)
Coal Noise Certification (05/11-12)

May 16-20
Accident Analysis and Problem Identification (05/17-20)

May 23-27
Blasting (Surface) (05/23-26)
Coal Dust Control (05/23-26)

JUNE 1988

June 6-10
Refuse Impoundments (Qualification for Industry Personnel) (06/7)
Accident Analysis and Problem Identification (06/7-10)

June 13-17
Applied Communication Techniques (06/13-16)
Haulage (06/13-16)

June 20-24
Accident Analysis and Problem Identification (06/21-24)

June 27-July 1
Electricity and Permissibility for Non-Electrical Inspectors (06/27-30)
Mine Disaster Procedures (06/27-30)

JULY 1988

July 11-15
Introduction to Mining (07/12-14)
Accident Analysis and Problem Identification (07/12-15)

July 18-22
Coal Noise Control (07/18-21)
Instructor Training Workshop (07/19-21)
Instruction of Accident Prevention Techniques (07/19-22)

July 25-29
Coal Mine Ventilation (07/25-29)
Accident Analysis and Problem Identification (07/26-29)

AUGUST 1988

August 1-5
Hoisting (08/1-4)

August 8-12
Health Hazard Recognition (08/1-4)
Annual Retraining for Qualified Impoundment Inspectors (08/9)
Accident Prevention Techniques (08/9-11)
Accident Analysis and Problem Identification (08/9-12)

August 15-19
Interpretation and Application of Title I (08/15-18)

August 22-26
Coal Dust Certification (08/23-24)
Effective Writing (08/23-26)
Coal Noise Certification (08/24-25)

SEPTEMBER 1988

September 19-23
Annual Retraining Program for Electrical Specialists (09/20-23)
Instructor Training Workshop and First Aid Instructor Training (09/20-23)

For more information CONTACT:
National Mine Health and Safety Academy
Department of Resident Education
P.O. Box 1166
Beckley, West Virginia 25802-1166
Commercial # (304)256-3313

THE LAST WORD

You can help make your neighborhood safer by being observant and reporting unusual or suspicious activities to the police.

WHAT TO REPORT

Someone.....

*looking into the windows of parked cars.

*wandering around with no apparent purpose.

*carrying property such as radios, TV's, stereos, microwave ovens.

*trying to enter a car by using a coat hanger or other device.

*loitering around schools and playgrounds.

OR

*A moving van or truck parked in front of a neighbor's home.

*The sound of breaking glass.

*A child or adult being forced into a vehicle.

*Business transactions which are conducted from or in a vehicle.

*Door-to-door solicitors without properly issued licenses.

*A stranger to the neighborhood stopping to talk to a child or elderly resident.

*Someone screaming or running from a car or home.

Important Information The Police Will Need to Know:

*What happened
*When
*Where
*If anyone is hurt
*License numbers and vehicle descriptions
*Direction of travel
*Description of suspect(s)
*If there were weapons involved

REMEMBER: THE POLICE WOULD RATHER BE CALLED AND NOT NEEDED THAN NEEDED AND NOT CALLED.

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United States Department of Labor
MSHA
Mine Safety and Health Administration

HOLMES SAFETY ASSOCIATION
MEETING REPORT FORM

For the month of _____

TOTAL meetings held this month _____

TOTAL attendance this month _____

Chapter Number _____ (See address label, if incorrect, please indicate change.)

_____
(Signature)

_____
(Telephone No.)

_____
(Title)

FILL OUT - FOLD AND STAPLE - FREE MAIL-IN

NOTE: BE SURE OUR ADDRESS SHOWS

- -

If you do not care to receive this Bulletin, please check here and return this form. ☐

Please include any change of address below:

Joseph A. Holmes Safety Association

Awards Criteria--Outline

Type "A" Awards - For Acts of Heroism

The awards are medals with Medal of Honor Certificate.

Type "A" - For Acts of Heroic Assistance

The awards are Certificates of Honor.

Type B-1 Awards - For Individual Workers

(40 years continous work experience without injury that resulted in lost workdays)
The awards are Certificate of Honor, Gold Pins and Gold Decal.

Type B-2 Awards - For Individual Officials

(For record of group working under their supervision)
The awards are Certificate of Honor.

Type C Awards - For Safety Records

(For all segments of the mineral extractive industries, meeting adopted criteria)
The awards are Certificate of Honor.

Other Awards - For Individual Workers

(For 10, 20, or 30 years without injury resulting in lost workdays)
The awards are 30 years-Silver Pin and Decal, 20 years-Bronze Pin and Decal, 10 years-Decal bearing insignia.

Special Awards - For Small Operators

(Mine operators with 25 employees or less with outstanding safety records)
The awards are Certificate of Honor.

Contact: HSA Office

Department of Labor
MSHA, Holmes Safety Association
4800 Forbes Avenue
Pittsburgh, PA 15213

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