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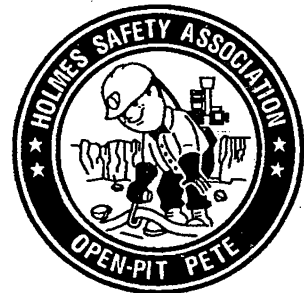
# BULLETIN


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August 1991





August 1991

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

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## KEEP US IN CIRCULATION

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

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# Welcome new members

NAME	CHAPTER NO.	LOCATION	NAME	CHAPTER NO.	LOCATION
Mikes Shale Pit .....	9225 .....	Saugerties, NY	Mon Valley .....	9251 .....	Granville, WV
Kennecott Corp. Barneys Canyon .....	9226 .....	Bingham Canyon, UT	N. A. Degerstrom .....	9252 .....	Ransay, MT
Kennecott Ut Copper/Copperton .....	9227 .....	Bingham Canyon, UT	Beal Mountain .....	9253 .....	Anaconda, MT
United Sand & Gravel, Inc. ....	9228 .....	Ogden, UT	Rebuild Shop .....	9254 .....	Raleigh, WV
Gibbons & Reed (Webb Pit) .....	9229 .....	Ogden, UT	Anker Energy Ward Tipple .....	9255 .....	Morgantown, WV
Kennecott Utah Copper Corp. ....	9230 .....	Magna, UT	London Bridge .....	9256 .....	East Bernstadt, KY
Kennecott Utah Copper Corp. ....	9231 .....	Bingham Canyon, UT	Montgomery Mine Supply .....	9257 .....	Montgomery, WV
B and R Mining .....	9232 .....	Benton, AR	J.M. Huber-Marble Falls Plant .....	9258 .....	Marble Falls, TX
Eastern Industries Inc. ....	9233 .....	Center Valley, PA	J & A Steam Cleaning .....	9259 .....	Gauley Bridge, WV
Kennecott Refinery .....	9234 .....	Magna, UT	W.R.R. Industries, Inc. ....	9260 .....	Salt Lake City, UT
Kennecott Smelton .....	9235 .....	Magna, UT	D & L Coal Co., Inc. ....	9261 .....	Lebanon, VA
UE & C - Catalytic (concentrator) .....	9236 .....	Bingham Canyon, UT	Jamb Mining, Inc. ....	9262 .....	Cedar Bluff, VA
UE & C - Catalytic (smelter) .....	9237 .....	Bingham Canyon, UT	Douglas Explosives, Inc. ....	9263 .....	Phillipsburg, PA
R & R Wash Materials, Inc. ....	9238 .....	Green Lake, WI	Douglas Explosives, Inc. ....	9264 .....	Garrett, PA
Montezuma County Road Dept. ....	9239 .....	Cortez, CO	Waukesha Lime and Stone .....	9265 .....	Waukesha, WI
Wellmore Coal Corp. ....	9240 .....	Grundy, VA	Safety - Cement Plant .....	9266 .....	Thomaston, ME
Kennecott Utah Copper .....	9241 .....	Bingham Canyon, UT	John Lane #6 .....	9267 .....	Lee, MA
ABX, Inc. ....	9242 .....	Huntington, WV	Lane Cont. Lenox Dale .....	9268 .....	Lenoxdale, MA
Appalachian Builders, Inc. ....	9243 .....	Huntington, WV	Hunn's Lake Sand & Gravel .....	9269 .....	Stanfordville, NY
Parr's Shale Bank .....	9244 .....	Saugerties, NY	City of North Adams .....	9270 .....	North Adams, MA
Donovan .....	9245 .....	Stockbridge, MA	K & B Coal .....	9271 .....	Neon, KY
Backiel's Used Equipment .....	9246 .....	Hatfield, MA	Flagrock Inc. ....	9272 .....	Flagstaff, AZ
Sugartree Bench Mtn. Mine .....	9247 .....	Ronceverte, WV	Utah Const. & Develop., Inc. ....	9273 .....	Bluffdale, UT
Hunnis Lake Sand & Gravel .....	9248 .....	Stanfordville, NY	Fire Master .....	9274 .....	Helper, UT
Oxbow Mine .....	9249 .....	Coushatta, LA			
L C & N Co. ....	9250 .....	Tamaqua, PA			

# Message from the President

It's a rare privilege when one has an opportunity to deliver his own personal message to hundreds or thousands of people. It's a trust that deserves a high degree of respect and safekeeping: I pledge to do that during my term as President of the Holmes Safety Association during 1991-92.

Before beginning the first "Message from the President" I would like to congratulate all of the incoming officers and express my appreciation for their willingness to accept their new responsibilities which are to cement the gains enjoyed by the organization and strive to make the Holmes Safety Association an even stronger entity. I also want to express my appreciation to everyone who is a member of the Holmes Safety Association and who works quietly behind the scenes to accomplish our objectives. Many of you attend council meetings on a regular basis, accept any charge, and work like Trojans to further the cause of the Holmes Safety Association. You do a great job and you must be

highly gratified knowing that you have made a substantial contribution to Mine Safety and Health, both coal and metal and nonmetal.

The message I have to offer is simply this: as you well know nothing ever stands still, we are either moving forward or backward. I would invite everyone to focus on those ideas, activities, and endeavors that will cause us to move closer to our goals this year. You have a new president and a new secretary (Bob Glatter) who are both firmly committed to safety and health in the minerals extraction industries and to the Holmes Safety Association: with your support and advice we will strive for the most successful year ever. Bob and I both are looking forward to the coming year with great enthusiasm; we want to hear your ideas and we will appreciate your advice. Bob can be reached on FTS 235-8264 or (703) 235-8264 and I can be reached on FTS 923-4277 or (304) 291-4277.

*Ronald Keaton, President, Holmes Safety Association  
1991-92*

## 1991 National Coal Mine Rescue, First-Aid, and Bench Contest

**The 1991 National Mine Rescue, First-Aid, and Bench Contest will be held at the Kentucky Fair and Exposition Center, Louisville, Kentucky, on September 9-12, 1991**

Registration of bench participants, first-aid contestants, judges, officials, and guests will begin at 1 p.m. on Sunday, September 8, 1991.

The bench contest will begin at 1 p.m. on Monday, September 9, 1991, in the East Hall, Exhibit Area A, Kentucky Fair and Exposition Center (KFEC) with isolation of the bench participants at 12 noon.

The first-aid contest will begin at 12 noon, September 9, 1991, in the East Hall, Exhibit Area B.

Preliminary mine rescue competition will begin at 8 a.m. on Tuesday and Wednesday in the East Wing of the KFEC with finalists competing on Thursday.

Entries by participants desiring to compete in the contest were due prior to July 1, 1991.

On Thursday evening, September 12, 1991, at 7 p.m., there will be an awards banquet in the Mary Queen of Scots Ballroom at Executive West featuring a prime rib dinner. Banquet tickets can be secured by contacting the MSHA District 3 Office at (304) 291-4277. Tickets purchased prior to September 1 are \$20; those purchased after September 1 are \$21.

Prior to the national competition, local contests are held throughout the country. Listed on pages 4 and 5 are previously held and scheduled contests.

# 1991 Local Mine Rescue, First-Aid, and Bench Contests

<u>Contest</u>	<u>Date and location</u>	<u>Contact and no.</u>
Smokeaters Bench Contest	May 3, 1991 Lexington, Kentucky	Larry Frisbie (606) 432-0943
Wolf Creek Collieries Underground Contest	May 11, 1991 Lexington, Kentucky	Frankie Taylor (606) 395-2038
National Mine Rescue Association Post 10 Bench Contest	May 11, 1991 Beckley, West Virginia	Rick Hickman (304) 934-5301
Southeastern Ohio Holmes Safety Kickoff Contest	May 23, 1991 New Lexington, Ohio	John Collins (614) 384-2189
Kentucky Mountain Laurel Mine Rescue and First-Aid Contest	May 31, 1991 Pineville, Kentucky	Jim Coomes (606) 337-2392
Holmes Safety Association Kanawha Valley Council Annual Mine Rescue Contest	June 1, 1991 Cannelton, West Virginia	Jerry Richards (304) 442-5245
Trinidad St. Junior College's 13th Annual Mine Rescue, First-Aid, and Bench Contest	June 8, 1991 Trinidad, Colorado	Florie Massarotti (719) 846-5502
Holmes Safety Association Coal River Council, 8th Annual Mine Rescue Contest	June 8, 1991 Madison, West Virginia	James Beck (304) 247-6266
National Mine Rescue Association Post 1 Mine Rescue Contest	June 8, 1991 Welch, West Virginia	Tyrone Coleman (304) 436-4507
Tri-State Post No. 6, 10th Annual Mine Rescue and First-Aid Contest	June 13-14, 1991 St. Clairsville, Ohio	Robert Schmidt (614) 439-5591
Middlesboro Woman's Club Mine Rescue /First Aid Contest	June 14, 1991 Middlesboro, Kentucky	Dale Halcomb (606) 573-1260
Union College Mine Rescue Contest	July 19, 1991 Barbourville, Kentucky	Burley Wright (606) 546-4188
Sixth Annual Governor's Cup Rescue Contest	July 26, 1991 Wise, Virginia	Dink Shackelford (703) 523-4200
Virginia Mining Institute Safety Day	August 1-2, 1991 Blacksburg, Virginia	Lewis Wheatley (703) 523-8228
Rocky Mountain Coal Mine Rescue Association Contest	August 8-9, 1991 Price, Utah	David Lauriski (801) 687-9821

<b><u>Contest</u></b>	<b><u>Date and location</u></b>	<b><u>Contact and no.</u></b>
Mid-State Safety Day Mine Rescue/First-Aid Contest	August 8-9, 1991 Summersville, West Virginia	Joe Cardullo (304) 649-5161
Harlan Mining Institute Mine Safety Day	August 9, 1991 Harlan, Kentucky	Ken Fee (606) 573-3400
Central/North Central Pennsylvania Association Mine Rescue Contest	August 10, 1991 Indiana, Pennsylvania	Tim Thompson (814) 533-4463
Western Kentucky Safety Day	August 14-15, 1991 Madisonville, Kentucky	Charles Wesley (502) 249-3156
Central WV Coal Mining Institute and College of Mineral and Energy Resources 41st Annual Safety Day	August 15-16, 1991 Morgantown, West Virginia	Pat Brady (304) 291-4277
Hazard Mine Rescue and First-Aid Contest	August 16, 1991 Hazard, Kentucky	Roger Reynolds (606) 436-3323
Southwestern Pennsylvania Safety Association Mine Rescue Contest	August 17, 1991 Waynesburg, Pennsylvania	Robert Newhouse (412) 627-8145
Land of Lincoln Mine Rescue Contest	August 17, 1991 Benton, Illinois	Steve Kattenbraker (618) 439-4355
1991 Tennessee Mine Rescue Contest	August 23, 1991 Caryville, Tennessee	Charles Green (615) 562-4914
Pennsylvania State Mine Rescue Contest	August 24, 1991 Waynesburg, Pennsylvania	Gerald Davis (412) 578-3788
3rd Annual Indiana Mine Rescue Contest	August 24, 1991 Washington, Indiana	Mike Stanley (618) 298-2394
Big Sandy Elkhorn Coal Mining Institute Safety Day	August 29-30, 1991 Allen, Kentucky	Bill Prater (606) 395-2039
Southern West Virginia Mine Rescue/First-Aid Contest	August 29-30, 1991 Beckley, West Virginia	Frank Legg (304) 465-1911
1991 Alabama Coal Assn. Mine Rescue/First-Aid Contest	September 5-6, 1991 Birmingham, Alabama	William Kelce (205) 822-0384

# Holmes Safety Association Monthly Safety Topic



## Fatal fall of person accident

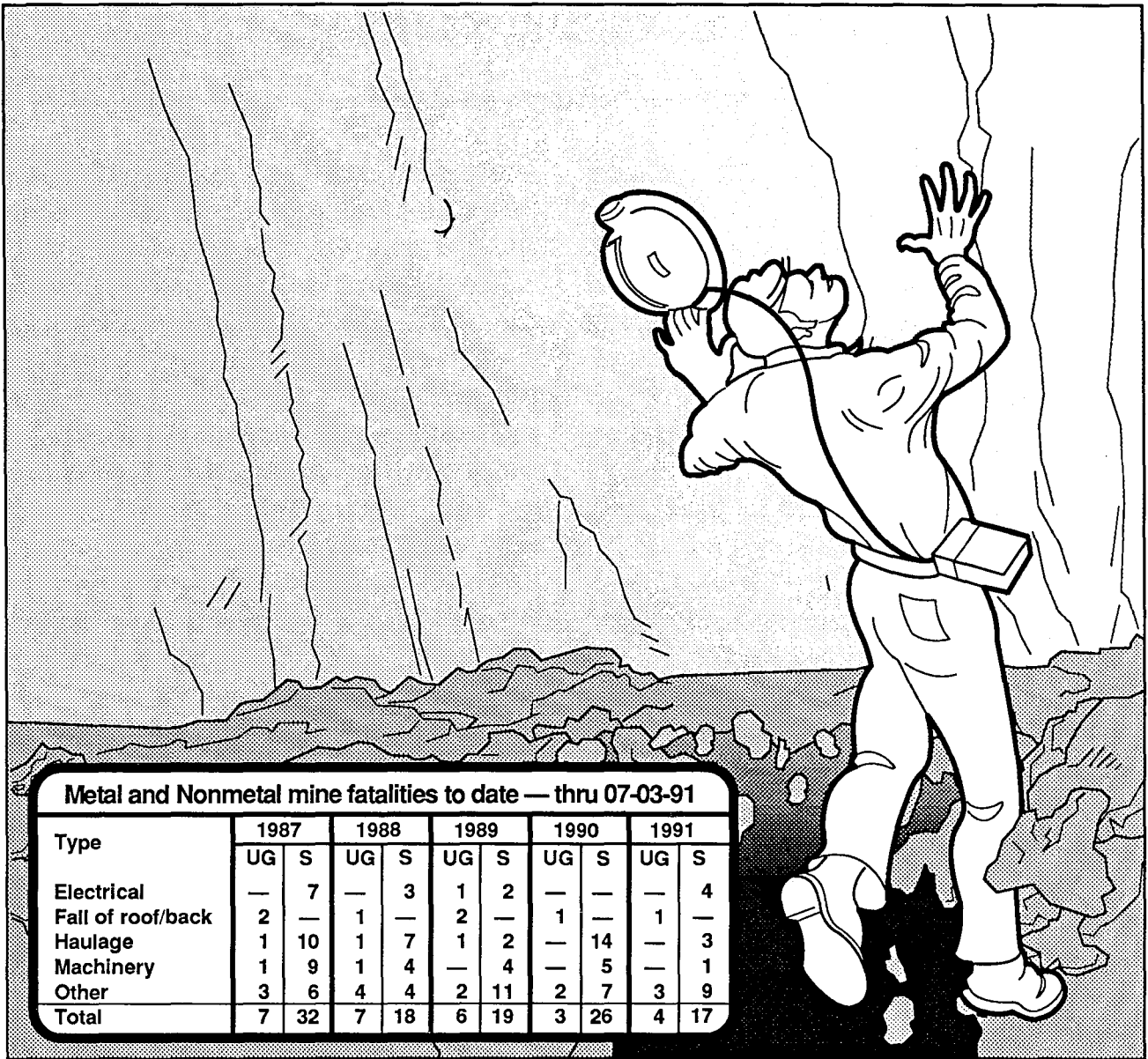
**GENERAL INFORMATION:** A 38-year-old stope miner, with 17 years of mining experience, was fatally injured when he was drawn into an ore raise after the bridged-over raise collapsed.

**DESCRIPTION OF ACCIDENT:** The victim and another miner began their shift at 8:00 a.m. They were assigned to work in the 50 E stope. They entered the stope through the secondary manway. The primary manway was blocked at the stope level from an up-cut round blasted on the previous shift. After scaling down the loose ground, they installed rock bolts in the back and ribs. An area of approximately 15 feet of the back and ribs were bolted. It became necessary to slush the remainder of loose muck to have room to finish bolting towards the primary manway.

The mine foreman stated that he entered the stope around 11:30 a.m., made an inspection of the stope, filled out the company safety check list, and had it signed by the victim (company safety check lists were standard procedures at the mine). The foreman left the stope to make arrangements to have muck pulled from the raise, which he did at approximately 1:00 p.m. when he contacted the motorman. The foreman further stated he did not know the ore raise was bridged-over until after the

accident when he was informed by the motorman.

Shortly after 1:00 p.m., seven 5-ton cars of ore were pulled from the ore raise, almost emptying the raise. The raise bridged-over near the stope sill level because of a blockage believed to be at or near the collar of the tunnel liner ore raise. The bridged-over area was later estimated to be approximately 8 feet thick directly above the tunnel liner collar. In an attempt to clear the blockage, the two miners slushed a hole in the blasted muck pile directly over the raise removing approximately 4 feet of the bridged-over muck. When this failed to drop the muck, they decided to blast (bomb) the material from below, which was company procedure. The other miner left to get explosives while the victim remained in the stope. The other miner stated that as he was getting explosives from the magazine, which was approximately 60 feet away from the chute, he heard muck fall down the raise. He returned to the stope and yelled up the manway to ask the victim if he still needed the explosives, but received no answer. He then climbed up to the stope where he discovered the raise had dropped and the victim was not in sight. Certain that the victim had fallen into the raise, he climbed down to the sill and opened the chute to empty the raise. As the



raise emptied, a hard hat came into view followed shortly by the victim who became wedged among the rocks in the chute. After an unsuccessful attempt to remove the victim, he went to summon assistance. Help arrived within a few minutes. The victim was removed and after attempts were made to revive him, he was then transported to the fire house where he was pronounced dead. The cause of death was extensive upper torso injuries caused by blunt force trauma.

**CONCLUSION:** The cause of the accident was the victim placing himself in the proximity of the ore raise collar without being tied off with a safety lanyard. The victim was wearing a safety belt but it was not tied off. The use of a platform would not have been practical due to unstable muck elevated 7 to 10 feet above the tunnel liner collar.



# Stockpiling safety

By James P. May, U.S. Bureau of Mines

A 22-year-old haulage truck driver died when he backed his truck over the top edge of a 35 ft. stockpile. A front-end loader operator died when he walked up the side of a surge pile and was drawn into the feed chute draw-hole. A 71-year-old highway truck driver died when he was engulfed by collapsing material while standing between his truck and a stockpile. Unfortunately, accidents such as these occur far too frequently. In fact, accidents involving stockpiles, waste dumps, and surge piles are responsible for a significant number of serious injuries and fatalities each year. The tragedy is that most of these accidents could have been prevented by following simple precautions and through adequate training.

## Use a safe stockpiling technique

A *good method* of stockpiling involves the haulage truck dumping its load back from the crest of the pile, with the material then being pushed over the edge by a dozer or front-end loader. This method allows for the easy construction and maintenance of berms. It also keeps the haulage truck away from the edge of the pile where it has the highest chance of being involved in an accident.

A *fair method* of stockpiling involves the haulage truck dumping its load directly over the crest of the pile. For this method to be performed safely, adequate berms must be maintained and the equipment operators well

trained regarding stockpile hazards. It is also important to routinely inspect the dump area for signs of slope instability. When using this method, insure that material is not removed from the toe of the pile where dumping is taking place.

A *dangerous method* of stockpiling involves the haulage truck dumping its load directly over the crest of a pile where material has been removed from the toe. Removing material from the base of a pile generally results in a steepened slope. A steepened slope is less stable and cannot support as much weight. This puts equipment operators working near the crest of the pile in danger of being involved in a slope failure.

An *alternative method* which is very good involves the construction of stockpiles in layers. In this method, haulage trucks dump their loads as piles on a single level. After a level is complete it is then smoothed over by a dozer and dumping continues on the next layer. The operation of the mobile equipment compacting the previous layer results in greater pile strength. The method also permits the slope angle to be maintained lower than the angle of repose—resulting in greater slope stability. It also has the added benefit of minimizing size segregation.

## Loading out at the toe

“Loading out at the toe” refers to the removal of material from the base or toe of the stockpile, normally by front-



end loaders. It often results in a steepened slope with reduced strength. This presents a hazard to the loader operators (and pedestrians) at the base of the pile who need to continuously watch for collapse of the steepened face. It also presents a hazard to equipment operators and others at the top edge of the pile who are in danger of being involved in slope failure. Loading out at the toe can result in slopes so weakened that the slope, including the berm, will fail when a truck backs up to dump. In these instances, berms provide a false sense of security to the haulage truck operator, who assumes the berm signifies a stable slope. Removing material from the base of the pile can also result in the total removal of the berm. This can allow haulage truck drivers to simply back over the edge of a pile when, unexpectedly, a berm is no longer there. When loading out at the toe:

- The loader operator should be alert to material sloughing down the pile and the fall of frozen or consolidated chunks.

- The loader operator should insure that haulage trucks don't dump at the top of a pile where the toe has been removed.

- Haulage truck drivers should routinely observe the base of the pile where they are dumping, to insure that the pile has not been over steepened by the removal of material.

### **Stay alert to signs of slope instability**

Stockpiles by their nature are only marginally stable. As material is dumped over the edge of a pile, it slides down the slope coming to rest at the angle of repose. At the angle of repose, the material is just strong enough to support its own weight. The strength of the stockpile will often increase a



certain amount from the compaction and vibration of mobile equipment operating on it. This may be apparent by the steeper slopes formed when material is removed from the base of the pile. This additional strength can be misleading, however, as an over-steepened slope may not support the weight of mobile equipment. Moisture within the stockpile will also allow the slope to stand at a steeper angle. This indication of increased slope strength is known as apparent cohesion. This strength is very unstable and may quickly disappear with an increase or decrease in moisture levels. Apparent cohesion is also vulnerable to collapse induced by equipment vibration. Freezing can also result in a temporary increase in strength. This increase in strength is highly variable and can quickly disappear with a change in the weather. In general, moisture or freezing will give a temporary indication of strength that cannot be relied upon.

**DUE TO THE MARGINAL STRENGTH OF STOCKPILES IT IS IMPORTANT TO STAY ALERT TO ANY SIGNS OF SLOPE INSTABILITY.** If one of the following warning signs appear, then the slope edge may not be safe for equipment operation: 1) cracks along the crest; 2) slumping on the slope; 3) bulging at the toe; or 4) slope steepened by loading out at the toe.

### **Haulage trucks**

**Know where your rear tires are—**When operating your haulage truck near the crest of a stockpile, **STAY ALERT.** Know where your rear tires are in relationship to the slope edge. A

surprisingly high number of stockpile accidents occur when a haulage truck is simply backed over the edge of a pile. If you are end-dumping over the crest of a stockpile, make sure that it is in a designated area with adequate berms or other impeding devices. Make sure that your mirrors are clean and properly adjusted. If you are dumping at night, there should be adequate lighting to see the edge. Test your brakes to insure that they are working properly. Don't wait until you need them to find out they're not working. When backing to the dump point, do it slowly so that you will have adequate time to react and stop before contacting the berm.

**Don't use a berm to stop your truck—**Backing through or over a berm is a common cause of stockpile accidents. A normal rule of thumb states that berm height should be equal to mid-axle height of the largest truck using the dump site (for roadways this is mandatory under Title 30, CFR, Part 56/57.9300). The berms should be constructed strong enough to survive a moderate impact; however, you should not use them to stop your truck. Berms should be used as a visual indicator of where the truck should be stopped or to provide a "feeling" of the berm as the rear tires contact it. **A BERM SHOULD BE USED FOR SPOTTING ONLY!**

**Dump at the correct area—**It is important that you only dump at a location designated by your supervisor. **IF YOU ARE UNSURE WHERE TO DUMP—THEN DON'T.** It is better to



contact your supervisor and determine the correct dumping location than to take a chance and dump at a potentially unsafe area.

**Back square to the slope edge**—If the rear tires on the side of the truck opposite the operator's compartment reach the slope edge first, the chance for an accident increases. This happens when you are watching your side of the truck and the other side unexpectedly contacts the berm. It is important to back your truck square to the edge of the slope, or at a slight angle that places the operator's side closer to the slope edge. Use the mirrors on the operator's side of the truck when backing, occasionally glancing at the far mirrors to check for correct orientation and potential obstacles.

**Back slow and brake easy**—Approach the slope edge at a moderate to slow speed when backing to dump, and apply the brakes gradually while stopping. Braking hard at the last moment substantially increases the chance of a slope failure, and decreases your reaction time to hazards that may develop. It also increases the risk that you will contact the berm too fast, going over or through the berm.

**Use caution when dumping on sloped or soft ground**—As the dumped is raised to the dump position, the center of gravity becomes higher and the truck becomes less stable. **THE DUMP POINT SHOULD NEVER BE CONSTRUCTED SO A TRUCK IS PARKED ON A DOWNWARD SLOPE TOWARD THE**



**BERM.** The dump point should be constructed level or at a slight upward incline. Maintaining the dump point at a slight upward angle (1° to 3°) allows for drainage and decreases the amount of force required to stop the truck. It also decreases the chance of tipping over backwards should material hang up in the dumpbed. **THE DUMP POINT SHOULD BE CONSTRUCTED SO THE HAULAGE TRUCK SITS FLAT, NOT LEANING TO THE SIDE.** If the sideways angle is too steep the truck is in danger of tipping on its side. This is also a problem when the dump point is soft, as the rear tires may sink as the dumpbed is raised into the dump position. Soft material will also force you to apply more power to the drive wheels when approaching the berm, complicating your ability to maintain control in this potentially hazardous area.

**Make sure your dumpbed is lowered**—When you approach the dump site, look for any overhead obstructions such as powerlines which may be in the area. After backing to the dump point, bring the truck to a complete stop and apply the parking or holding brake. Follow the procedures provided in the operator's manual for the particular truck you are operating. After dumping the load, pull out slowly. Engage the transmission before releasing the parking brake to prevent the truck from rolling backwards. Lower the dumpbed as quickly as possible. If material is hanging up in the bed, moving the truck can increase the chance for tipping over. The dumpbed should be fully lowered before leaving

the dump site and entering the haulroad.

### **Front-end loaders**

**Keep your bucket low and maintain control**—It is very important that the bucket on a front-end loader be kept low while tramming. This maintains a low center of gravity and provides better stability. It also allows for an unobstructed view of the roadway. The bucket should be tilted back and kept 15 to 20 inches off the ground. If tramming on a steep grade, go slow and keep the transmission in a low gear. This will allow you to maintain higher engine RPM and adequate hydraulic pressure for braking and steering. When going down a steep grade with the bucket full, tram in reverse. If you tram forward in this situation and apply the brakes, you could find yourself resting on the bucket with the rear wheels off the ground. Having the bucket elevated (especially when full), significantly increases the chance of tipping sideways. This can occur when tramming along a slight grade or if you inadvertently drive up along the bottom edge of a stockpile or berm.

**Use caution around other equipment**—When loading a truck, minimize the impact of material being loaded into the dumpbed. This can be accomplished by loading fine material prior to any large chunks, by tilting the bucket slowly to reduce the sudden drop of material, and, when possible, by breaking large consolidated chunks before loading. It is equally important not to strike the truck with the loader

bucket or bucket arms. Any sudden impact can cause damage to the truck and injury to the truck driver.

Watch out for the truck driver and make sure that he stays in the cab of the truck. If he must get out, then have him stand a safe distance from the slope and out of the way of equipment operation. Don't swing the loader bucket over the cab of the truck or load over individuals standing next to the truck. Keep the load area clean and, when time permits, clean up, level, and maintain berms at the top of the pile. Stay alert to other equipment that may be operating in the area and the occasional unexpected pedestrian. Keep your windows and mirrors clean and properly adjusted. If it is windy and dusty, keep the wind to your back while dumping, so dust won't obscure your vision. Finally, it is important to regularly check your backup alarm to insure that it is working properly.

**Operating tips**—The loader should always be operated perpendicular rather than parallel to the base of the pile. This places the operator compartment further from the slope where it is less susceptible to collapsing material and falling rocks. It also allows for quicker response in moving the loader should a slope failure occur.

Front-end loaders are subject to many of the same hazards as haulage trucks while operating at the top of the pile. The best method to prevent an accident at the top of the pile is to keep the loader perpendicular to and facing the slope edge. This keeps the weight of the loader further from the slope edge and lowers the chance of tipping

or leaning sideways if the edge settles. It also allows you to quickly back the loader out of danger should a hazard develop.

### **Dozers**

**Pushing material**—The power, stability, and traction of dozers can result in a false sense of security. **DON'T** become over confident in the capabilities of the dozer or in your capabilities of operating it. When pushing material over the crest of a stockpile or waste dump, stop a safe distance from the edge and use other material to bump it over. **ALWAYS MAINTAIN A BERM AT THE CREST OF THE PILE.** This will prevent you and other equipment from inadvertently going over the edge. When working or leveling the top of the pile keep track of where the edge is. Many accidents occur when the dozer unexpectedly backs over the edge of a pile.

Always work the dozer so that it is perpendicular to and facing the slope edge. This will allow a quicker response in backing from the edge should a slope failure or settlement occur. **NEVER** run the dozer along the slope edge. The weight and vibration of the machine increases the chance that a slope failure and rollover will occur. When operating parallel to the slope edge, you also have less room and time to respond in case of operator error.

**Draw points**—Stockpiles and surge piles that have material removed by underground feeders are particularly dangerous. As an underground feeder removes material, a drawhole is formed. The top edge of the drawhole

is very unstable and always near collapse. When a dozer operates close to this edge, it can induce a slope failure and slide down into the drawhole. Injuries and fatalities occur when material sloughs down on top of the dozer either crushing or suffocating the operator. **DON'T PUSH MATERIAL DIRECTLY INTO THE DRAWHOLE.** Bump it in with other material keeping the dozer a safe distance from the edge. Keep the dozer perpendicular to the draw point and use caution so that you don't back or slip into it. The location of each drawpoint should be marked (e.g., a brightly colored marker suspended above it).

Occasionally, a draw point will bridge over. This can be especially dangerous as it may be impossible to determine the exact size and location of the void under the bridged material.

The dozer operator should have a direct means of communication with plant personnel to determine which feeders are being used and the amount of material being removed. With this information and an inspection of the surge pile, it should be possible to determine if a bridge has formed. Injuries and fatalities occur when the bridged material fails under the weight of the dozer—allowing it to fall into the void. If a void is known to exist, use extreme caution. Keep the dozer a safe distance from the draw point. It may become necessary to remove material from the pile in order to safely collapse the void.

### **Pedestrians**

In most cases, and for good reasons, pedestrians are not allowed on or near stockpiles. **IF YOU MUST BE ON FOOT AND WORK AROUND A**





**STOCKPILE, NOTIFY YOUR SUPERVISOR AND ALL EQUIPMENT OPERATORS.** When possible, stay away from the toe where a danger exists of being engulfed or struck by falling material. In addition, make sure loader operators and truck drivers are aware of your presence. Equipment operators do not expect people on foot when working around the pile and they cannot be counted on to see you. In addition, most mobile mining equipment will have large blind areas where the operator is unable to see. Stay alert to backup alarms and be ready to move in a hurry if necessary.

**NEVER WALK ON A SURGE PILE WITH AN UNDERGROUND FEEDER.** You can be caught and drawn into material that is gradually being worked down by the feeder, or you can suddenly fall into a void covered by bridged material. Your weight alone is enough to cause bridged material to collapse. When the material you are standing on begins to move or collapse, it is very easy to get sucked in and trapped. You can become entrapped in material that is only knee deep and suffocate in material that is only chest deep. When buried to the chest the material will close in as you breathe in and out, packing tightly, eventually making it impossible to breathe.

### **Highway trucks**

When a highway truck driver backs up to a stockpile to get loaded, there is a good chance that he will get out of the truck. He may want to stretch his legs, go to the bathroom, or watch to see how his truck is being loaded. Unfortunately, highway truck drivers seldom

receive any safety training and are not aware of the hazards around stockpiles and mining equipment. Truck drivers should be encouraged to stay in their trucks with their seatbelts fastened. If truck drivers must get out of the truck, then make sure they stand a safe distance from the stockpile and out of the way of moving equipment. **HIGHWAY TRUCK DRIVERS SHOULD NEVER BE ALLOWED TO STAND BETWEEN THEIR TRUCKS AND THE STOCKPILE.** In addition, material should never be loaded or swung over the cab of the truck. If this must be done, then the driver must exit the truck and stand in a safe location.

### **Seatbelts save lives**

Your chance of surviving an accident is greater when you wear a seatbelt. In fact, the safest place to be during an accident is in the cab with a seatbelt on. Nearly one-half of all mobile mining equipment fatalities happen to operators who are not wearing seatbelts, or who take them off in a futile attempt to jump clear of the equipment. It is nearly always better to stay with the machine rather than attempting to jump out. A significant number of needless fatalities can be prevented by the simple act of wearing your seatbelt and by remaining within the cab.



# FOOTWEAR



is a major factor  
in the ***PREVENTION*** of  
slip and fall accidents

*Courtesy of Mines Accident Prevention Association, Ontario, Canada*

# Taking the danger out of confined spaces

**Confined space accidents kill hundreds of workers annually. Following these safety precautions could reduce that toll dramatically.**

*By Gregg LaBar*

Last May, John Rustad was working alone inside an empty tanker truck. While using a chlorine mixture to clean the 40-foot interior of a tank, he inhaled chlorine fumes and passed out. Rustad apparently had no way to signal for help, and his co-workers had no indication he was in danger. Several hours later,

he was found lying at the bottom of the tank. Rustad had been working in confined spaces regularly but had little or no protection from oxygen-deficient and hazardous chemical atmospheres.

Following its investigation, OSHA proposed \$250,700 in fines, nearly all of it directly related to confined space work, even though there is currently no federal confined space safety standard. For



the unconscious Rustad was found lying at the bottom of the tank. He died a short time later of chlorine poisoning.

After investigating the fatality, the Occupational Safety and Health Administration (OSHA) charged that the employer, Mondovi Foods Inc., a Mondovi, Wisconsin pet food company, had required workers to enter confined spaces (including truck tanks and process vessels) without instituting proper safety precautions. According to OSHA, Mondovi Foods employees worked in con-

each of the 49 alleged willful violations of the Occupational Safety and Health Act's general duty clause, the agency proposed a \$5,000 fine (a total of \$245,000). The company was also cited for one alleged willful violation of the hazard communication standard and two alleged serious violations of personal protective equipment regulations. At press time, the company was contesting the citations.

## **A national concern**

What happened at Mondovi Foods

happens all around the country. Each year, an estimated 300 workers die in accidents involving confined spaces, which the National Institute for Occupational Safety and Health (NIOSH) defines as work areas having any or all of the following characteristics:

- Limited openings for entry and exit
- Unfavorable natural ventilation
- A design not intended for continuous worker occupancy

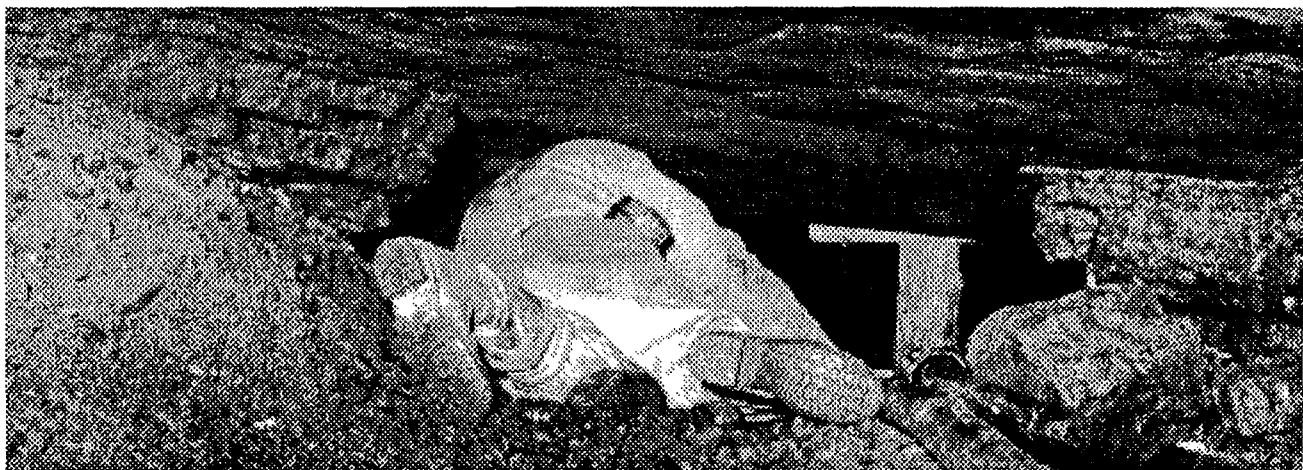
Examples include boilers, furnaces, manholes, pipelines, pits, reaction or process vessels, sewers, silos, storage tanks, and utility vaults. These are not normal work environments, but workers may be required to enter them for inspection, cleaning, maintenance, and repair purposes.

Inside confined spaces, material residue, chemical reactions, hazardous material leaks or spills, and certain types of work (welding, for example) - combined with the lack of natural air movement - can create oxygen-deficient (less than 19.5 percent oxygen), flammable, and/or toxic atmospheres. Thus, asphyxiation is the leading cause of death in confined spaces. In addition, there can be physical hazards such as temperature extremes, engulfment, noise, moving parts, slick/wet surfaces, poor lighting, and falling objects.

Because confined spaces occur in various types of work areas and industries and present a broad array of hazards, they are "one of the most dangerous" safety and health concerns in industry, said Craig Schroll, President of FIRECON, an East Earl, Pennsylvania-based training and consulting firm.

"Most of the things that kill people in confined spaces cannot be detected with the human senses until it's too late," Schroll noted. "You don't have the readily apparent hazard, such as the flames, heat, and smoke, that accompany a fire."

He said the lack of perceived hazard is a particular problem for would-be res-



cuers, who make up about one-half of confined space fatalities. "For some reason," he said, "it doesn't click in the rescuers mind that whatever put the first guy down, is going to do the same thing to him. People think they can dash in and dash out."

By definition, however, confined spaces have limited openings for entry and exit, either because of the size of the opening or because of the location. Indeed, escaping from a confined space is "not like walking out of a room," pointed out John B. Moran, director, safety and health, Laborers' National Health and Safety Fund.

Fortunately, most confined space work—about 90 to 95 percent of all jobs that require entry—is routine and occurs without incident, according to Moran, a former NIOSH director of safety research. However, when accidents do occur, the consequences tend to be severe.

Moran estimated that there is a 10-to-1 ratio of serious injuries to fatalities in confined space accidents. In contrast, he noted, the ratio of serious injuries to deaths for all other workplace accidents is in the neighborhood of 1,400-to-1.

### **Knowing what to do**

In its citations of Mondovi Foods, OSHA said that there was information available to the company (indeed, to all employers) to help it set up and maintain a comprehensive confined space safety program. The agency mentioned American National Standards Institute (ANSI) standard Z117.1-1989, "Safety Requirements for Confined Spaces," as an example. Other guidance is available in NIOSH's "Guide to Safety in Confined Spaces," OSHA's proposed rule on confined space safety (29 CFR 1910.146), and

trade association guidelines, such as those developed by the American Petroleum Institute. Some state OSHA programs—Maryland's, for example, have mandatory confined space safety standards.

FIRECON's Schroll said instituting a confined space safety program is "not that technically difficult," especially since ANSI, NIOSH, and OSHA have done much of the legwork. Still, he observed, many company efforts are "pretty shaky at best" - which is why so many fatalities, serious injuries, and near-misses occur every year.

However, at Chevron, Metropolitan-Edison Co. (Met-Ed), and Atchison, Topeka and Santa Fe (AT&SF) Railway Co., confined space safety is a priority. These companies have formal confined space safety programs, including provisions for a permit system, worker and environmental monitoring, training, and a rescue plan. They also require that contractors doing confined space work have safety programs of their own.

"We pretty much know what it takes to make confined space entries safe," said Ken Oxman, senior safety engineer at Chevron U.S.A. Inc.'s Richmond, California, petroleum refinery. "If you have a formal program, there aren't going to be many surprises."

Having a formal, written policy on confined space safety is critical according to Terry W. Krug, CIH. Krug is in charge of the industrial hygiene program, including confined space safety, for AT&SF Railway Co., Chicago. Krug, who has taught confined space safety at the OSHA Training Institute, said such a program should include a definition of what the company considers to be a confined space.

With NIOSH's definition as a guide-

line, AT&SF Railway, which operates a freight railway system between Chicago and California, defines a confined space as a work area that has limited means of egress, is not designed for continuous employee occupancy, and has the potential to contain a hazardous atmosphere. AT&SF Railway's work areas which meet this criteria include tank cars, sludge pits, sewers, and manholes.

Confined spaces can further be defined as work areas that have the potential for engulfment by loose particulate matter and have inwardly tapering walls or sloped or tapered floors so that a person is prevented by the structure of the area from escaping on his own. That's the added criteria used by Met-Ed, which operates an electric power generating station in Portland, Pennsylvania. Examples of confined spaces at the plant include steam-to-water condensers, storage tanks, boilers, and pits, said James Jones, Met-Ed's station director.

Work areas identified as confined spaces should be marked "OFF LIMITS" to passersby through the use of warning signs, barricades, and/or secured entrances, Jones said. Such markings, combined with training in the hazards of confined spaces,

are designed to prevent unauthorized entry, he said.

Ensuring the safety of people working in confined spaces requires considerably more effort. A permit system is needed, according to Jones, to document and control confined space entries.

At Chevron, AT&SF, and Met-Ed, permits for confined space entry are issued by a foreman, supervisor, or other management official. According to Met-Ed's Jones, permits should contain the names of the entrants and standby person, the reason for entry, and the duration of the permit (usually one or more 8-hour shifts).

Permits should also specify what atmospheric and physical conditions must be considered before confined space work is allowed to proceed. Among our respondents' recommended considerations are the percentage of oxygen in the space, concentrations of toxic substances, use of intrinsically safe equipment in explosive atmospheres, and locking or tagging out of valves and motors, which if accidentally started, could put entrants in danger of being cut or crushed.

"The permit should be reminding people what kinds of things to check," Schroll





said. "Not everything will apply to every space."

With the permit specifications in hand, workers or other trained personnel at the worksite can then assess the current conditions of the confined space. Ideally, Krug said, atmospheric monitoring should be done at the top, middle, and bottom corner of the space.

If a confined space falls within the parameters for entry set by the permit, or if the hazards can be controlled through the use of ventilation, respirators, or personal protective equipment, the confined space entry and work can proceed. If not, the job supervisor should not allow the work to begin until the permit's requirements have been met.

"Confined space entry is a go/no-go system," according to Ted Tomczak, OSHA's project officer for the proposed confined space safety standard. "If the numbers fall in the right range, people can go in. If not, they don't. [Without a program], you might have some managers taking a calculated risk by allowing the job to proceed."

Chevron, AT&SF Railway, and Met-Ed all require that there be a trained attendant outside the confined space while work is going on. The attendant needs to have a means of communication with those inside, as well as with supervisors or rescuers who may need to be summoned to the scene. The designated attendant, our respondents stressed, should not enter a confined space unless he is replaced at the site by another attendant. These three companies also have provisions for monitoring the work environment and/or the workers. In many cases, especially where there is a potential for oxygen deficiency, monitoring should be

continuous, the experts said.

AT&SF Railway requires that all confined spaces, no matter what the hazards, be monitored continuously while work is going on. Krug's reasoning: "Things can change fast, even before the next round of periodic monitoring." For example, he said, a cleanup operation may stir up dust or residue that was undisturbed and undetected prior to entry.

If environmental conditions exceed permitted parameters, or if workers complain of feeling dizzy or ill at any time during the confined space work, they should exit immediately, Krug said. Work should not resume until the permitted conditions have been met.

### Training

Being part of a confined space safety program—either as a permit issuer, entrant, attendant, or rescuer—is not a responsibility to be taken lightly. And it certainly is not for the uninitiated, which is why our respondents put so much emphasis on their confined space training efforts.

"As part of our training program, we review some of the horror stories from OSHA's 'Fatal Facts,'" said Bob Atrz, Met-Ed's Supervisor of station training. "It's amazing, but in almost every case, there was no formal training program."

"A little bit of knowledge in this area can cost you your life," AT&SF Railway's Krug said. Like other respondents, he advocated a confined space training program where the amount and type of training depend on the person's job and previous experience.

For example, Krug recommended that managers who issue permits have at least 24 hours of initial training. He said that

they need to understand the science of confined space safety, the mechanics of the permit and monitoring systems, and the capabilities and limitations of entrants and rescuers.

In Krug's opinion, entrants need one to three days of initial training to become familiar with the warning signs of unsafe conditions and the use of monitoring devices and personal protective equipment.

FIRECON's Schroll said confined space permit issuers should have at least one day of intensive confined space-specific training. Entrants/attendants, meanwhile, need at least one-half day, he said.

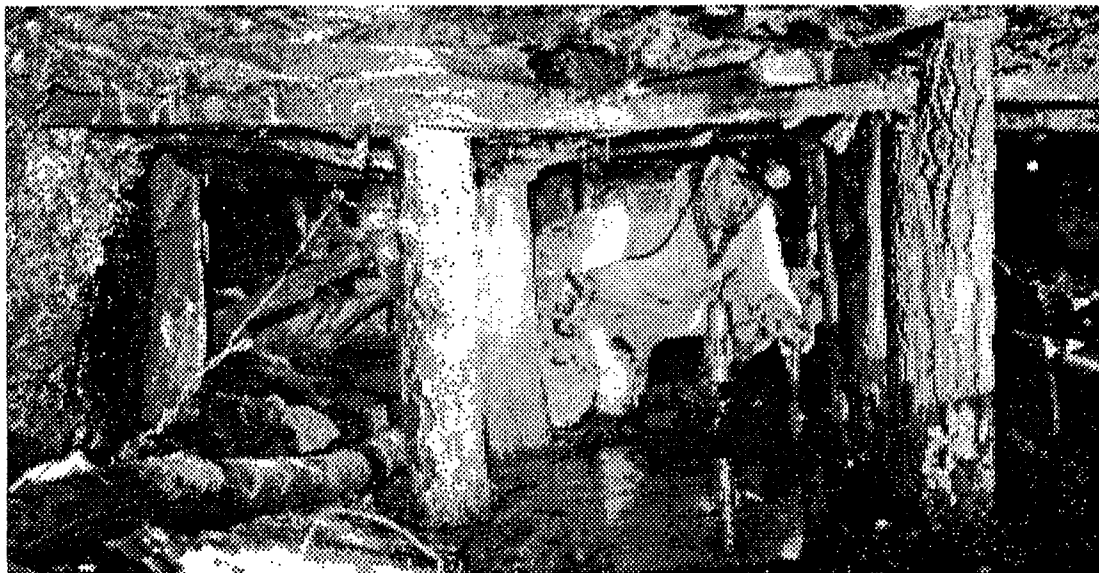
Another respondent, Michael Roop, president of Roco Corp., a Baton Rouge, Louisiana-based safety consulting and training company, said the training required for entrants and attendants should be different. He said attendants need the

ception is he's just standing there with nothing to do."

In reality, says Roop, the attendant is responsible for knowing what's going on inside the space without having the benefit of actually observing the space and for ensuring that external hazards, such as motor vehicles, do not affect the space. He also has to stay in contact with the entrants and the foreman, and may need to decide when a job should be stopped or when help is needed. Thus, Roop contends, attendants need a minimum of 8 hours of training.

Entrants, Roop said, can learn everything they need to know in 2-4 hours, provided they've already had personal protective equipment and hazard communication training. He said entrants need to know four basic things:

- How to recognize hazards,
- How to maintain communication



more extensive training.

"The attendant has an awesome responsibility," Roop said. "Unfortunately, in many workplaces, it's not unusual for the least skilled person to be picked to serve as an attendant because the per-

with the attendant,

- How to use personal protective equipment, and
- How to initiate self-rescue, using a ladder, for example.

Krug recommended that training be



spread out over a couple of sessions throughout the year rather than scheduling all training at one particular time of the year. This helps keep confined space safety in employees' minds and prevents the training from becoming burdensome. After the initial training, he said, the periodic followup could be shorter, depending on the competency and experience of the people involved.

The heavy toll on would-be rescuers concerns FIRECON's Schroll, who notes that it is not unusual for more than one person to be killed while attempting to rescue a coworker. Therefore, even though designated emergency responders or rescuers are seldom called upon, they need the most intensive training, according to Schroll.

"Rescue is a very demanding skill, physically and mentally," he said. "It requires practice time and the ability to make decisions. Rescue is the kind of thing that if you can't do it real well, or real fast, you may as well not do it at all. It becomes body recovery."

Schroll said in-plant rescue teams need five days or more of training in the hazards, equipment, and rescue techniques used for confined spaces. In addition, these people should also have taken a first-responder course, and have exten-

sive training in the use of respirators.

Roco's Roop said rescue team members need to be trained in working together, leadership, and decision-making. For example, "You have to know when an external entry will work and is safer," said Roop, whose company can dispatch a "confined space response team" to a site to ensure safety during planned entries and effect rescue procedures if necessary.

According to Chevron's Oxman, confined space rescue is a bit of a "specialty" for emergency responders. At Chevron, some 40 plant protection professionals are certified emergency medical technicians and specially trained in confined space rescue techniques.

Rescue is the part of the confined space safety program that you hope you never need; but if you have it, it indicates that you have a comprehensive confined space safety program, our sources said. Like rescue specifically, confined space work in general must be done well and efficiently, or not done at all. Otherwise, it may become, as Schroll put it, "body recovery."

*Reprinted from the February 1991 issue of Occupational Hazards magazine.  
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## Substance (ab)use

Of the exotic and not-so-exotic substances available, the list grows daily, those which are common household words may be the most dangerous. **Substance abuse** may be the phrase which becomes self-defeating in the universal struggle to control **substance use**.

Tobacco and beverage alcohol products are legal in most jurisdictions. The legal status is often self-defeating. Published research overwhelmingly charges these legal products as the most costly in dollars and human suffering.

Illegal substances are properly attacked

by government, religion, community, and family. At the same time, a wink of approval is given to legal substances which are usually the drugs of introduction to the illegal substances. And, when not an introduction to illegal substances, often the threshold to tragedy.

A call has gone out for zero fatalities by the year 2000. Every effort must be made to achieve this goal. Success can come only if bold and difficult decisions are pioneered in the nation's mines.

Recent studies show that children in grades 7-12 simply follow parental example in the use of drugs. The 1989-90

Youth Survey of 223,663 South Carolina public school students shows:

<u>Percent</u>	<u>Alcohol</u>	<u>Marijuana</u>
Never used .....	47.8 .....	85.8
Used at home .....	18.6 .....	1.7
Used at friend's home ....	17.4 .....	5.6

For a zero fatality mining year, it may be necessary for each miner, beginning now, to devote the remaining years of the 90's to breaking the habit of:

- A. Impairing themselves**
- B. Dealing to children**
- C. Encouraging future fatalities**

*Robert Floyd, Midlands Technical College, Columbia, S.C.*

## **Lonnie Gore, Jr. is honored**

### **The Eighth Annual State Holmes Safety Council extends well deserved recognition for his continuous service to the association**

Lonnie Gore, Jr. was born on April 14, 1951, at Holden, West Virginia. He grew up in Holden and was educated in the schools of Logan County where he excelled in sports and scouting.

After graduating high school in 1969, he entered the coal mines. In 1970 he went to work for Island Creek Coal Co. as a roof bolter trainee at the Pond Fork operation. In 1973 he was promoted to section foreman. In 1974 he joined the Safety Department and became a member of Island Creek's Holden Mine Rescue Team. In 1976 he went to work for Cannelton Industries as safety manager of the Indian Creek Division and was captain of their mine rescue team. During this time, he became very active in the Post 10 Smokeaters as well as other safety-related organizations such as West Virginia Coal Association, Safety Exchange Information Group, and the Holmes Safety Association (HSA). He remained with Cannelton until 1981 when he accepted the position as safety

trainer at Tug Valley Coal Processing Company.

In late 1981, he formed and trained two mine rescue teams. In their first year of competition, they won the National Novice Team Award.

He was past president and secretary/treasurer of the Aracoma District Council of the HSA and has served since 1985 as treasurer of the West Virginia State Council. Also, he has served on the State Council Executive Committee since 1984 and on the National HSA Executive Committee since 1989. He is currently serving as president of the Post 10 Smokeaters and is a past secretary/treasurer of Post 10. In addition to these endeavors, he is a full-time minister.

He has quietly served the interests of health and safety in the mining industry and consistently provided support and encouragement to the HSA at the local, state, and national levels.

# Holmes Safety Association Monthly Safety Topic



## Fatal roof fall accident

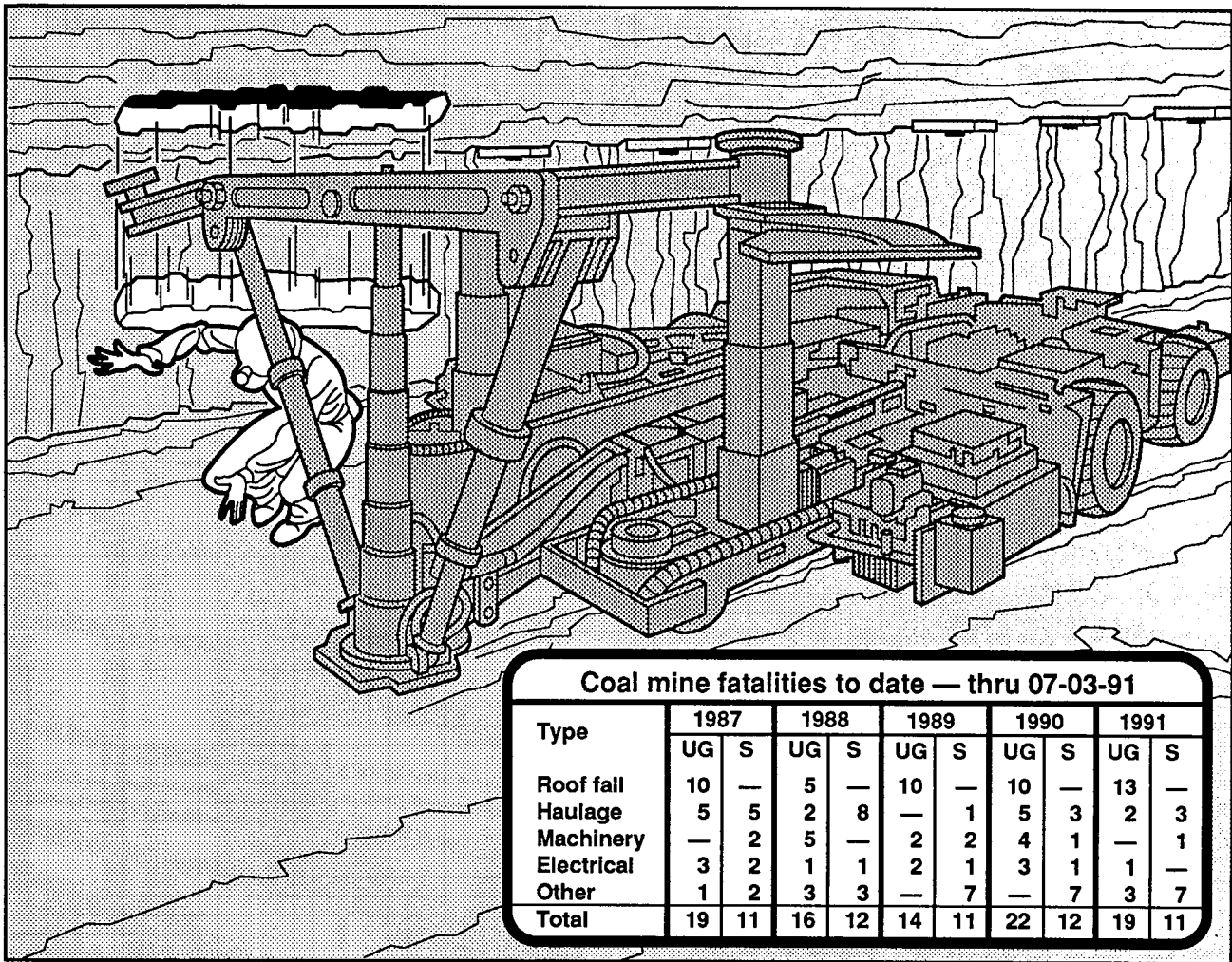
**GENERAL INFORMATION:** A 44-year-old roof bolter with 15 years of mining experience, 7 years with this company as a roof bolter operator, was killed in a roof fall accident. The mine produces an average of 650 tons per day with one continuous miner section, working one shift per day, 5 days per week. The total number of employees is 20, with 13 classified as underground and 7 surface.

**DESCRIPTION OF ACCIDENT:** The day shift for the South Mains Section entered the mine at their usual starting time of 7:00 a.m. The crew, supervised by the mine foreman, proceeded to the section, arriving at about 7:20 a.m. The foreman conducted a safety meeting and gave instructions to the crew to mine nos. 36 and 37 pillar blocks. The first cut of the primary split was mined from the no. 36 block; the continuous miner then moved to the no. 37 block. The roof bolting machine then began bolting the unsupported cut in no. 36 block. At this time, the foreman was called to the surface. He notified the electrician (a certified mine foreman) that he was going outside.

During this time, the first cut in no. 36 block was roof bolted. The first cut in the no. 37 block was completed, and a second cut mined in no. 36 block. The continuous miner was then reposi-

tioned to remove the second cut in the no. 37 block, as the roof-bolting crew prepared to support the second cut removed from the no. 36 block.

The victim, and another roof bolter, positioned the roof-bolting machine in the cut in the no. 36 block. The other roof bolter was operating the right side drill head and the victim was operating the left side drill head. The other roof bolter and the victim installed the outside (rib line) roof bolts in the first row and swung the drill heads inward to install the two inside roof bolts. According to the other roof bolter, at approximately 10:45 a.m., as he was drilling the second roof-bolt hole, he heard a rock fall. He turned and saw the victim pinned between the rock and drill boom. He ran around the rear of the roof-bolting machine and saw that the victim had pushed himself clear of the rock and had fallen to the mine floor with his head toward the rib. He stated that the fallen rock was resting against the drill boom, at an angle toward the left rib line where the victim had fallen. He yelled for help and noticed that the rock was positioned so that it still posed a hazard and could strike the victim again. He maneuvered the roof bolter so that he could lift the rock and flip it over and in by the ATRS, thereby removing any further threat to the victim.



The mine foreman, who had just returned to the section from outside, was told that the victim was hurt. He, along with crew members, rendered first aid and administered CPR to the victim as he was transported to the surface. The rescue squad transported the victim to the hospital, where he died.

**CONCLUSION:** The fatality occurred because an undetected loose piece of cap rock fell between the outby edge of the ATRS and the canopy over the drill controls, just inby the last row of roof bolts, striking the victim as he was changing drill steels. Contributing factors could have been that, (1) according

to testimony, sound and vibration tests were not conducted prior to roof bolting; (2) a smaller than required canopy was provided over the drill controls; and (3) a slip, present in the mine roof outby the row of bolts being installed, was not supported with boards which would have provided additional bearing surface against the roof.

# First aid



## Medical emergencies—Part two

### Diabetic emergencies

Diabetes is the inability of the body to appropriately metabolize carbohydrates. The pancreas fails to produce enough of a hormone called insulin. The function of insulin is to take sugar from the blood and carry it into the cells to be used. When excess sugar remains in the blood, the body cells must rely on fat as fuel. Since blood sugar is a major body fuel, when it cannot be used, diabetes develops.

When the blood sugar level becomes too high because of too little insulin in the blood, diabetic coma, or ketoacidosis, may occur. Meanwhile, the cells, deprived of sugar, begin to use fats for fuel. Use of fat results in the production of acids and

ketones as wastes. The ketones give the victim's breath a fruity odor.

The opposite condition, insulin shock, can result when a person with diabetes has taken too much insulin or has not eaten. The blood sugar level drops dangerously low, and the victim becomes weak and disoriented, or unconscious.

Both of these conditions can be fatal unless something is done to reverse them.

### First aid

**LOW blood sugar** (insulin reaction or *hypoglycemia*)

#### *Symptoms:*

- Sudden onset
- Staggering, poor coordination

- Anger, bad temper
- Pale color
- Confusion, disorientation
- Sudden hunger
- Sweating
- Eventual stupor or unconsciousness

**Action to take:**

*Provide sugar!* If the person can swallow without choking, offer any food or drink containing sugar, such as soft drinks, fruit juice or candy. Do not use diet drinks when blood sugar is low. If the person does not respond in 10 to 15 minutes, take him/her to the hospital.

**HIGH blood sugar** (*hyperglycemia* or acidosis)

**Symptoms:**

- Gradual onset
- Drowsiness
- Extreme thirst
- Very frequent urination
- Flushed skin
- Vomiting
- Fruity or wine-like breath odor
- Heavy breathing
- Eventual stupor or unconsciousness

**Action to take:**

Take this person to the hospital. If you are uncertain whether the person is suffering from high or low blood sugar, give some sugar-containing food or drink. If there is no response in 10 to 15 minutes, this person needs immediate medical attention.

## Epilepsy

### Types of seizures

Epileptic seizures may be convulsive or nonconvulsive in nature, depending on where in the brain the malfunction takes place and on how much of the total brain area is involved.

Convulsive seizures are the ones that most people generally think of when they hear the word "epilepsy." In this type of seizure, the person undergoes convulsions

that usually last from 2 to 5 minutes, with complete loss of consciousness and muscle spasm.

Nonconvulsive seizures may take the form of a blank stare lasting only a few seconds, involuntary movement of an arm or leg, or a period of automatic movement in which awareness of one's surroundings is blurred or completely absent.

Since these seizure types are so different, they require different kinds of action from a first aider, and some require no action at all. The table on pages 30-31 describes seizures in detail and how to handle each type.

### First aid

An uncomplicated convulsive seizure due to epilepsy is not a medical emergency, even though it looks like one. After a few minutes it stops naturally, without ill effects. The average victim is able to resume normal activity after a rest period and may need little or no assistance in getting home.

However, several medical conditions other than epilepsy can cause seizures. These require immediate medical attention and include:

- encephalitis
- meningitis
- heat stroke
- poisoning
- pregnancy
- hypoglycemia
- high fever
- head injury

The following guidelines are designed to help people with epilepsy avoid unnecessary and expensive trips to the emergency room, and to help you decide whether or not to call an ambulance when someone has a convulsive seizure. Do not call an ambulance if:

*Please continue on page 32*

## Seizure: recognition and first aid

Seizure type	What it looks like	What it is not	What to do	What not to do
<b>Generalized Tonic-Clonic</b> (also called grand mal)	Sudden cry, fall, rigidity, followed by muscle jerks, shallow breathing or temporarily suspended breathing, bluish skin, possible loss of bladder or bowel control, usually lasts a couple of minutes. Normal breathing then starts again. There may be some confusion and/or fatigue, followed by a return to full consciousness.	Heart attack  Stroke	Look for medical identification. Protect from nearby hazards.  Loosen tie or shirt collars. Protect head from injury. Turn on side to keep airway clear. Reassure when consciousness returns. If single seizure lasted less than 5 minutes, ask if hospital evaluation is wanted. If multiple seizures, or if one seizure lasts longer than 5 minutes, call an ambulance. If a person is pregnant, injured, or diabetic, call for aid at once.	Don't put any hard implement in the mouth.  Don't try to hold tongue, it can't be swallowed. Don't try to give liquids during or just after seizure.  Don't use artificial respiration unless breathing is absent after muscle jerks subside, or unless water has been inhaled.  Don't restrain.
<b>Absence</b> (also called petit mal)	A blank stare, lasting only a few seconds, most common in children. May be accompanied by rapid blinking, and/or some chewing movements of the mouth. Child is unaware of what's going on during the seizure, but quickly returns to full awareness once it has stopped. May result in learning difficulties if not recognized and treated.	Daydreaming  Lack of attention  Deliberate ignoring of adult instructions	No first aid necessary, but if this is the first observation of the seizure(s), medical evaluation should be recommended.	
<b>Simple Partial</b>	Jerking may begin in one area of the body, arm, leg, or face. Can't be stopped, but patient stays awake and aware. Jerking may proceed from one area of the body to another, and sometimes spreads to become a convulsive seizure. Partial sensory seizures may not be obvious to an onlooker. Patient experiences a distorted environment. May see or hear things that aren't there, may feel unexplained fear, sadness, anger, or joy. May have nausea, experience odd smells, and have a generally "funny" feeling in the stomach.	Acting out, bizarre behavior  Hysteria  Psychosomatic illness  Parapsychological or mystical experience	No first aid necessary unless seizure becomes convulsive, then first aid as above.  No action needed other than reassurance and emotional support. Medical evaluation should be recommended.	

## Seizure: recognition and first aid

Seizure type	What it looks like	What it is not	What to do	What not to do
<b>Complex Partial</b> (also called psychomotor or temporal lobe)	Usually starts with a blank stare, followed by chewing, followed by random activity. Person appears unaware of surroundings, may seem dazed and mumble. Unresponsive. Actions clumsy, not directed. May pick at clothing, pick up objects, try to take clothes off. May run, or appear to be afraid. May struggle or flail at restraint. Once pattern is established, the same set of actions usually occur with each seizure. Lasts a few minutes, but post-seizure confusion can last substantially longer. No memory of what happened during the seizure period.	Drunkenness  Intoxication on drugs  Mental illness  Disorderly conduct	Speak calmly and reassuringly to patient and others. Guide gently away from obvious hazards.  Stay with person until completely aware of environment.  Offer to help getting home.	Don't grab hold unless sudden danger (such as a cliff edge or an oncoming car) threatens.  Don't try to restrain.  Don't shout.  Don't expect verbal instructions to be obeyed.
<b>Atonic Seizures</b> (also called drop attacks)	A child or adult suddenly collapses and falls. After 10 seconds to a minute he/she recovers, regains consciousness, and can stand and walk again.	Clumsiness  Normal childhood "stage"  In a child, lack of good walking skills  In an adult, drunkenness, acute illness	No first aid needed (unless an injury was sustained in the fall), but the child should be given a thorough medical evaluation.	
<b>Myoclonic Seizures</b>	Sudden brief, massive muscle jerks that may involve the whole body or parts of body. May cause person to spill what they were holding or fall off a chair.	Clumsiness  Poor coordination	No first aid needed, but should be given a thorough medical evaluation.	
<b>Infantile Spasms</b>	These are clusters of quick, sudden movements that start between 3 months and 2 years. If a child is sitting up, the head will fall forward, and the arms will flex forward. If lying down, the knees will be drawn up, with arms and head flexed forward as if the baby is reaching for support.	Normal movements of the baby  Colic	No first aid, but a doctor should be consulted.	



1. Medical identity jewelry or card identifies the person as epileptic, and
2. The seizure ends in less than 10 minutes, and
3. Consciousness returns without further incident, and
4. There are no signs of injury, physical distress, or pregnancy.

Call an ambulance if:

1. The seizure has happened in water.
2. There is no medical identity jewelry or card and no way of knowing whether the seizure is caused by epilepsy, and
3. The seizure continues for more than five minutes. Setting a 5-minute limit on a seizure of unknown origin before calling for emergency assistance (as opposed to 10 minutes if medical identification is worn) is a precaution based on the possibility that epilepsy may be causing the convulsion.

If an ambulance arrives after the person has regained consciousness, you should ask the person whether emergency room care is wanted. The same questions should be asked of a person without medical identification whose seizure lasts less than 5 minutes and for whom an ambulance has not yet been called.

## Asthma

Asthma results from a narrowing of the airway bronchial tubes, causing breathing difficulty, especially while exhaling. Wheezing is a whistling, high-pitched sound produced by air forced through a constricted airway. Not all wheezes involve asthma.

### Common signs and symptoms

- Breathing difficulty while exhaling
- Wheezing or whistling sound
- Tense, frightened, nervous behavior
- Bluish skin color in severe attacks due to lack of oxygen

- Preference for sitting up (since it is easier to breathe)

### First aid

In most cases, the first aider can do little more than recognize asthma and, if needed, obtain medical assistance. Provide the following for the victim:

Comfort and reassure victim, since emotional stress can make the condition worse.

Many asthmatics carry tablets or inhalers that relax bronchial spasms. Help them in using these medications.

Help the victim into a comfortable breathing position that he or she chooses. The best position is usually sitting upright.

Place the victim in a room that is as free as possible of common offenders (e.g., dust, feathers, animal hair). It should also be free of odors (e.g., tobacco smoke, paint).

Keep conversations with asthmatics brief since they are struggling to breathe.

Increase the drinking of water if possible. Seek medical attention, for:

1. Severe prolonged asthma attacks
2. Reactions happening after an insect sting or contact with another source that produces an allergic reaction, which could progress to anaphylactic shock
3. Failure to improve with medication
4. Breathing that can barely be heard
5. Increasing bluish skin color
6. Pulse rate of more than 120 beats per minute

## Medical emergencies quiz

### Diabetic emergencies

Mark each action yes (y) or no (n).

*Which of the following actions should you take when a diabetic emergency occurs?*

1. Look for medical alert tag on the person's wrist or neck.

2. Give a conscious diabetic several glasses of diet drink.
3. Wait 30 minutes to see if the person's condition improves.
4. Give a conscious diabetic anything containing sugar if there is any doubt about which diabetic emergency is involved.

### **Epilepsy**

**Mark each action yes (y) or no (n).**

*Which of the following actions should you take when a convulsive seizure happens?*

1. Put a "bite stick" or other hard implement between victim's teeth.
2. Hold the victim down.
3. Give some water during or just after a seizure.
4. Look for medical identification.
5. Loosen tight clothing around the neck (e.g., tie).
6. Turn on side to prevent choking.
7. Person in a seizure lasting longer than 10 minutes should be taken to the emergency room.
8. Take victim to emergency room if multiple seizures occur.

### **Asthma**

**Mark statements true (t) or false (f).**

*Which of the following actions apply when treating a person suffering from an asthma attack?*

1. In most asthma cases, a first aider can do little except obtain medical assistance if needed.
2. Don't give water because of possible choking.
3. A vaporizer may be helpful.
4. Inhaling aerosol medication can be effective.
5. The best position for the victim is usually lying down on one side.
6. Keep the victim talking since it keeps the air moving into the lungs.

**ANSWERS:**

*Diabetic emergencies* 1. Y 2. N 3. N 4. Y

*Epilepsy* 1. N 2. N 3. N 4. Y 5. N 6. N 7. Y 8. Y

*Asthma* 1. T 2. T 3. F 4. T 5. F 6. F

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## **PPE - the last line of defense**

Does your workplace rely too heavily on personal protective equipment (PPE) to protect workers from hazards? The answer is "Yes" if there is not enough consideration given to engineering or administrative controls to eliminate or reduce hazards at their source or block them along the path before they reach the worker.

PPE should be the last line of defense, used when engineering and administrative controls fail to reduce hazards. There are many examples in the mining industry of both types of controls. Rotating work so as to reduce the time a worker is exposed to a haz-

ard (such as radiation) is an example of an administrative control. Examples of engineering controls include: noise and dust reducing control booths for crusher operators; isolating compressors from work areas; local dust or fume collecting ventilation where material is transferred or chemicals are mixed; substituting existing chemicals with safer ones; and building enclosures around processes or equipment.

It is a misconception that these types of controls are always more expensive than PPE. Engineering controls are often one-time costs. An effective PPE program, on the other hand, involves

fitting workers and training them in the use and maintenance of the equipment, enforcing use, and maintaining and/or replacing worn or disposable equipment. If you add to that the cost of injuries where PPE proves to be less effective than other controls, the PPE program may not turn out to be such a great deal after all.

So look around your workplace in areas where PPE is required. Is there a better, practical way to control the hazard? If you think so, talk about it with your supervisor or joint health and safety committee.

*Courtesy of Mines Accident Prevention Association, Ontario, Canada, June 1991.*

## Memorial statue

The Joseph A. Holmes Safety Association, Coal River Council, is proposing a Memorial Statue dedicated to all past, present, and future coal miners in Boone County, West Virginia. This bronze statue of a coal miner will be 7'-2" tall and will serve as West Virginia's first memorial to coal miners. We are proposing this statue

be located at the Courthouse in the city of Madison—the seat of Boone County.

We are proposing that this memorial be unveiled and dedicated on September 2, 1991. We are making plans to have several dignitaries on hand for the dedication, and the public is cordially invited to attend.

## JAH/HSA safety meetings concluded

The most successful National Council Meeting in recent years was held at the Pipestem State Resort Park at Pipestem, West Virginia on May 29 & 30, 1991. Over 200 people attended this year's conference. Ten Hero Awards and one Certificate of Honor was approved for acts of individuals who risked their lives in saving or attempting to save others. The Bulletin will feature these in future issues.

The Safety Awards Committee approved twenty-two Type B-1 (40 Year) Awards, eight Type C Awards and twenty-five Special (Small Operator) Awards. There was a significant number of Type C and Special Awards that were approved based on information provided by the Mine Safety and Health Administration's Safety and Health Technology Center located in Lakewood, Colorado. A Special Award was given for exemplary progress in reducing the accident/injury rate for Usubelli Coal Company in Alaska.

Leland Payne, Green River Council, Owensboro, Kentucky, was selected as "Man of the Year" for his outstanding work in reviving the Green River District

Council, promoting the First Annual Safety Conference in the western Kentucky/southern Indiana area and promoting the National Council programs in that region.

Jan Irvin, Scotty Groves District Council, Waynesburg, Pennsylvania, was selected as "Woman of the Year" for her efforts and enthusiasm that resulted in increased attendance at the District Council meetings and support of Pennsylvania state programs.

Merit Awards recipients were:  
John Matty, Tunnelton Mining Co.  
Gene Jones, Tunnelton Mining Co.  
Michael Hancer, Florence Mining Co.  
Kenneth S. Barish, Florence Mining Co.  
Lonnie Gore, Jr., Marrowbone Development Corp.

Secretary's Special Recognition Awards for exceptional assistance provided to the national secretary during the past year were presented to :

Donna Schorr	Joseph Pavlovich
Ival Van Horne	Jon Montgomery
Paul Belanger	Ray Saunders
Joe Parks	

# Notice to all District Councils

From time to time there is a need for the National Office to communicate with the District Councils. Names and addresses for the newly elected officers for most of the District Councils have not been updated for several years. We want you to be a part of this organization and to receive your ideas and input. It is also necessary to have the officers'

names and addresses updated each year so that we know who to notify on matters relating to the District Council Competition Awards. Please take a minute and complete the form below and return it to: Holmes Safety Association, c/o MSHA-EPD, 4015 Wilson Boulevard, Arlington, VA 22203-1984.



Name of district council: \_\_\_\_\_

Location or area represented: \_\_\_\_\_

Contact person: \_\_\_\_\_ Telephone: \_\_\_\_\_

Official mailing address: \_\_\_\_\_

\_\_\_\_\_

Annual date of election of officers: \_\_\_\_\_

List the names and addresses of the officers currently serving:

President: \_\_\_\_\_ Secretary: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Vice president: \_\_\_\_\_ Vice president: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Other officers: \_\_\_\_\_

Title: \_\_\_\_\_ Name: \_\_\_\_\_

Title: \_\_\_\_\_ Name: \_\_\_\_\_

\_\_\_\_\_

# The last word...

A kindergarten class visited the local police station and saw the photos of the 10 most wanted men. One child pointed to a picture and asked if it really was the picture of the person wanted. "Yes," replied the policeman. "Well," inquired the youngster, "why didn't you keep him when you took his picture?"

"Keep both feet on the ground and you'll be less likely to jump to a conclusion."

"Compromise is the art of cutting a cake so that everybody believes he or she got the biggest piece."

"The fact that you'll never reach perfection is no excuse for aiming at less."

"The only nice thing about being imperfect is the joy it brings to others."

"Most folks will accept criticism they think is meant for someone else."

"The trouble with some folks is that instead of putting on their thinking cap, they put a cap on their thinking."

"Politician: Someone who approaches every subject with an open mouth."

"Take care of your pennies, and the dollars will take care of your heirs and the lawyers."

"Enthusiasm is what enables some folks to die of old age without ever having seemed old."

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

**REMINDER:** The District Council Safety Competition for 1991 is underway – please remember that if you are participating this year, you need to mail your quarterly report to:

Holmes Safety Association Bulletin  
c/o Educational Policy and Development  
4015 Wilson Boulevard, Room 531  
Arlington, Virginia 22203-1984

Phone: (703) 235-1400

