Slips, Trips and Falls

AR 2012

DMME

Division of Mineral Mining

It Doesn’t Take Much…

- Since the beginning of 2008, 14 miners have died from injuries sustained in falls at M/NM mines. Several were wearing a harness and lanyard, but the lanyard was not attached properly. In other cases harnesses were not utilized when they should have been.
- Other examples:
  - Several workers fell through temporary openings in decks or open hatches.
  - Several others fell because the materials they were standing on were not capable of holding them.
- Always take precautions when working from elevated locations. Mine operators must provide substantial work platforms, handrails, fall protection equipment and other means to reduce exposure to fall hazards. Miners must utilize these things as well as inspect their work areas for hazards. As the record shows, when it comes to fall hazards, **“It doesn’t take much…”**

Slips & Falls Remain a Top Cause of Injuries and Deaths

- Nationally, there were three fatalities due to falls at M/NM mines in 2011.
- Slips and falls have been a leading cause of serious injury in Virginia for the past several years. Fortunately, none in 2011, however, 6% of reportable injuries in 2011 were due to slips and falls and 14% of reportable injuries in 2012.

Fall Protection

- 30 CFR Part 56.15005
  - Safety belts and lines shall be worn when persons work where there is a danger of falling. A second person shall tend the lifeline when bins, tanks or other dangerous areas are entered.

* Safety belts are not permitted in Virginia.

Safety Harnesses
4 VAC 25-40-1740

- A safety harness with a (attached) line shall be worn when persons work where there is danger of falling.
- ***Use of safety belts is prohibited in Virginia.***

Wear Harnesses Properly

- Bend the knees and back slightly while adjusting the straps, when you straighten up, the harness will fit snuggly.
- Be especially sure the leg straps are positioned and adjusted properly.
- Make sure the rings are in the right place.
- Your pockets should be empty.

Fall And Rescue Training

- Training should not stop with the proper way to wear a harness. It should include instruction on what to do after the fall, both, for the individual in the harness and those whose job it is to get the victim down.
- The fall victim must be gotten down as quickly as possible in order to avoid a potentially fatal condition know as “suspension trauma”. Simply calling 911 and waiting for help to arrive may take not be enough.

Suspension Trauma

- Hanging motionless in the harness will cause blood to pool in the legs. Also, the harness leg straps may contact a key pressure point not allowing the blood to circulate.
- This can result in symptoms similar to shock; feeling faint, sweating, pale skin, nausea, dizziness and loss or “graying” of vision.
- If unchecked, it can lead to unconsciousness and even death.
- Those already unconscious, or injured so that they cannot move their legs, are most at risk.
- Symptoms may start in less than 5 minutes, unconsciousness in as little as 10 minutes, though usually 15 minutes or more.

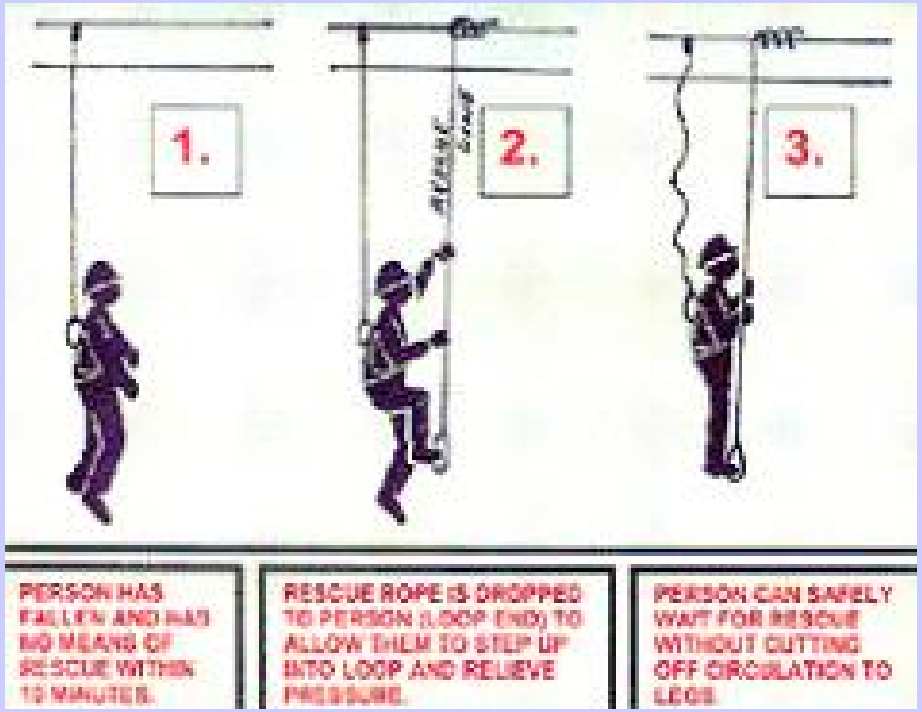
Shown here, are a stepping sling and foot loops that can help prevent the blood from pooling in the legs.

Prevention

- Straps/slings like those shown on this, and the previous, slide will help relieve pressure on the harness leg straps and allow the person to flex the leg muscles.
- Flexing the leg muscles, and/or bringing the legs up to a sitting position, is key to preventing suspension trauma. Simply pumping the legs up and down can help significantly.

From The MSHA Web Site

If a rescue can not take place in 10 minutes then you must relieve the harness leg strap pressure as quickly as possible by taking the body weight off the leg straps. As a preventative measure, "Rescue Ropes In Buckets" are recommended at all mine site locations where fall protection is used. The "rescue rope" is a simple and effective method for relieving the pressure from the harness leg straps by allowing the person to step up into the loop of the rescue rope to shift weight and relieve the pressure until rescuers arrive.



A miner in New York state suggested this to his company and to MSHA.

Rescue/Treatment

- A victim should be released from suspension ASAP. Plans/equipment should be available to accomplish this within 5 to 15 minutes (rescue kits, self rescuers, man-lifts, etc.). It is better to lower the person rather than lift them, if possible.
- If blood has pooled in the legs, the sudden release of this un-oxygenated blood back to the heart can be life threatening (remember being taught to slowly release a tourniquet?). Kidney damage is another possibility. Once on the ground, do not lay the person down. The upper body should be kept raised to 30 degrees or more. A sitting, crouching or squatting position is best. The victim should be kept in a sitting position for 30 minutes. In the meantime, belts and other restrictive clothing should be loosened and emergency personnel summoned.
- The above depends on the absence of other life threatening injuries or conditions.

Discuss Potential Consequence

- Foreman & miner clearing blockage in jaw crusher feeder.
- What could happen?

Scaffolds & Work Platforms

4VAC25-40-2010

- Substantial construction.
- Handrailing.
- Toeboards.
- Maintained in good condition.

Construction and Maintenance of Structures

4 VAC 25-40-365

- Structures shall be of substantial construction and maintained in safe condition.
- In recent years several miners have fallen to their deaths because of deteriorated structure or walkway materials.

Openings In Walkways

4 VAC 25-40-1920

- Where impractical, warning signs must be posted.

- Openings above, below, or near travelways where fall hazards exist must be protected by:
  - railings
  - barriers
  - covers

Hazardous Walkways
4 VAC 25-40-1950 & 1960

Walkway cleared of ice & snow as required.

- Slippery walkways must be provided with cleats and handrails.
- Regularly used walkways and travelways must be sanded, salted or cleared of snow and ice as soon as practical.

Debris To Be Cleared, Safe Access Provided

• Ladders, stairways, walkways and ramps shall be kept free of loose rock and extraneous materials.

(4 VAC 25-40-1880)

• Safe means of access shall be provided and maintained to all work locations.

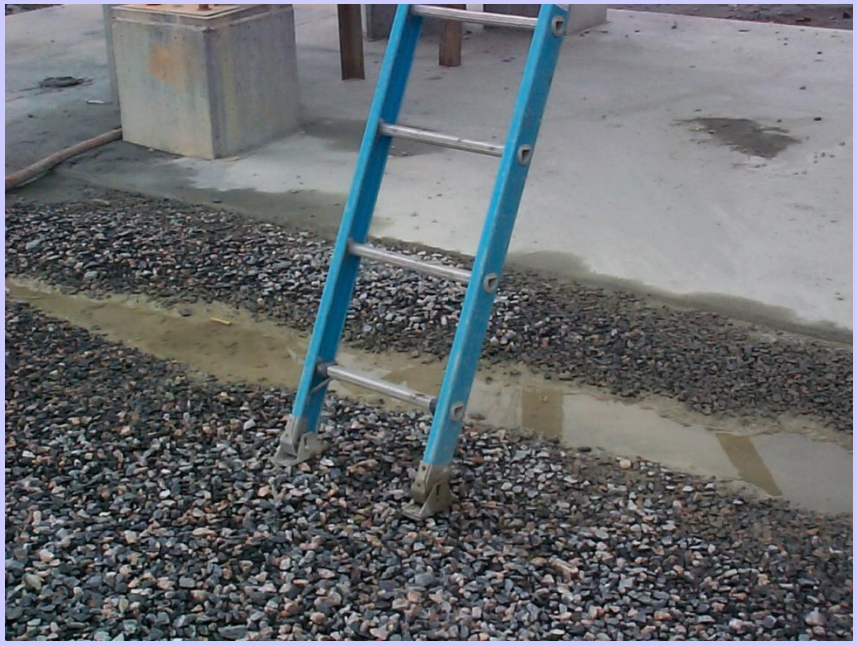
(4 VAC 25-40-1810)

Fixed Ladder Requirements

- Substantially built, and kept in good condition. (4VAC25-40-1830).
- Project 3 feet above landings or handholds provided (4VAC25-40-1860).
- Provided with fall protection, backguards (4VAC25-40-2000).
- Must be anchored securely and provide at least 3 inches of toe clearance.

Portable ladders

4 VAC 25-40-1840



Portable straight ladders must be:

- provided with non-slip bases.
- placed against safe backing.
- set on secure footing.

* Wooden ladders never painted!!


DANGER
WATCH FOR FALLING MATERIAL
FIRE
EXTINGUISHER
EMERGENCY CONVEYOR STOP
DANGER
FLAMMABLE MATERIAL
NO SMOKING
OR OPEN FLAMES
KEROSENE

Mounting/Dismounting Equipment

• A number of accidents have occurred as a result of falling while getting on or off equipment. In fact, the majority of injuries to equipment operators are due to this.

• Face ladders and keep your hands free for climbing.

Loader Operator Fall Accident

Miner seriously injured when he fell while dismounting.

Contractor Service Technician Injured

- Equipment service contractor technician broke his foot when he fell from the truck fender to the ground below.

Plant Trip/Fall Accident

Miner tripped & fell while carrying 40 lbs. bag on stairs.

Water Truck Driver Slip/Fall Accident

- The miner fell while climbing down the embankment to open a water-line valve to fill the water truck.
- Steps & hand-railing were not provided.

And On It Goes….

Virginia Department of Mines Minerals and Energy

DMM Safety Alert:
Use of Fall Protection

In June 2007, a miner was seriously injured when he fell fifteen feet to a concrete pad located below the platform he was working from (see the photograph). Numerous other miners have been injured or killed in falls from varying heights. Head first falls from as little as three feet have resulted in serious injuries. The Virginia Division of Mineral Mining safety regulations require a safety harness with an attached lanyard be worn when working where there is a danger of falling (4VAC25-40-2550). To avoid injuries from falls, always evaluate your work area prior to starting work. At a minimum, ask yourself the following questions:

- Does the work height pose a fall hazard?
- When working from lower heights, does the work position present a head first fall hazard?
- Is there a suitable point to secure the safety harness lanyard?

If your answers indicate the need, then use a safety harness and lanyard!!

Miner fell from platform in top center of photograph

Falls from stationary equipment, mobile equipment and travelways continue to be a leading cause of injuries at mineral mines in Virginia.

Va. Dept. of Mines, Minerals and Energy, Div. Of Mineral Mining, 900 Natural Resources Dr., Suite 400, Charlottesville, Va. 22903, 434-951-6310

And On….

Virginia Department of Mines Minerals and Energy

DMM Safety Alert:

Slips, Trips and Falls

Injuries from slips, trips and falls from mobile equipment, stationary equipment and travelways continue to occur frequently at Virginia mine sites. In August 2007, a miner was seriously injured at an underground mine when he fell twenty five feet as he descended the shaft ladder. This is the second serious injury accident resulting from a travelway fall since June 2007, when a miner fell fifteen feet from a crusher walkway. The Virginia Division of Mineral Mining safety regulations require mine operators to establish certain safeguards intended to prevent accidental falls, including:

- Openings above, below or near travelways that present a fall hazard must be protected by railings, barriers or covers unless it is impractical, in which case warning signs or signals must be posted (4VAC25-40-1920).

- When climbing or descending a fixed or portable ladder on mobile equipment, stationary equipment or other travelways you must face the ladder with both hands free for climbing (4VAC25-40-1910).

- All personnel shall examine their active workings for unsafe conditions prior to starting work and frequently thereafter (4VAC25-40-460).

Underground mine shaft where recent accident occurred.

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And On….

Virginia Department of Mines Minerals and Energy

DMM Safety Alert:
Falls From Mobile Equipment

In September 2008, a night shift haul truck driver was seriously injured when he fell from the top of the access ladder on his Caterpillar 769D haul truck. The miner had stopped the truck and was preparing to descend the ladder when he fell approximately seven feet to the ground. The miner was hospitalized for treatment of five broken ribs, a broken bone in his shoulder and a dislocated shoulder. This is one of the most common types of accident involving mobile equipment. The following Virginia Safety And Health Regulations For Mineral Mining are specifically intended to prevent this type of accident from occurring:

- Illumination sufficient to provide safe working conditions shall be provided at all active workings, structures, and travelways **(4VAC25-40-200)**.
- Machinery and equipment shall be maintained in accordance with manufacturer's specifications (this includes all steps and handrails)**(4VAC25-40-360)**.
- Mobile equipment that is to be used during a shift shall be inspected by the equipment operator. Safety defects shall be reported to the certified foreman and corrected before the equipment is used (this, too, includes steps and handrails)**(4VAC25-40-145)**.
- Persons climbing or descending ladders shall face the ladders and have both hands free for climbing (maintain three points of contact) **(4VAC25-40-1910)**.
- Fixed ladders shall be anchored securely and installed to provide at least three inches of toe clearance **(4VAC25-40-1850)**.

➢ **Equipment operators must keep their shoes clean and in good condition, as well as steps and walkways, to minimize the risk of slips, trips and falls!**

Virginia Division Of Mineral Mining, 900 Natural Resources Dr., Suite 400, Charlottesville, VA 22903, 434-951-6310, www.dmme.virginia.gov/dmm

And On

Virginia Department of Mines Minerals and Energy

DMM Safety Alert:

Trips and Falls (Slips, Too)

In May 2009, a contractor employee was seriously injured as he attempted to step over a silt fence that was located between an equipment parking area and an employee parking area. A section of the fence was partially loose and only 22 inches high as opposed to its normal 30 inches, and had become a travelway between the 2 parking areas. While crossing the fence, the injured worker caught his right foot in the fence, stumbled and fell. He landed hard on the side of his right foot, breaking both the tibia and fibula, and tearing ligaments in his right ankle. The employee was transported to the hospital where he underwent surgery for his injuries. At present, it is anticipated that he will have to stay off the foot for 6 weeks and may be off work for 6 months. Injuries from slips, trips and falls continue to be a major cause of accidents at mine sites both in Virginia and nationwide. To avoid these types of accidents, all miners are reminded of the following safe practices:

- Areas containing trip and fall hazards that cannot be removed, should not be used as travelways.

- Always maintain sure footing and good balance when climbing over or around objects. Handholds (railings) should be provided where there is a potential hazard/risk of falling.

- **Virginia Safety and Health Regulation for Mineral Mining 4 VAC 25-40-1810 states, "Safe means of access shall be provided and maintained to all work locations."**

- **From May 2007 to May 2009, half (5 of 10) of all serious injury accidents in Virginia were in the "slips, trips and falls" category.**

Virginia Division Of Mineral Mining, 900 Natural Resources Dr., Suite 400, Charlottesville, VA 22903, 434-951-6310, www.dmme.virginia.gov/dmm

And On

Virginia Department of Mines Minerals and Energy

DMM Safety Alert:

Miner Falls From Haul Truck

On November 11, 2010, a haul truck operator with 33 years of mining experience was seriously injured when he fell while climbing the access ladder to the cab of a Caterpillar 777D haul truck. As the miner reached out to grab the handrail near the top of the ladder, his hands slipped and he lost his balance and fell to the ground. The miner, who suffered a separated shoulder, a broken elbow, and two broken ribs, was initially treated at the site by emergency medical technicians and then airlifted to a hospital, where he was admitted for treatment and observation.

Over the past several years, accidents involving slips and falls have been one of the top three causes of injuries to Virginia's mineral miners. Mobile equipment operators are most often injured as they are climbing onto or off of the equipment.

To prevent these types of accidents, the Virginia Division of Mineral Mining recommends the following:

- Always maintain three points of contact while climbing ladders.
- Whenever climbing up or down a ladder, always face the ladder and keep both hand free for climbing.
- Make sure that your footing and hand-holds are secure when climbing. Take your time!
- Keep ladders in good condition and free of obstructions.
- Make sure ladders are free of oil, grease, mud, etc. that might cause a slip and/or fall.
- Keep shoes clean and in good condition to minimize the risk of slips and falls.

Scene of this serious injury.

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WHAT CAN YOU DO?

- If something is creating a potential slip, trip, or fall hazard fix it (clean it up - move it).
- Place signs to warn others of the potential hazard.
- If you can not fix it – Report it to your supervisor.
- Wear Fall protection when called for. Attach it and wear it properly.

Slips, Trips & Falls Summary

- Inspect work area & structures prior to start of work to ensure safe working conditions.
- Use properly secured safety harness when working where a fall hazard exists.
- Ladders, stairways, walkways and ramps shall be kept free of loose rock and extraneous material.
- Slippery walkways shall be provided with cleats and handrails.
- Report unsafe conditions and warn others.