Mine Safety

PREAMBLE

Mine safety is a broad term referring to the practice of controlling and managing a wide range of hazards associated with the life cycle of mining-related activities. Mine safety practice involves the implementation of recognized hazard controls and/or reduction of risks associated with mining activities to legally, socially and morally acceptable levels. While the fundamental principle of mine safety is to remove health and safety risks to mine workers, mining safety practice may also focus on the reduction of risks to plant (machinery) together with the structure and orebody of the mine.

INCIDENT

Coal Miner Dies in 4th Mining Fatality of 2018

More Mining Deaths Prompt Calls for Safety Stand-Downs

In 2006, the deaths of two more West Virginia coal miners yesterday which brought the state's mining death toll which 16 prompted Gov. Joe Manchin to call for a statewide mine safety stand-down.

"This means that starting with the current shift, and each new shift after that, the mine companies, supervisors and the miners themselves are to engage in a thorough review of safety procedures before any work is to continue," Manchin said. He added that the Mine Safety and Health Administration has agreed to send additional inspectors to West Virginia to respond to what MSHA Administrator David Dye called "the unusually high number of mine fatalities" in the state this year.

Dye asked coal mines across the country to conduct a stand-down for safety on Feb. 6. While 2005 was the safest year for mining on

record, **so far this year 16 in West Virginia, two in Kentucky and one miner from Utah have died for a total of 19.**

"I am asking miners and management at every mine operation to do the right thing: Take 1 hour out for safety's sake this Monday and stand down for safety, to be proactive in preventing future accidents and saving lives," Dye said. "This Monday, we urge that extra time be taken, at the beginning of each shift and before the start of any mining activity, to go over the hazards involved with mining and the vital safeguards that need to be taken."

MSHA said it will send packets of safety information to stakeholders for discussion at coal mines as well as post information regarding the safety stand-down on its Web site.

Manchin said that there were incidents at three separate coal mines yesterday at two underground mines and one surface mine. The two fatalities occurred at Elk Run Coal Co.'s Black Castle Mine and Long Branch Energy's No. 18 Tunnel Mine, according to MSHA.

In response to yesterday's mining fatalities, United Mine Workers of America President Cecil Roberts urged union coal mines in West Virginia "to undertake a meticulous inspection of their mines." Roberts said the Long Branch Energy mine is represented by UMWA.

If operators of union mines fail to cooperate with inspections, Roberts added, "the union will consider taking further action under the authority of the union's collective bargaining agreements with the operators."

"We support Gov. Manchin's call for a stand-down of mines in West Virginia until there is a thorough review of safety procedures," Roberts said. "At non-union mines, that means the governor will have to rely on the word of the operator that the mine has carried out his directive. The UMWA will be taking that a step further at union mines with the order for a full safety inspection."

Today, in 2020 Gov Joe Manchin is still in office in West Virginia as a strong advance of the Coal industry. But fatalities in coal mining operations still occur across the USA and elsewhere in the world.

BUSINESS / REGULATORY

The Mine Safety and Health Act of 1977, MSHA is required to inspect underground coal mines in their entirety at least four times per year to safeguard miners. However, a **lack of resources** during a period of increasing mining activity, as well as agency officials not placing "adequate resources on ensuring the inspections completed," contributed to the agency's failure to complete the required inspections.

According to a report released by the Labor Department's Office of the Inspector General (OIG), MSHA failed to conduct the required inspections at 107 of the nation's 731 underground coal mines in 2006.

The obvious conclusion to draw is that if more resources (money) was allocated for safety inspections in America's underground real mines, more of the dead miners may still be alive. There were 19 deaths in the coal sector 2005.

This part 50 implements sections 103(e) and 111 of the Federal Coal Mine Health and Safety Act of 1969, 30 U.S.C. 801 et seq., and sections 4 and 13 of the Federal Metal and Nonmetallic Mine Safety Act, 30 U.S.C. 721 et seq., and applies to operators of coal, metal, and nonmetallic mines.

- It requires operators to immediately notify the Mine Safety and Health Administration (MSHA) of accidents, requires operators to investigate accidents, and restricts disturbance of accident related areas.
- This part also requires operators to file reports pertaining to accidents, occupational injuries and occupational illnesses, as well as employment and coal production data, with MSHA, and requires operators to maintain copies of reports at relevant mine offices.
- The purpose of this part is to implement MSHA's authority to investigate, and to obtain and utilize information pertaining to, accidents, injuries, and illnesses occurring or originating in mines.
- In utilizing information received under part 50, MSHA will

develop rates of injury occurrence (incident rates or IR), on the basis of 200,000 hours of employee exposure (equivalent to 100 employees working 2,000 hours per year).

The incidence rate for a particular injury category will be based on the formula:

IR = (number of cases x 200,000) divided by hours of employee's exposure.

MSHA will develop data respecting injury severity using days away from work or days of restricted work activity and the 200,000-hour base as criteria. The severity measure (SM) for a particular injury

SM = (sum of days x 200,00) divided by hours of employee exposure. Immediate

Immediate notification.

The operator shall immediately contact MSHA at once without delay and within 15 minutes at the toll-free number, 1-800-746-1553, once the operator knows or should know that an accident has occurred involving:

(a) A death of an individual at the mine;

(b) An injury of an individual at the mine which has a reasonable potential to cause death;

(c) An entrapment of an individual at the mine which has a reasonable potential to cause death; or

(d) Any other accident.

Investigation.

(a) After notification of an accident by an operator, the MSHA District Manager will promptly decide whether to conduct an accident investigation and will promptly inform the operator of his decision. If MSHA decides to investigate an accident, it will initiate the investigation within 24 hours of notification.

(b) Each operator of a mine shall investigate each accident and each occupational injury at the mine. Each operator of a mine shall develop a report of each investigation. No operator may use Form 7000-1 as a report, except that an operator of a mine at which fewer than twenty miners are employed may, with respect to that mine, use Form 7000-1 as an investigation report respecting an occupational injury not related to an accident. No operator may use an investigation or an investigation report conducted or prepared by MSHA to comply with this paragraph. An operator shall submit a copy of any investigation report to MSHA at its request.

Each report prepared by the operator shall include:

(1) The date and hour of occurrence;

(2) The date the investigation began;

(3) The names of individuals participating in the investigation;

(4) A description of the site;

(5) An explanation of the accident or injury, including a description of any equipment involved and relevant events before and after the occurrence, and any explanation of the cause of any injury, the cause of any accident or cause of any other event which caused an injury;

(6) The name, occupation, and experience of any miner involved;

(7) A sketch, where pertinent, including dimensions depicting the occurrence;

(8) A description of steps taken to prevent a similar occurrence in the future; and

(9) Identification of any report submitted under §50.20 of this part

STATISTICS

Coal mining is one of the most dangerous job in America. Explosions in coal mining have killed thousands of workers. Even

though safety regulations and technology have improved to reduce injuries and fatalities, accidents still occur.

2008 – 2018

· Over 400 people died in this period.

2018

· Fatalities fell marginally from 15 to 12

2017

- 27 people died in mining facilities in 2017
- There were 4,035 non-fatal injuries in mining facilities in 2017
- There are 1,216 currently active coal mines

2016

- 25 U.S. miners died at work.

2012

- There were 1,871 coal mines and 137,650 miners.
- In 2012, 20 people died in work-related accidents in coal mines.
- There were 3,459 injuries reported in 2012.
- Of the reported injuries, 2,331 resulted in days off work.
- The Mine Safety and Health Administration issued 139,770 citations to coal mine operators.

2011

- There were 1,973 coal mines and 143,437 miners.
- In 2011, 21 fatalities occurred in coal mines.
- There were 3,923 total injuries reported, an increase compared to 2010.
- Of the total injuries, 2,601 resulted in lost work days.
- The Mine Safety and Health Administration issued 156,802 citations to coal mine operators.

2010

- In 2010, there were 1,944 coal mines and 135,500 miners.
- Of those miners, 48 died due to fatal workplace injuries.
- There were 3,766 total injuries reported in 2010.
- Of the total injuries, 2,532 resulted in lost work days.

PREVENTION

The mining industry can be risky business, with health serious risks. It is important for miners to be protected.

The introduction of strict safety legislation, as well as advances in safety equipment, the industry has seen its fatality rate drop over time.

The following steps will advance the safety of miners

1. **Coal dust**

   - Dust inhalation or coal dust is one of the most common concerns for miners.
   - The ongoing inhalation of coal dust can cause what is known as ‘miner’s lung’ or ‘black lung’. Miner’s lung is a form of the occupational lung disease group pneumoconiosis. Symptoms include shortness of breath and scarring of lung tissue, which causes ongoing respiratory issues.
   - Black lung has been legally enforced for many years now but new cases still occur among coal miners.
   - Mining companies need to develop a dust control plan, and supervisors must ensure that dust control systems are working properly for every production shift.
   - Mine workers must be trained on the hazards of over-exposure to coal mine dust.
   - Respiratory protection should be used when dust control protection is being installed, maintained or repaired.

2. **Noise**

   - The potential for hearing damage is serious with the constant drilling and heavy machinery.
   - Many people don’t notice the damage to their hearing until long after they were first exposed to the noisy environment,

as most damage occurs very slowly.

- “Over-exposure to excessive noise can result in tinnitus (ringing in the ears), sleep disturbances, concentration problems and even permanent hearing loss.
- Mining companies need to evaluate working conditions and noise exposure through risk assessments.
- Avoiding and reducing exposure can be achieved by applying engineering controls at the noise source or along the noise path to reduce exposures.
- Regular maintenance of machines is essential to reducing noise.
- Employer must ensure proper use of personal hearing protection amongst noise-exposed employees.
- Provide necessary health and safety training and maintain up-to-date health surveillance records.

3. Whole body vibration

- Whole body vibration (WBV) is a slow forming physical hazard that occurs to mining workers.
- WBV can be caused either by spending a lot of time sitting on machinery, which is most of the time in mining extraction, or by standing, such as working on jumbo operators.
- Some forms of vibration are ok, but become dangerous when they involve uneven surfaces, vehicle activity such as ripping versus pushing material in a bulldozer, and engine vibrations.
- Symptoms of WBV include musculoskeletal disorders, reproductive damage in females, vision impairment, digestive problems and cardiovascular changes.
- Reducing exposure does reduce health risks and the first step that mining should companies take. This includes filling in potholes on unmade roads, minimizing the transport of goods or materials, or replacing manned with unmanned machines such as remotely controlled conveyors.
- Where risks cannot be avoided, supervisors need to reduce the time employees use the machine each day.
- Instruction and training are critical.

- Symptoms of back pain in employees must be closely monitored.

4. UV Exposure

- There is risk of over-exposure to UV (ultraviolet) radiation in sunlight for pit-miners.
- Over exposure of ultraviolet rays can put you at risk of skin cancer. UV rays cause melanomas to form, but they can cause serious damage to your eyes if you are not wearing protective eye wear.
- Overexposure to the sun can cause dehydration, headaches and nausea.
- Mine workers often spend whole days out in the baking hot sun, and are at a very high risk of developing cancer and eye problems.
- Employers should conduct a risk assessment on outdoor work scheduled to assist in developing appropriate sun protection measures.
- The effective way to reducing UV exposure is to use a combination of re-organizing work to avoid the UV peak of the day.
- Provide natural or artificial shade.
- Provide appropriate protective clothing, and applying sunscreen.
- Employers must train employees to raise awareness of the risks associated with exposure to UV and the sun protection measures required.
- Employers can provide skin cancer checks as part of regular workplace medical examinations and in pre-employment medical checks.

5. Musculoskeletal disorders

- Musculoskeletal disorders (MSDs) refer to any problems affecting your bones, muscles, blood vessels and nerves.
- Musculoskeletal damage can occur due to a trip, fall or

heavy lift, the more serious ones occur slowly over time due to ongoing heavy lifting or repetitive strains.

- Employers should identify and assess job-related MSDs hazards and put in place controls to reduce workers' exposure to MSDs hazards.
- Workers need be advised and trained about MSDs hazards in their job and workplace and encouraged to participate in health and safety programs.
- Employers need to follow up to ensure preventative measures are working.

6. Thermal stress

- A common health risk that miners face is thermal – or heat – stress.
- Overexposure to heat and humidity causes the body to become fatigued and distressed which results in heat stroke or more serious ongoing health problems.
- Where there is a possibility of heat stress occurring, companies must carry out a risk assessment that considers the work rate, working climate, worker clothing and respiratory protective equipment.
- Control the temperature using engineering solutions, provide mechanical aids where possible to reduce the work rate, and regulate the length of exposure to hot environments.
- Personal protective equipment must be provided, such as specialized protective clothing that incorporates personal cooling systems or breathable fabrics.
- Companies must provide training for workers, especially new and young employees, and monitor the health of workers at risk.

7. Chemical hazards

- Mine workers are often exposed to harmful chemicals.
- The most common group of chemicals that cause concern in a coal mining environment are polymeric chemicals.
- Regardless of the chemicals you work in close proximity,

appropriate safety wear and precautions need to be taken to minimize your body’s exposure to them. Risks include chemical burns, respiratory problems and poisoning.

- Each chemical has a unique set of hazards and needs to be handled properly to ensure worker safety and employers according need to conduct risk assessments to establish best practices.
- A standard operating procedure (SOP) that addresses the use of correct personal protective equipment, safe handling, safe use, and proper disposal must be established.
- Thorough training and drills should be conducted regarding the company’s spill response plans and chemical hygiene plans.
- Ventilation, general housekeeping and cleanliness are important factor to minimize exposure.