



AMERICAN COLLEGE OF
OCCUPATIONAL AND
ENVIRONMENTAL MEDICINE

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December 17, 2010
Office of Standards, Regulations, and Variances
Mine Safety and Health Administration
1100 Wilson Boulevard, Room 2350
Arlington, Virginia 22209-3939

Re: RIN 1219-AB-71

To Whom It May Concern:

The American College of Occupational and Environmental Medicine (ACOEM) is pleased to submit the attached comments in response to the Mine Safety and Health Administration's request for information about effective, comprehensive safety and health management programs at mines.

ACOEM's comments were prepared by a working group of ACOEM members with knowledge and background in mine safety and health issues.

Thank you for your consideration of these comments

Sincerely,

Natalie P. Hartenbaum, MD, MPH

Natalie P. Hartenbaum, MD, MPH, FACOEM
President

Enclosure

**Comments of the American College of Occupational and Environmental Medicine
U.S. Mine Safety and Health Administration
Safety and Health Management Programs for Mines (RIN 1219-AB71)
Submitted December 17, 2010**

The American College of Occupational and Environmental Medicine supports the efforts of the Mine Safety and Health Administration (MSHA) to develop comprehensive safety and health management programs in the mining industry. Companies such as Alcoa and Brush Wellman, have successfully modified the corporate culture from the top down to include safety as a core value. Programs were designed to include everyone in the organization (owners, managers, supervisors, union leaders, employees and contractors) with beneficial results on lost time injuries, fatality rates and exposure rates.

The safety and health of those in the mining industry requires coordination between management, employees, unions, and contractors. The challenges in the mining industry are different from the manufacturing industry and are in many cases much less forgiving of mistakes. Underground mining is of particular concern due to its inherently dangerous environment of poor lighting, irregular surfaces, temperature variations, restrictive spaces and dangerous atmosphere. Coal mining adds the factor of a flammable product to that mix.

The identified elements of Management Commitment, Worker Involvement, Hazard Identification, Hazard Prevention and Control, Safety and Health Training and Program Evaluation are essential components to any workplace safety program and can be used to address specific issues relevant to each worksite. Building trust and communication among the different contributors to the company will be a long process but is essential to the safety of everyone. Companies will also need to develop accessible and reliable resources from the occupational health and occupational safety fields to offer assistance to overcome persistent issues.

ACOEM is concerned with the occupational safety of the mining workforce and also with the overall health of those workers who face so many challenges. Some medical issues of concern that will tie back to safety programs and a culture of safety include:

1. Increases in coal workers' pneumoconiosis.

The increasing prevalence and severity of coal workers' pneumoconiosis (CWP) in the last decade is a concern to the medical community. After an overall drop in disease and death from CWP, there has been an upswing in morbidity and mortality, especially noted in younger age groups of workers in the southern Appalachian coalfields. There are multiple possibilities for this increase such as increased working time periods with a resultant decrease in recovery time due to increased work schedules and concomitant silica exposure in certain strata. Continued cooperation between the National Institute for Occupational Safety and Health, MSHA, and industry health and safety personnel would help clarify the numbers of exposed workers and the exposure factors. Decreasing exposure to coal mine dust and silica

is the key to preventive efforts, and may require reevaluation of existing approaches to ventilation, monitoring, and mining processes.

Laney A, Attfield M. Coal workers' pneumoconiosis and progressive massive fibrosis are increasingly more prevalent among workers in small underground coal mines in the United States. *Occup Environ Med.* 2010;67(6):428-31.

Laney A, Petsonk E, Attfield M. Pneumoconiosis among underground bituminous coal miners in the United States: is silicosis becoming more frequent? *Occup Environ Med.* 2010;67(10):652-6.

Attfield M, Bang K, Petsonk E, Schleiff P, Mazurek J. Trends in pneumoconiosis mortality and morbidity for the United States, 1968–2005, and relationship with indicators of extent of exposure 2009 *J. Phys.: Conf. Ser.*

2. Fatal and non fatal injuries.

Review of the MSHA 2009 Mine Injury and Worktime, Quarterly, demonstrates that work related fatalities in coal mining over the last three years is greater than in the metallic mineral, nonmetallic mineral, stone and sand/gravel combined. Of the 18 coal mining related fatalities last year six were underground operators, four were surface operators, one was an underground contractor and seven were surface contractors. Injury rates for underground mining was approximately twice that of surface mining with underground coal mining having the highest incidence rate (6.09). The activities associated with the highest incidence of injuries were material handling (back and upper extremity injuries), slip & fall (knee, ankle and back injuries), machinery related (finger and back injuries) and in the case of underground coal mining, roof falls (finger and hand injuries).

Among non-fatal injuries, including lost time and non lost time injuries, musculoskeletal injury is the most common type. Based on the MSHA Injury Experience in Coal Mining, 2008 sprains and strains were most common type of injury and resulted in the highest rate of lost time due to back, shoulder and upper extremity injuries. Cuts and punctures were second in total incidence but caused much less lost time. Fractures were the third most common injury and second highest rate of lost time. Back and knee injuries caused the most lost time injuries while finger injuries were the most commonly reported injury. These trends are similar in other mining industries

Using the proposed safety and health model each injury can be addressed by the company safety committee to discover underlying cause and any modifiable risk factors. Development of procedures and equipment to minimize injury recurrences requires the willingness to discard protocols that are ineffective.

Injury Experience in Coal Mining, 2008 U.S. Department of Labor

Hilda L. Solis, Secretary Mine Safety and Health Administration; Gregory R. Wagner, M.D. Deputy Assistant Secretary for Policy IR 1341 2009

Mine Injury and Worktime, Quarterly U.S. Department of Labor

Hilda L. Solis, Secretary Mine Safety and Health Administration; Joseph A. Main, Assistant Secretary Program Evaluation and Information Resources Information Technology Center; January – December 2009 Final

3. Aging workforce.

Many experienced miners have or will soon retire, leading to an influx of new miners with much less experience. The time of greatest risk of injury with most types of employment is during the first few years at the position. Maintaining proper supervision while training the next generation and maintaining mine production will offer challenges in mine management but will also offer the opportunity to instill strong habits of safety.

On the flip side of that issue, many miners are now older. Issues with aging that can be of concern in an underground environment are visual changes, hearing changes, recovery times from injury, decreased physical capabilities and concomitant medical conditions such as heart disease, diabetes, pulmonary disease and kidney disease. Many chronic medical conditions are treated with multiple medications which can cause unexpected interactions sometimes leading to impaired judgment, decreased coordination or fatigue. Policies to allow operators to manage their health conditions proactively and voluntarily remove themselves from safety sensitive positions should be considered. Consideration of the age of the workforce is necessary when designing new processes or introducing new machinery.

Kowalski-Trakofler K, Steiner L, Schwerha D. Safety considerations for the aging workforce. *Safety Science* 2005; 43:779–793.

Allen H, Woock C, Barrington L, Bunn W. JOEM • Volume 50, Number 8, August 2008 873-894 Age, Overtime, and Employee Health, Safety and Productivity Outcomes: A Case Study *J Occup Environ Med* 2008;50, 873-894.

4. Impaired workers.

Although worker impairment is often assumed to be from substance abuse, impairment is more complex than a single cause. The mining environment often requires sustained mental focus to control heavy machinery around other workers while maintaining an almost constant awareness of a dangerous physical environment. Mental, physical, psychological and medical factors can cause individuals to not be able to maintain focus.

Fatigue and lack of alertness can be caused by lifestyle issues such as substance abuse or lack of exercise; medical issues such as diabetes, thyroid disease, or sleep apnea; work related issues such as long work shifts and long drives to the mine site or life stressors. Many medications used to treat pain can also cause sedation. A comprehensive safety and health program should address individual factors such as fatigue, stress, sedating medications and substance abuse that put not only the individual but their coworkers at risk of harm. Employee assistance programs, consistent and clear drug screening policy, and the ability to use leave for medical purposes are needed to begin to deal with these complex issues.

5. Healthy workforce programs.

The popularity of company based worker health programs has increased in the last decade and a wide variety of programs have been implemented. Some companies are only able to offer smaller programs such as handouts on healthy lifestyles while some have comprehensive health and wellness programs

that include healthy cafeteria meals, medical exams and exercise facilities. Mining operations will have varied resources and facilities and each will have to identify the resources available in their respective areas.

Cost effectiveness of programs varies and returns on investment calculations are difficult as factors such as workers compensation costs, health care expenditures, sick days, and current investment in the employee must be considered. With the aging workforce encouraging activities such as strength and flexibility training will help prevent injuries. In a setting where there is potential exposure to agents that can cause pulmonary damage, decreasing tobacco use can help prevent lung disease from non occupational causes. There has been some evidence that focusing on control of Body Mass Index will benefit both the employee by decreasing risk for sleep apnea, diabetes and injuries as well as decreasing injury risk.

Kowalski-Trakofler K, Steiner L, Schwerha D. Safety considerations for the aging workforce. *Safety Science* 2005;43:779–793

Pollack K, Sorock G, Slade M, Cantley L, Sircar K, Oyeboode T, Cullen M. Association between Body Mass Index and Acute Traumatic Workplace Injury in Hourly Manufacturing Employees. *Am. J. Epidemiol.* 2007;166: 204-211

Shultz A, Edington D. The Association Between Changes in Metabolic Syndrome and Changes in Cost in a Workplace Population. *J Occup Environ Med* 2009;51:771-779

Trogdon J, Finkelstein E, Reyes M, Dietz W. J. A return-on-investment simulation model of workplace obesity interventions. *Occup Environ Med.* 2009;51(7):751-8.

6. The element of time.

Many of the issues above are tied into concerns about increased work hours. The underground coal mining industry shows an increased in average work hours from 36 hours per week in 1993 to 42 hours per week in 2009. This increased average could be a reflection of seasonal fluctuations requiring more overtime during specific time periods or a specific subpopulation working more hours. However, longer work shifts cause increased mental and physical fatigue which are associated with increased injuries. With more time spent at work there is less time for proper lifestyle choices and appropriate sleep. Lifestyle related diseases influence risk of impairment and workplace injury. The lack of recovery time can cause decreased physical and mental capacity and increased risk of mental health issues. In the case of CWP the increased work shifts decreases recovery times from exposures increasing the risk of disease.

Dembe A, Erickson J, Delbos R, Banks S. The impact of overtime and long work hours on occupational injuries and illnesses: new evidence from the United States. *Occup Environ Med* 2005;62:588–597.

Johnson J, Lipscomb J. Long Working Hours, Occupational Health and the Changing Nature of Work Organization. *Am J Indust Med* 2006;49:921–929.

Kleppa E, Sanne B, Tell G. Working Overtime is Associated With Anxiety and Depression: The Hordaland Health Study. *J Occup Environ Med* 2008; 50:658-666.

Dembe A, Delbos R, Erickson J. The Effect of Occupation and Industry on the Injury Risks From Demanding Work Schedules. *J Occup Environ Med* 2008; 50:1185-1194.

Conclusion

ACOEM would like to see efforts to decrease coal workers pneumoconiosis, prevent injuries, reduce musculoskeletal disorders, address issues of an aging workforce, develop programs to identify and help impaired workers, and promote workers' health through the worksite while maintaining a work schedule that allows proper rest and recovery time. Comprehensive safety and health programs should address these issues though the priority will vary by worksite and implementation time will vary by resource availability. ACOEM supports the implementation of these programs and the efforts to improve the health and safety of the working population.

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