

Türkiye 15. Madencilik Kongresi /15<sup>th</sup> Mining Congress of Turkey. Güyağüler,Ersayın,Bilgen(eds) © 1997, ISBN 975-395-;

## **POLISH-AMERICAN LABOR-MANAGEMENT PARTNERSHIP IMPROVES WORKER SAFETY AND HEALTH**

J.H Daniel.

Regional Director, Partners In Economic Reform, Inc , Katowice, Poland

**ABSTRACT.** Partners In Economic Reform, Inc (PIER) established the Mine Safety and Health Center in Katowice, Poland, to improve working conditions in the mining industry. The program is based on experience of the minerals industry and Federal agencies in the United States, and is executed by a Coordinating Committee headed by the PIER Regional *Director* and Polish leaders from the mining industry. State Mining Authority, organized labor, and academia

Existing safety and health practices and the attitudes of both labor and management personnel have been assessed for the first time in mines throughout the country. Areas requiring improvement are the subject of seminars and a post-graduate training program in safety management. Short-term demonstration projects have been initiated to measure dust levels during the coal extraction process, implement the use of personal eye protection, and promote hazard awareness. The program provides a basis for certification under the International Organization for Standards 9000-Series quality management system. Procedures developed for the mining industry will also improve the work environment of the manufacturing sector, which is undergoing market restructuring.

### 1 INTRODUCTION

Partners In Economic Reform, Inc. (PIER), a non-profit, organization in the United States, established the Mine Safety and Health Center in Katowice, Poland, in 1996. The goal of the Center is to reduce worker safety and health hazards in the mines of Poland by adapting successful methods practiced by the minerals industry and Federal agencies in the United States. Hazardous conditions are improved through a labor-management program of safety awareness, hazard identification, demonstration projects, training, and exchange visits of experts to each country.

The program is supported by the United States Agency for International Development (USAID), a Federal agency that finances international economic development programs, and the mining industry of Poland. Activities support Polish market reform and coal industry restructuring initiated in 1993 to improve worker safety and health, production, environmental quality, and economic efficiency.

### 2. MINE SAFETY AND HEALTH CENTER

The Mine Safety and Health Center (Center) is located in the Silesian Region of Poland in the city of Katowice, the heart of the hard coal industry. The Center is headed by the PIER Regional Director with program activities coordinated through a Coordinating Committee (Committee). Committee members are leaders from the Polish mining industry, and have the following responsibilities:

- Coal Holding Companies: Adapting safety and health methods practiced in the United States to Polish mine conditions and management, and implementing the program at mines.
- Solidarity Trade Union: Conducting workshops describing safety and health activities with mine workers and management officials, and implementing survey procedures at mines.
- State Mining Authority: Coordinating the program with mines throughout the country, and assisting in data collection.

- **Central Mining Rescue Station** Coordinating the program with mine rescue and disaster prevention teams
- Universities. Developing and conducting post-graduate safety management instruction

Occupational hazards will be reduced through accomplishment of the following objectives

- Assessment of worker attitudes and mine practices by labor and management personnel
- Development of a safety-management post-graduate training curriculum
- Conduct of short-term demonstration projects to reduce accidents and injuries
- Expansion of successful procedures to the industrial manufacturing sector

### 3 PROGRAM ACTIVITIES AND ACCOMPLISHMENTS

#### 3 1 Assessment of Attitudes and Practices

The Management Evaluation Regarding Itemized Tendencies (MERIT) Mine Rating Procedure (or MERIT survey) has been modified for use in Polish coal mines. The survey determines the specific needs and concerns of existing programs from the perspectives of the workers, management, and the organizational structure of the company. The program was developed in the late-1970's by the National Institute for Occupational Safety and Health (NIOSH), the Federal agency in the United States responsible for identifying and assessing worker health and safety conditions.

The MERIT program was designed based on investigations and evaluations of safety and health data, programs, and experience of industrial and manufacturing plant operations that exhibited both excellent and poor records (Smith et al., 1978). International Salt Company has used the program in its mines in the United States, and the U.S. Department of Labor, Mine Safety and Health Administration (MSHA), National Mine Academy conducts training in implementing the program as part of Accident Prevention Training (MSHA Manual, no date).

MERIT evaluates all aspects of a safety and health program to help make decisions for improving

conditions. Randomly selected workers and supervisory employees respond to twenty-nine comprehensive, multi-part questions evaluating nine areas of safety and health management. The nine areas are

- **Program Management** Evaluates existing safety and health programs with emphasis on written policies and the involvement of all employees
- **Accident Investigation** Evaluates accident reporting with emphasis on the causes, completeness of written reports, recommendations, and involvement of workers
- **Inspection** Evaluates the reporting of workplace safety and health inspections, the frequency of actions, and if self-propelled equipment issues are included
- **Job and Task Analysis** Evaluates work practices with emphasis on identification of unsafe conditions and actions, and corrective measures required including training
- **Personnel Protection** Evaluates the wearing of personal protective equipment and the conditions and policies that promote its application
- **Rules** Evaluates the awareness and understanding of workers to safety and health rules, and the enforcement and disciplinary actions required to implement the rules
- **Communications** Evaluates how employees are informed on safety and health matters with emphasis on meetings, types of employees involved, and the use of bulletin boards
- **Promotion** Evaluates how safety and health practices are encouraged with emphasis on newsletters, awards, and awareness activities such as handouts and hardhat stickers
- **Personal Perception** Evaluates the concern of employees with emphasis on the attitude of management and if workers feel that colleagues support and practice safe procedures

Over two-thirds (41 mines) of the nearly sixty coal mines in the country have completed the survey. Data from 5,613 workers representing 32 mines have been evaluated to date. Figure 1 shows the relative ranking of the nine areas evaluated for each of the 32 mines. A ranking of "1" indicates the area that requires the most emphasis to improve conditions. A ranking of "9" indicates the area that requires the least emphasis to improve conditions

Results show that the three areas of *Promotion, Rules, and Job and Task Analysis* require increased emphasis at the greatest number of mines. These three areas account for nearly three-fourths (72%) of the total number of first and second place rankings. That is, 72% of the mines rated these areas as either first or second place as requiring the most emphasis to improve conditions

The next area requiring emphasis is *Personal Perception*; however, the number of mines concerned with this area is noticeably reduced when compared with the areas of *Promotion, Rules, and Job and Task Analysis*. Review of the data also indicates that the three areas of *Inspection, Accident Investigation, and Safety Management* have the most effective worker awareness and practice, hence, requiring the least attention of the nine areas.

Thus, the areas of *Promotion, Rules, and Job and Task Analysis* are the subjects of developing training curriculums and in conducting health and safety seminars. Review of the data from the remaining mines indicates that this focus will continue. However, cases will exist where some mines will not need all the training required of the greatest number of mines. Individual mine survey results define the training areas required to improve conditions at each operation.

The MERIT program provides a method of evaluating and improving working conditions with an annual assessment of progress. Policies implemented meet the intent and procedures under the International Organization for Standards (ISO) 9000 Series. Although ISO 9000 relates primarily to the manufacturing sector, mining operations are beginning to implement the procedures, particularly those involved with a final product such as kaolin (Arlington-Webb, 1997)

The three ISO series, 9001-2-3, provide a method to help ensure product quality based on requirements and documentation of work procedures and policy. MERIT supports ISO certification in the requirements of management responsibilities, documentation, audits, and training. These requirements are becoming more important in competing in worldwide markets. In conducting the MERIT program, representatives from each mine are trained and form a committee to explain and implement the survey objectives and procedures. The committees are responsible for annual updates and assessment of progress.

### 3.2 Safety Management Training

A Post-Graduate Study Program, "Safety Management in Mining," is being developed in cooperation with the Technical University of Silesia, Department of Mining and Geology. The two-term course is designed to train mine management staff and consultants in the field of safety problem analysis management. Objective is to provide participants with the knowledge and skills to better identify, analyze, and control hazards. Part of the course will focus on standards and enforcement procedures practiced in the United States.

Results of the PIER program, along with continued knowledge shared through the exchange of technical experts from both countries will enhance the effectiveness of this formal training. The program will also provide Polish and American experts to serve as lecturers and trainers.

In support of the training objective, exchange visits of Polish and American experts occur so that both parties are knowledgeable of mining regulations, mine practices, and safety and health training programs. During 1996, all members of the Coordinating Committee visited MSHA's National Mine Safety and Health Academy in Beckley, WV, USA, and learned of accident prevention training for Federal mine inspectors and mine rescue procedures. Mine conditions and operations were observed during tours of underground coal mines in the states of Alabama and West Virginia. Discussions and visits with local and headquarter's officials of the United Mine Workers' of America (UMWA), universities, and Slate mining departments have provided knowledge of worker

Mine Area	1 Piast	2 at Kami	3 Ciecierz	4 Boronia	5 Slemia	6 Murzek	7 Jaworz	8 Silesia	9 Wieszore	10 Socimula	11 Brzezie	12 Staszic	13 Wesola	14 Krupn	15 Pnowk	16 Juhna
Safety Management	3	5	4	6	5	6	5	6	9	6	7	5	1	7	6	8
Accident Investigation	6	6	6	9	8	9	7	7	6	5	8	8	5	6	4	6
Inspection	4	9	7	7	9	3	8	8	5	8	9	1	7	5	7	7
Job & Task Analysis	8	2	2	1	1	1	3	5	1	4	5	7	4	3	1	3
Personal Protection	1	7	8	5	3	7	8	9	4	7	6	9	8	8	9	4
Rules	5	4	1	2	7	2	2	3	8	1	3	2	2	1	2	1
Communications	7	8	9	8	6	8	6	4	2	9	4	4	6	9	8	6
Promotion	2	1	5	4	4	4	1	1	3	2	2	3	3	2	3	2
Personal Perception	9	3	3	3	2	5	4	2	7	3	1	6	9	4	5	5

Mine Area	17 Murck	18 Centrum	19 Lubowka	20 Polska	21 Powiat Sl	22 Siersza	23 Jowisz	24 Jadwiga	25 Pr. Kłono	26 Pokój	27 Slask	28 Boi Sm	29 Bobrek	30 Jankowice	31 Mysłowic	32 Zezowet
Safety Management	8	9	9	4	8	8	2	2	8	9	7	6	7	9	6	9
Accident Investigation	7	6	2	7	5	5	3	5	4	8	8	7	9	4	4	8
Inspection	9	8	7	9	9	9	5	8	7	6	5	9	6	3	7	6
Job & Task Analysis	4	3	3	2	3	2	2	4	2	3	3	8	3	8	1	7
Personal Protection	6	7	8	1	7	7	4	7	4	2	2	4	5	2	9	2
Rules	1	1	4	3	6	4	2	1	1	1	6	1	4	1	5	1
Communications	3	5	1	9	4	6	7	3	5	7	9	5	8	6	8	5
Promotion	2	2	5	5	1	3	1	2	3	5	4	2	1	5	3	3
Personal Perception	5	4	6	8	2	1	6	6	6	4	1	3	2	7	2	4

Figure 1. Relative Ranking of Safety and Health Areas Evaluated by Mine.

safety and health concerns, and programs to help ensure worker protection

The program sponsored an International Seminar, *Safety Management — Polish and American Experience*, in Katowice, Poland, 18-19 October 1996. American attitudes and procedures of safety and labor management were presented by technical representatives from MSHA, the Federal agency that establishes and enforces mine regulations, and the UMWA, the organized labor sector in underground coal mines. Presentations were also made by members of the Coordinating Committee and leaders from the Polish mining industry. A second seminar is planned for June 1997, which will focus on the programs of universities and industry.

### 3.3. Demonstration Projects

Three one-year demonstration projects are being conducted. Assessments have supported other safety studies showing the primary causes of accidents to be associated with worker behavioral and motivational actions. The projects focus on these causes, and include:

Reflective Hardhat Safety Awareness Stickers A reflective safety sticker to be placed on the hardhats of miners has been designed. Figure 2 shows this sticker. In the United States, Federal regulations require hardhats to display six square-inches of reflective material visible from all sides. However, stickers are not found in Polish mines. Two requirements of the sticker design were that the slogan would make workers think, and would be applicable to all industries.

Enthusiasm for this project has been high, and the additional safety awareness is expected to have a positive effect on accident and injury records. Results will be measured by the number of underground workers using the reflective, highly-visible stickers, and long-term accident data that can be associated with such awareness projects. In describing the reflective sticker at a mine, the mine manager reported that the week before a worker was killed by being struck by a locomotive with the operator reporting that he did not see the victim.

Eye Protection The practice of wearing safety glasses is not common in Polish mines. With the

high potential of eye injury associated with work in the confined, dimly-lit, humid, and dangerous underground work environment, and the seriousness of loss of sight, an awareness/demonstration project was initiated that includes analysis of areas in mines and work situations that are the most hazardous. With the labor intensive and hand-tool methods of timber-sets and steel-arch roof support, and the practice of sand backfilling mining methods, eye hazards are increased. Results will be measured on the number of miners accepting the practice, and documentation of eye injuries.

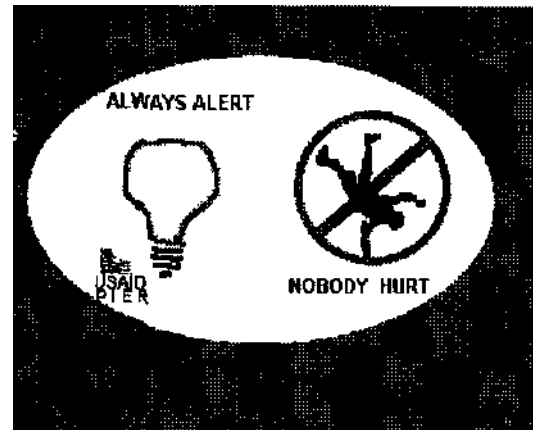
Dust Monitoring/Characterization Dust concentration gradients in three highly-productive mines are being measured during the actual coal extraction operation. Both road header and longwall shearer sections are being assessed. Continuous recording dust measurements in real-time have not been practiced in the underground mines. This project, in cooperation with KOMAG Mining Mechanization Centre, will identify the most hazardous dust areas so that workers may avoid these areas through administrative controls and work practice. In addition, continuous measurement of the changing dust concentrations in the workplace is essential in evaluating dust control methods and devices. The technique provides for the evaluation of dust control devices by measuring dust concentrations during the precise periods when the controls are turned on and off during the varying coal extraction conditions.

## 4 CONCLUSION

The Polish-American Mine Safety and Health Center with cooperation of all sectors of the Polish mining industry has established a national management program to reduce hazards in the haul coal industry in Poland. The program has been evaluated for the first time over the altitudes of 11 mine workforce towards safety and health conditions and practices. The areas industry-wide requiring the greatest focus to improve conditions have been identified as Promotion and Rules and Job and Task Analysis. Training curricula and demonstration projects including dust monitoring, eye protection, and safety awareness stickers are being conducted.

Program success is due to the cooperation of the minerals industry, State agencies, and universities. Short-term results are measured by the continued acceptance of the program by the mining industry, and ultimately by the longer term reduction of accident and injury statistics. Results of the program allow companies to comply with the requirements and documentation of the International Standards Organization Series 9000 that govern quality management, which is becoming increasingly important in worldwide markets. In addition, the safety and health results are applicable to improving workplace conditions in the manufacturing sector.

Figure 2. Reflective Safety Sticker.



#### REI-ERENCES

Smith, M J, H H Cohen, A Cohen, and RJ Cleveland 1978 Characteristics of Successful Safety Programs *hmtial of Safety Research* (Spring) vol 10, no 1

Mine Safety and Health Administration, U S Department of Labor, National Mine Academy, Beckley, WV, 25801, USA *Accident Prevention techniques I raining Cow se Manual* 559 pp

Amngton-Webb, LA, E Ldyd 1997 ISO 9002 Certification Helps Thiele Kaolin *Mining Ingmeetng (bebrumy)* vol 49, no 2 pp 23-25