

## **Public Sector Safety Professionals: Focused on Activity or Results?** **By Fred Fanning, CSP, M.Ed., M.A.**

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This article addresses a topic that the author has thought about for many years. The author believes that looking at this accident 60 years after it occurred will provide lessons that will be relevant and long-lasting. Recent mine accidents remind us that lessons once learned are often forgotten. This article does not present information about individuals to impugn their character but to explain the situation in which people find themselves.

On March 25, 1947, a deadly coal mine explosion rocked the calm, peaceful town of Centralia, IL. During World War II, this mine provided coal to the war effort. A charge ignited built-up coal dust and caused the explosion. This explosion should have surprised no one. Many public sector safety professionals from state and federal agencies knew of the hazards as a result of inspections, union complaints and letters to state officials. These same safety professionals had notified various officials of mine safety agencies and the mine company of the hazards on more than one occasion. Officers of the mine's union had also pressed for the hazard to be corrected. Failure to take action to abate the hazard resulted in the loss of 111 hard-working men who had spent much of their lives mining coal.

This article reviews the history of the mine before the disaster, the people involved and the circumstances that allowed the explosion to occur. The author believes that the analysis and its results are relevant to today's public sector safety professionals.

### **A Brief History**

This article reports the circumstances that surrounded a mine explosion that killed 111 miners in a small town in Illinois. The analysis will answer the question, "Should public sector safety professionals focus on activity or results?" Although this incident occurred 60 years ago, its lessons are as applicable today as they were in 1947. Knowledge of these lessons makes this article relevant to today's public sector safety professional.

In 1883, the state of Illinois was divided into five inspection districts, and Governor John Hamilton appointed an inspector for each district to oversee practices and safety regulations. In that same year, a Board of Examiners for Mine Inspectors was created to judge the qualifications of candidates for the position of mine inspector. In 1899, this board's name changed to the State Mining Board. It further supervised the state mine inspection service.

The Illinois Department of Mines and Minerals was created in 1917. It absorbed several boards and commissions created earlier to regulate mining. This department carried out the policies of the State Mining Board (Illinois Secretary of State, 2003).

In May 1946, the coal miners went on a national strike. In response to the need for coal to support the war, President Harry Truman ordered the mines seized. That same month, a letter was signed between the United Mine Workers of America (UMWA) and the Department of Interior for the department to run the mines. This letter also authorized the enforcement of federal safety rules in the mines. In 1946, the federal

government developed an organization called the Coal Mines Association (CMA) to administer the mines.

The Centralia Coal Co. owned Centralia Mine Number 5. It opened in 1907 and covered nearly 6 square miles underground. The mine employed 250 men and produced 2,000 tons of coal each day. On March 25, 1947, the mine exploded, killing 111 miners (Barlow, 1948). In the 1947 report on the explosion, the Bureau of Mines described the reason for the explosion as “coal dust raised in the air and ignited by explosives fired in a dangerous and nonpermissible manner.” Heavy deposits of coal dust were present along the roadways and on the roof, ribs and timbers in working places and entries (Bureau of Mines, 1947).

According to the Centers for Disease Control (CDC), from 1839 to 2001, 717 mine disasters occurred, killing 15,196 people. CDC ranked the Centralia Mine No. 5 disaster as 23rd in the nation (CDC, 2001). The U.S. Mine Rescue Association (USMRA) lists the Centralia disaster as one of the five worst coalmine disasters since 1940 (USMRA, 2003).

### **Events Leading Up to the Explosion**

In 1941, Illinois Governor Dwight Green appointed Robert Medill, who worked on the governor’s campaign, as director of the Illinois Department of Mines and Minerals. In 1941, the governor also appointed Driscoll Scanlan, recommended by his state representative, as one of the states 16 mine inspectors (Martin, 1948).

Scanlan was the inspector of the district that included Centralia Mine No. 5. Scanlan inspected the mine several times in the years before the explosion. He made a report of each inspection and sent them to the Illinois Department of Mines and Minerals. In many of these reports, he noted that the mine was highly explosive due to coal dust buildup. Robert Weir, assistant director for the Illinois Department of Mines and Minerals, received and processed his reports. Weir signed a letter for each inspection that identified issues, provided recommendations and requested a response from the company. In 1942, Frank Prez, a mine inspector from the U.S. Bureau of Mines, conducted a federal inspection of Centralia Mine No. 5. His findings and recommendations were similar to Scanlan’s. Prez also noted the mine was highly explosive (Martin, 1948).

In November 1944, William Rowekamp, the UMWA Local 52 recording secretary, sent a letter to Medill noting that the conditions of the roadways were dirty and dusty and becoming dangerous. The letter also said the company ignored Scanlan’s recommendations and begged for Medill’s prompt action. Weir received the letter and sent Scanlan to investigate. Scanlan conducted an inspection that identified the hazards, and Norman Prudent, mine superintendent, said he would spray the roads within a week. In his December 1944 inspection, Scanlan noted that the mine was again dirty and recommended closing the mine until it was cleaned. Weir’s letter on this inspection did not specify closing the mine (Stillman, 2000).

In early 1945, Scanlan phoned Medill about the hazards. Medill told him to write him a letter. In February 1945, Medill received the letter and forwarded it to William Young of Bell and Zoller Coal and Mining Co., the parent company of Centralia Mine No. 5. Young answered that he hoped coal production would slow down in the future so he could respond to these recommendations (Stillman, 2000).

In March 1945, Scanlan told Medill that if an explosion occurred, it would spread throughout the mine and probably kill the men in it. Scanlan also claimed that Medill said they would need to take that chance. Medill denied the conversation.

In April 1945, the UMWA Local 52 filed charges against mine manager Brown for blowing a charge with the miners in the mine. In May 1945, Weir wrote to the State Mining Board stating that the company admitted to the charge but claimed it was an emergency and would not happen again. The State Mining Board refused to uphold the union's charges against Brown (Stillman, 2000).

In April 1945, Scanlan told Prudent that he had to shut down the mine or clean it. The mine dug coal 4 days a week and cleaned for 3 days. The conditions in the mine improved until June 1945 when Scanlan and Prez both found dust buildup. In October 1945, Scanlan wrote another letter to Medill. Based on this letter, Medill wrote another one to the company.

In December 1945, Medill called a meeting of the State Mining Board. Scanlan was on the agenda to speak to the board. However, before the board meeting, Ben Schull, a member of the State Mining Board, asked Scanlan to withdraw a request he had made for sprinklers to be installed in Centralia Mine No. 5. Scanlan refused and was never called before the board.

A committee was sent to the mine to investigate charges filed by the UMWA Local 52 against Brown and Prudent. Prudent led the committee through the mine. The UMWA Local 52 was not notified of the visit nor was asked any questions pertaining to the visit or to the charges. Medill notified the UMWA Local 52 that the committee found insufficient evidence for the charges the union had filed against Brown. This information was only provided to the union after a request by the union secretary (Stillman, 2000). Readers may recall that representatives of the company admitted to Weir that they had committed the charges.

In February 1946, Rowekamp wrote to Medill to tell him that UMWA Local 52 members were dissatisfied with the committee findings. A second letter was sent to the governor. A secretary to the governor sent the letter to Medill. Medill responded by explaining the situation from his perspective. The governor's secretary sent a response to the union stating that the State Mining Board would consider their request. Medill reprimanded Scanlan and directed him to cut down his reports. Medill also asked Scanlan's political sponsor if he could fire him. The sponsor refused (Stillman, 2000).

In November 1946, Prez conducted an enforceable inspection of Centralia Mine No. 5. Also in November, a CMA representative sent a letter to the mine directing management to fix all hazards identified in Prez's report and to respond to CMA in writing to confirm abatement. In November 1946, Norman Niermann, the new mine superintendent, sent a letter to CMA telling them they could not comply because of the miner strike (Stillman, 2000).

In January 1947, a CMA representative wrote a second letter to Centralia Mine No. 5 directing management to correct the hazards and to reply by February 1947. A representative of Bell and Zoller Coal and Mining Co. sent a response stating that many hazards were corrected. In February 1947, a representative of CMA wrote back asking for details. In March 1947, a representative of Bell and Zoller Coal and Mining Company sent the details to CMA. On March 25, 1947, the mine exploded, killing 111 miners (Stillman, 2000).

## **Investigation Results**

The U.S. Bureau of Mines conducted an investigation into the explosion. In 47 pages, the investigation team explained the circumstances of the explosion. The team found that "the explosion was localized and confined to four working sections of the mine. However, the two remaining sections into which the explosion failed to propagate were affected by afterdamp. The explosion failed to propagate further in every instance when it reached or as it approached the rock-dusted zones on the entries." In particular, the

finding that the propagation of the explosion stopped when it reached rock-dusted zones supports the inspectors, identifying rock-dusting as the control measure for dusty conditions (Bureau of Mines, 1947).

As for an ignition source, “The investigation team believed the only possible ignition sources present at the faces at the time of the explosion were the open lights of the shot firers, a few others and the detonation of explosions.” To further support the investigation team’s belief that explosives ignited the coal dust, they found “indications that the top right shot in Face 1 was under burdened. This was evidenced by the shot not pulling down all the coal as in normal fashion.”

Finally, the explosion could have been ignited by an improperly stemmed shot. The investigation team found “a blownout shot of explosives that was stemmed with coal dust or an underburdened shot of explosions could have ignited the coal dust that was raised by preceding shots of explosions” (Bureau of Mines, 1947).

Earlier, it was noted that in April 1945, the UMWA Local 52 made charges against the mine manager for firing explosives in an unsafe manner with miners in the mine. The State Mine Board reviewed the case, but it did not uphold the charges. The board failed to uphold the charges despite the mine manager’s admission to them. Compare that incident with the investigation team’s finding that “permissible explosives were being fired in a non-permissible manner with caps and fuses, and coal dust was being used for stemming.”

In summary, the U.S. Bureau of Mines investigation found that the explosion originated at the face of one west entry; that it was strictly a coal dust explosion, which was propagated by coal dust throughout four working sections of the mine; and that the coal dust was raised into the air and ignited by explosives fired in a dangerous and nonpermissible manner (Bureau of Mines, 1947).

This was the scenario Scanlan and Prez identified. It is unfortunate that mine management did not accept the inspector’s findings and recommendations. The investigation report supported Scanlan’s and Prez’s recommendations when the team identified that the presence of rock dust in entries, even though somewhat deficient in quantity, was the most important factor in preventing the spread of the explosion throughout the mine and to the shaft bottom (Bureau of Mines).

To clearly see what should have been known before the explosion, it is important to understand what the Federal Mine Code for Bituminous Coal and Lignite Mines in the U.S. said. Article VI Coal and Rock Dust, Section 1a-Coal stated that dust should not be permitted to accumulate on haulage roads or on roadways of working places. Furthermore, Sections 2a and 2b stated that rock dust should be applied within 80 ft of the faces in all open, unsealed rooms, haulage entries and parallel entries connected by open crosscuts. Sections 2a and 2b also stated that back entries should be rock-dusted for at least 1,000 ft within the junction with the first active entry (Bureau of Mines, 1947).

Many employees in mine management violated the Federal Mine Code for Bituminous Coal and Lignite Mines by not adequately rock dusting. Mine inspectors Scanlan and Prez made these violations known to the mine company and their agencies. Many actions were taken by many parties, but few actions when taken by mine management to abate hazards.

With the standard known, the next step is to understand the risk of an event resulting from the hazard. This information was also known. The U.S. Bureau of Mines conducted a test which indicated that coal dust required a presence of 33% incombustible matter to prevent ignition when no gas was present and 59% incombustible matter with gas present. This reference is to methane gas. These test results indicated that rock dusting that provides 33% of the incombustible matter can prevent explosions.

The investigation board came to this same conclusion. Based on these test results, the investigation team concluded that much of the untreated dust in the face regions was capable of initiating and propagating an explosion. The presence of coal dust in the treated areas was on the borderline safe side and was still effective (Bureau of Mines, 1947). The investigation team recommended that rock dust be applied up to and including the last open crosscuts in rooms and entries. The team also recommended that the face areas from the end of the rock dusted zone to the faces should be kept damp with water or a wetting solution.

Despite this information, many mine personnel at the time still considered methane gas as a key ingredient in any mine explosion. In the case of Centralia Mine No. 5, no evidence showed methane gas as a cause or contributing factor in the explosion. The investigation team addressed this very issue and included in the mine report that “the outstanding lesson to be learned from this disaster is that mines, which liberate little or no methane gas, are not immune from widespread and tragic explosions if dry and dusty conditions exist therein and adequate measures are not taken to control the dust hazard” (Bureau of Mines, 1947). Perhaps more importantly, the investigation team went on to say that “if explosions of this type are to be prevented, it will be necessary to regard dry and dusty conditions in mines as being imminently dangerous in the future and to withdraw the men from the mine or portion thereof where such dangerous conditions exist, until appropriate measures have been taken to remedy such conditions” (Bureau of Mines, 1947).

## **Conclusion**

Public sector safety professionals must be relevant, results-oriented and purpose driven. A public sector safety professional must be relevant to the needs of the public by focusing on results, not on activity. The story of the Centralia Mine No. 5 explosion is one of failure to focus on results. Because of that, the mine explosion killed 111 men.

This case study also describes a classic focus on activity or doing things and no focus on achieving results. Great control was taken in inspections, writing letters, having meetings and visiting the mine. This represents a significant amount of work. However, as the case demonstrated, activity does not create results.

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