

# ***Training future mine emergency responders***

## ***Part 1: Who should be trained and how?***

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Since 1991, Pittsburgh Research Center (PRC-formerly part of the Bureau of Mines) researchers have recorded extensive interviews with 30 individuals who are experts in the area of mine emergency response. These individuals, who have an average of 35 years of mining experience and 29 years of mine emergency response experience, related stories and observations from events that they experienced during their combined 850 plus years in mine emergency response. The purpose of this effort was to gather information that could be passed on to both today's and tomorrow's mine emergency responders to train and guide them in handling future events.

This is the first of two articles which report the responses that these experts gave when asked how they think people who may have to respond to a future mine emergency should be trained. During the interviews they discussed how training should be conducted, who should be trained, and what topics should be included. This article will cover the first two areas: what training methodologies would be most effective and who needs to participate.

### ***Methods for Emergency Response Training***

The emergency response veterans who mentioned specific methods they think should be used for training future responders discussed three types of training: mine emergency response development (MERD) exercises, mock disasters, and

tabletop simulations. Nine of the veterans said that some form of interactive simulated emergency response training would be the most beneficial. In addition, several other ideas were discussed.

Three of the experts felt that Mine Emergency Response Development (MERD) exercises should be used to train responders. Historically, MERDs have been fashioned to be approximately day-long role play events designed to present a realistic mine emergency scenario in the classroom to personnel who may be responding to an event. The overall objective of these exercises is to teach participants how to respond to a mine emergency in a correct, timely, well organized manner that ensures the safety of all individuals who will be involved in the emergency. At least one expert felt that every mine, regardless of its size, should conduct a MERD exercise:

I think we should require each mine, to have them put on their own MERD program. ...I think we could do it right at the mines. You know, we go to [classroom settings] and we set up mine offices, and mine foreman's office and stuff. Out there at the mines, it's the real thing ...I think ...it would be more real, and get more people involved.

Another form of enhanced mine emergency response training is the mock mine disaster. Like MERDs, mock disasters are role play exercises designed to present a

realistic mine emergency scenario. The major differences are that mock disasters make use of actual mine facilities and involve mine personnel who play their traditional roles at the operation. Three emergency response experts felt that conducting periodic mock disasters at mines would be an ideal way to train personnel. One veteran expressed his views on the utility of using mock disasters as training and assessment tools:

...to me, training is number one ...continue training the people. Renew them again, by having mock disasters ...Bring in [consultants] that can actually just sit down and watch, and then come up with recommendations of what they've noticed during the emergency that was supposed to have been done, and was not done... where's our downfall, etc....

In addition to the role play simulations discussed above, three response experts suggested that paper-and-pencil simulations of actual mine emergencies would be useful as training aids. Interviewees suggested that these simulations could be conducted in a classroom or in the offices at a mine site and used to train both command center personnel as well as other individuals who might be involved in the response. One expert talked about the success of using such simulations of actual mine emergencies to train personnel at his company:

All the little things that seem

to be taken for granted ...you run (personnel) through a couple of exercises, and ...you suddenly find out, "Hey these" ... "I never thought of that." And [the exercise] brings all these little things to the front.

Continuing in his discussion about training with table top simulations based on actual mine emergencies that have occurred, this veteran said:

First, it was just hypothetical situations. And they didn't seem to prove too much, cause they were too hypothetical. "Maybe this, maybe that." So, then we just decided to take incidents—actual incidents that occurred and relive them. And it really brings things out, you know. "Are you prepared for this? Are you prepared for that?"

... When you speak of an actual situation in front of these guys, and they start to solve problems, then you can see ...you see the panic starting to climb. You've got these men missing, and whatever you're doing is going wrong... You want to do this to ventilation, and the answer is "No, that won't work, because the ventilation door is burnt up. You can't shut that door." "Oh, what are we going to do now? I can't shut the door."



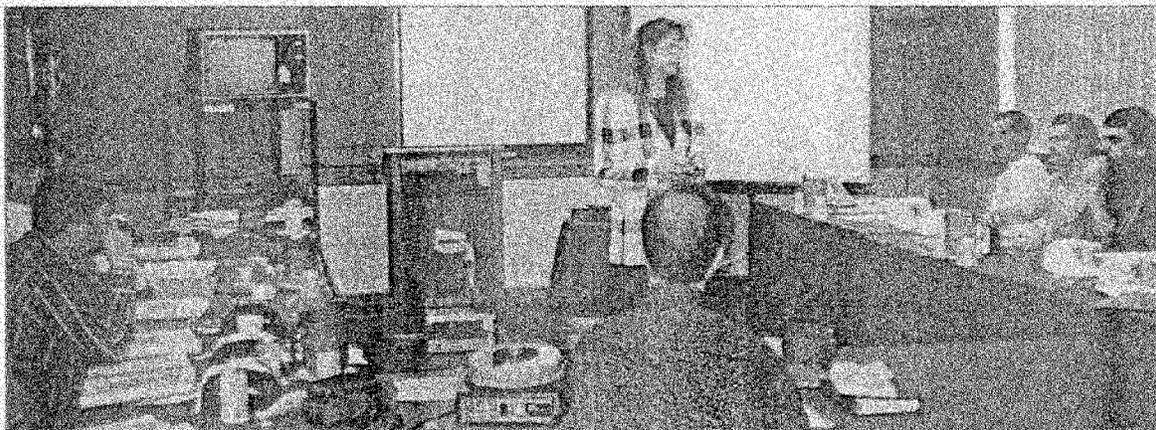
...So, it really proved it's working ...

One veteran responder proposed that operators have mine emergency response veterans come to the mine and make presentations on their past experiences, especially regarding critical phases of events. He suggested that mine operators could videotape the presentations and then show them to personnel who would be responding to emergencies. A second expert felt that training for future responders should begin early in their career, preferably at the college level, when students are receiving their formal training in mining engineering:

...I strongly believe that's

where it's (emergency response training) got to start is at the university ... where you've got graduate students that are taking the mining engineering discipline... That [should be] a credited part of their required diploma... [where] they have to take emergency management training as part of that. So that when these engineers or whatever get into the workforce, they end up being mine superintendent... They've got that background.

A third response veteran suggested that a text-based document, providing recommendations for



handling emergencies be compiled and distributed to mine operators. This veteran felt that such a manuscript might be developed as a "how to" manual and taken to the finest detail to ensure that all possible elements are covered. He believed that a document like this would be helpful, especially if written to be used by any size or type of mine.

### ***Who should be trained in emergency response procedures***

In sharing their thoughts on training future mine emergency responders, veterans mentioned specific groups of individuals they thought should be thoroughly trained in mine emergency response procedures. Their target audience included: mine management, top (corporate) management, and regulatory personnel.

It is clear from their responses that veterans believe that both mine and corporate managers would benefit from training in mine emergency response. A 40 year veteran shared his thoughts on training mine management:

...I would take the person that is responsible at the mine, and... the mine foreman on each shift, and [they] would have mine emergency training continuously... (and) I don't mean a shot of seven hours, and that's it... I would (also)

test [them] periodically.

In terms of training for corporate officials, another veteran responder said:

...you ought to have a situation where you have, primarily the top officers of the company involved, with regard to mine emergencies. Because when the emergency does happen, then they are the people that do get into that... I think they ought to be prepared more. And some of them that you have, probably never been involved in anything.

At least five veterans believe that both state and federal regulatory personnel should be thoroughly trained in mine emergency response. At least one of these experts felt that not enough emergency response training is provided to mine inspectors:

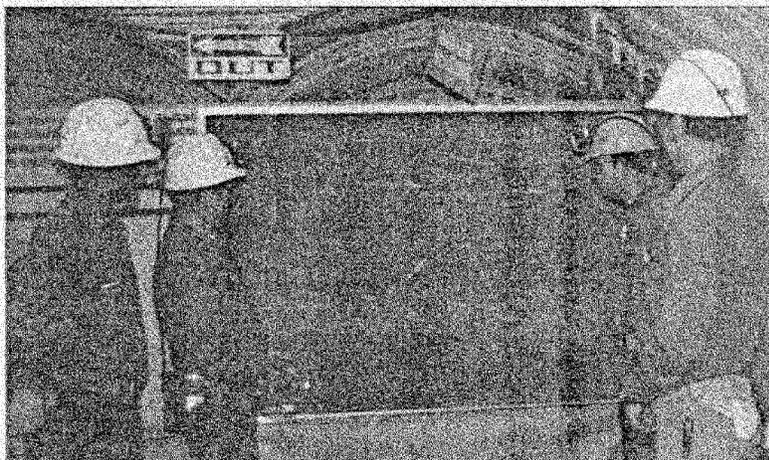
...we go to the Academy and we take too many senior people and I think it needs to filter down to the individual inspector 'cause any mine fire, that individual inspector is the person that's going to have to go out and really deal with [the emergency], in the initial quick stages of it.

### ***Conclusions***

When experts were asked how they would train future mine emergency responders, they responded in terms of how training should be conducted and who should be trained. Many believed that some form of interactive simulated response training is the best method. Three types of simulation were discussed including mock disasters, MERD exercises, and tabletop exercises. The need to adequately train mine or corporate management personnel in emergency response procedures was discussed. As one expert indicated, managers will be the ones who will be playing major roles in the decision making process at the command center. In addition to mine management, it was suggested that enforcement personnel should also be thoroughly trained in emergency response. As mentioned by one veteran, more and improved training for these individuals will enhance their ability to respond to a mine emergency when it occurs.

Why is the issue of training future mine emergency responders so important? The answer to this question can be found in one veteran's comment:

...a lot of people [have] come and gone since 1969. And we're having less problems. So, in the next 10 to 15 years, there's just going to be a hand-full of people that's had any experience.



In short, fewer major mine emergencies are occurring. As seasoned emergency response personnel depart from the mining industry, there will be fewer individuals in the future who have firsthand experience in mine emergency response. If the suggestions made by mine emergency veterans for training future responders are followed, the industry will be better prepared to handle emergencies that arise.