Emergency response veterans share the lessons they've learned

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Since 1991 the Pittsburgh Research Center (PRC formerly part of the U.S. Bureau of Mines) has been tapping a valuable resource—researchers have recorded extensive interviews with 30 individuals who are recognized as experts in the area of mine emergency response. These veterans related stories and observations from events experienced during as many as 47 years of response activities. Overall, the response veterans averaged 29 years of mine emergency response experience and 35 years mining experience. Individuals

interviewed included representatives from mining companies, the UMWA, and state and federal government agencies. This information was gathered so that it could be provided to today's miners and to tomorrow's emergency response personnel. It is hoped the collective wisdom that has been obtained can be used to help train new responders and guide those decisions which will have to be made on the scenes of future events.

During the interviews, the emergency response experts were asked to discuss lessons they had learned through experience. The interviewers asked them to tell what they had learned that would cause them to handle similar situations differently and to tell about things they saw at past events that they would warn others not to do in the future. In response, the experts discussed a variety of things. Most of their responses, however, touched on some of the same topics including: preparedness, experience, people on-site, mine rescue teams, and decision making. A summary of their responses provides an overview of the lessons learned on-site at the largest mine disasters in the country.

Preparedness

The most common lesson that experts reported dealt with aspects of preparedness. Almost a third of those interviewed suggested that future responders would better handle situations if they have been properly trained and if appropriate preparations have been made at the mine site. One expert suggested that responders 'Get a good procedure. Work on it. Everybody agree on it and write it up and practice, practice, practice." Another said that, "It's just a matter to me of organization and if you have the right organization, you don't have that many problems with it."

There was particular concern expressed about the need to develop a strategy for having appropriate personnel available when required. To accomplish this, staff needs must be determined:

> [I learned that] I would staff different. And as an example, this last accident that we had, we sent individuals up to handle the mine site, but we didn't think of our own needs within that office. As an example, we had a secretary there, this secretary, we should have sent back up for her. She ended up being the secretary, the phone answerer, the coffee pot girl, frankly, girl Friday. And we didn't worry one iota about wearing her out, the hours that she worked. [It] didn't enter our minds, and I said if we ever did anything again, that has demands like that, I would staff from the, not just the top people, but you got to staff down below. You got to prepare for that too.

Once staffing needs have been determined, it is critical that responders know what is expected of them before they arrive on a scene. As one expert said, "...everybody should have a clear-cut understanding

of what their responsibilities are, what their role is, and where they fit into the emergency structured "I

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think everybody needs to understand exactly what you re trying to do, whatever it may be." Preplanning, for both personnel and other resources, is a means of saving time:

> One of the biggest lessons I learned is once you've arrived on the site, get your backup, get your support, and call for help. You are not invincible. You need help. And get your resources, and get your backup behind you… You will need them. All your resource and material, …not necessarily to have the equipment on the property—underground. I mean, you can overload with …a whole bunch of equipment you may never need. But you should have your resources, your check list. If you want to call [to determine] where this equipment is and how soon can I get it here? Do I need it? …That first fire that I was involved in, and I said that I was going to be the big hero, and I was going to be there. And I was there until 12:00 at night before I called for help. And then, when I called for help, it was a mad scramble, and I should have been calling for that help at eight o'clock in the morning. When I arrived on the property, I should have made those phone calls. "Hey, I'm at the mine. We've got the emergency. You guys are on standby. Get this stuff ready… We may need it." It doesn't necessarily have to come to the property, unless there's a good chance you're going to use it, but at least have it ready.

As this quotation suggests, time saved by forethought and preparation can become valuable during a response.

Experience

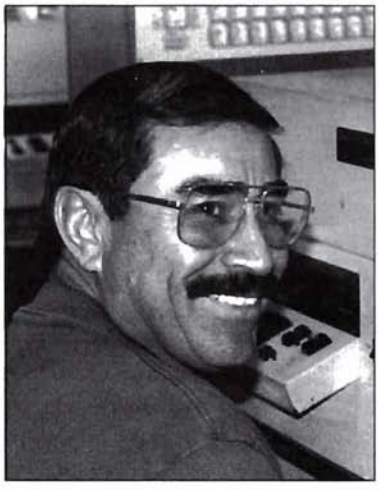
All of the experts provided glimpses of what it was like to be on-site during responses to major mine emergencies. When asked what they had learned that should be passed on to future generations, five of them discussed how experience influences the effectiveness of responders. One veteran used the example of an emergency operation with which he had been involved early in his career. He concluded that what had taken him 30 hours to complete then would require only half the time now because of his experience. The five individuals also suggested ways to make the most of the learning opportunities that responses create. They talked about the hands-on learning that occurs during a response, about the value of reviewing events and sharing what can be learned from them, and about simulating emergency conditions to give trainees a preview of what they may encounter.

The five veterans recounted that most of their training occurred during responses. One individual discussed how learning can take place under these circumstances. He was not a decision-maker in his first few responses. Instead, he talked with the experienced person who was in charge. This experienced responder explained not only what should be done, but also the technical information that supported each decision. The novice workers asked questions throughout the response and gained invaluable knowledge from the seasoned Teacher." During the interview, this subject expressed his opinion that some aspects of mine emergency response have to be learned on-site through experience. He further pointed out that while presence during responses provides opportunities for learning, it is up to the individuals involved to ensure that teaching and learning take place.

Those who stressed experience during their interviews also thought that learning could and should take place through the review of events. One respondent related a story about reviewing an event to determine causation. He explained how pieces of the puzzle didn't fit together until well after the event when all testimonies had been reviewed and a report was being written. When this collected information was put together, an analysis became possible and recommendations could be developed to prevent a similar situation from occurring in the future. The significance of summary reports, or formalized hindsight, was also mentioned in terms of the importance of sharing these documents with others in the industry: '…what we do is, we send [our association] a report, which they can take then and pass it on to other areas. Where… by our misfortune, they can learn by it too."

It was also suggested that experience can be gained through simulated emergencies. One expert

argued there should be available facilities in which mock emergencies can be staged, exposing trainees to something like a real event. Fire training would include responses to burns in controlled environments, for example. "You learn from your mistakes… Give them opportunities to make the mistakes where no one is going to get hurt. And then we'll have people [who've been trained], and this is what we need because this is …not something you learn in books."



People on-site

Lessons that had been learned regarding who should and should not be allowed on mine property during a response were passed on by four of the experts. They expressed concern about people who were not taking active roles in a response but who added complexity to the situation by interfering and/or simply contributing to overcrowding by their presence. These four individuals also addressed the special needs of victims' family members.

Control of site access had been discussed in another portion of the interview, but the experts felt this issue was important enough that future responders should learn from their experiences:

> [There] were situations where people had, I guess, influence …with the company that got into the area that wasn't really needed. I think that there should be a very strict policy on the number of people that come in… And I don't think that any of them that I know about, really adhered to that policy rigidly enough. I think maybe that in all cases there'd been some people in the area that shouldn't have been there.

The concern of extra people hampering response efforts is one consideration. A related (and equally important) issue is the safety of these bystanders:

> …maybe [when] there'd been a rock fall, there's a little too much chance taken around that rock fall. With too many people when you ought to have a little bit less number of people in the area trying to get the person cleared of the rock. I don't think you need eight or ten people around trying to clear the rock, when they were in each other's way. And if there's another fall, you just have that many more people killed.

Generally, it was agreed there should be as many people as needed to conduct an efficient and effective response on the mine site and no more.

It was mentioned, however, that special provisions should be made for the family members of missing miners:

> [With my experience] I would [now] know that family members are going to be there, and they are going to be very, very apprehensive. Someone with compassion needs to pay a lot of attention to family members and be able to brief them and to make sure that their pastors, their religious leaders, whoever they may be, [are] aware of the situation and invite them to come and be with the family members.

One expert agreed with the need to be as supportive as possible with family members, but warned that it should be clearly established who is and is not considered "family." He noted that in one case, family friends who were allowed to accompany the family abused their access to mine property in an attempt to gain more information about the victims. It is not surprising that these friends were interested in obtaining as much information as possible, but their activities hampered the efforts of responders. None of the veterans described this type of problem with actual relatives of victims and all felt they should be given every consideration possible.

Mine rescue teams

Four experts had thoughts regarding mine rescue teams that they felt should be communicated to future responders. One issue related to this topic is the problem of response times. Since team members may be away from the mine when an event occurs or may be called to a mine other than the one where they work, time is required to assemble a team. One suggestion for dealing with this delay is to use a mixed team: "… you [aren't] going to call 14 men and 14 of them be at home …if I didn't get as many men from one team as I wanted to …I took one or

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two from the other team." This person cautioned that while response time is important, it must be emphasized that team members (and other responders) should not endanger themselves by driving to the response in an unsafe manner. "There's no need to cause some more injury to yourself or someone else, just to get there two seconds, or two minutes earlier."

Another important issue relating to mine rescue teams is communication between a team and the command center. It was argued that teams sometimes do not follow directions of the command center and that they sometimes do not report back appropriately:

> If you let [the teams] go and not know what they're doing, or for them to ...just call back what they want to tell you, how are you going to make a decision on the surface? You'll make the wrong decision probably three-fourths of the time, because you don't know the information. And if they don't tell you, there's no way to know.

According to those interviewed, mine rescue teams should be the eyes and hands of their command center but this has not always happened during responses. As stated above, roles and responsibilities must be clarified for everyone involved in the response before an event occurs.

Decision making

One set of questions on the interview guide covered the area of decision making. Three of the people who were interviewed thought some aspect of this issue should also be brought up when speaking of lessons they would like to pass on. In all three cases the focus was on interactions between responsible individuals in the command center. It was pointed out that interplay between multiple people is helpful: "... it's best to have somebody that you can talk to because no one person [can always know the best thing to do]. They just don't make them that smart."

On the other hand, conflict between individuals in the command center can be a problem. One person related the story of a "skirmish" that occurred between representatives of regulatory agencies during a response. Another pointed out that, as stated above with regard to planning, command center personnel must know their roles: "I have no problem with the four agencies (company, federal, state, and union), as long as they understand that ...it's the responsibility of the company to call the shots." This individual stated that the government agencies and the union should provide personnel to assist the company if they need it and to discuss with them any decision that may create a hazard. He further reflected that when "... a person at a coal company has the knowledge of rescue and recovery work, it makes the job easier, and I think you get along better. Where a person does not have the knowledge, you'll have to question him more: 'Why are you doing this?' And the plans generally change [as a result of your questions]." A decision maker whose plans are questioned may want to remember this advice from one of the experts interviewed: "Well, quick decisions is often bad. Try to count to ten anyhow, before you make a decision... And a wise man changes his mind, and a fool never does."

Conclusions

During the interviews with PRC staff members, the experienced mine emergency responders covered a myriad of issues. The most commonly mentioned topic was preparedness. Implicit in their observations is the notion that it is critical to have a well-designed mine emergency plan which has been tested. Additionally, the importance of practice was reiterated as a basic theme. The veterans also talked about the value of experience and suggested that some of this experience could be gotten through practice during such activities as mock emergencies. Almost half the responders mentioned the advisability of rehearsing for actual events before they happened.

A second theme, which ran through discussions, was the essential nature of good communications and control. Over and over respondents talked about the importance of having reliable information about what rescue teams underground were doing. They also considered it crucial to stay abreast of the activities of various parties on the surface. These individuals recognized that the quality of decisions made during a response was directly related to the adequacy of available knowledge and how it was imparted. The implication is that, once an emergency plan has been developed and rehearsal is instituted, particular attention should be paid to the delineation of roles and establishment of communication protocols. If these things are done, future responders will be better prepared to handle the emergencies they face.

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