

TRAINING IN THE USE OF THE SELF-CONTAINED SELF-RESCUER

Henry P. Cole, Educational Psychologist,
University of Kentucky, Lexington, KY.

Charles Vaught, Research Sociologist,
Pittsburgh Research Center, Bureau of Mines, Pittsburgh, PA.

ABSTRACT

Researchers from the University of Kentucky and the Bureau of Mines have developed a set of training materials designed to increase SCSR donning proficiency. The package presents a generic procedure for the four SCSR's in common use (CSE, Draeger, MSA, and Ocenco). It offers (1) a donning position that is easy and efficient, (2) a donning sequence that moves critical steps (those necessary to isolate one's lungs from the ambient atmosphere) up front, and (3) a set of simplified, easy-to-remember procedural rules that can help miners order the complex array of tasks needed to put a self-contained self-rescuer into use.

This training package has been fieldtested with 16 groups of coal industry people in 3 States. The preliminary data suggest that the generic procedure is more efficient than training approaches currently in use. Additionally, the summary statistics indicate a need for consistent and thorough training that includes hands-on performance trials. The optimum interval for such activities has yet to be determined.

INTRODUCTION

The air in the immediate area of an underground coal mine explosion or fire may contain so little O₂ and such high levels of CO that filter self-rescuers would be ineffective. Under such conditions, survivors would have to don the self-contained self-rescuers (SCSR's) rapidly and flawlessly. Miners located at some distance from an explosion or fire might have more time to put their SCSR's into use, but a mine's ventilation system can quickly sweep deadly levels of smoke and CO into relatively distant places. In either case, proficient donning of the device is critical.

Researchers from the University of Kentucky and the Bureau of Mines, in cooperation with MSHA, the Kentucky Department of Mines and Minerals, and several private coal companies, have developed a set of training materials designed to increase donning proficiency. To provide an empirical base for the construction of these materials, the investigators videotaped, under experimental conditions, 50 miners putting on the CSE

AU-9A1.* This was the model in use at their mine. Each person's performance trial was first timed. The entire donning sequence was then broken into sub-tasks and evaluated (fig. 1). Finally, errors, interruptions, and omissions that occurred at each step of the procedure were logged. This analysis of the tapes allowed the researchers to target actual