

PROBLEMS IN DONNING SELF-CONTAINED SELF-RESCUERS

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

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

ABSTRACT

In 1986 University of Kentucky and Bureau of Mines researchers participated in a series of related SCSR donning studies. To establish a baseline for their investigations, they interviewed more than 50 mine safety instructors, rescue team members, and inspectors. The interviews support a widely held notion that very few underground coal miners ever actually don an SCSR in training. Rather, the typical training session will include a film, a slide-tape presentation, or a talk by an instructor who stands before the class and demonstrates the steps involved.

Given the industry's heavy reliance on abstract training methods, the research staff reviewed all generally available literature for the four models in common use (CSE, Draeger, MSA, and Ocenco). They targeted three main concerns with current training materials: (1) The recommended donning position appears difficult and inefficient and is impossible for miners working in low coal, (2) the donning sequence tends to place nonessential and time-consuming tasks such as strap adjustment ahead of some of the steps necessary to isolate one's lungs from the surrounding atmosphere, and (3) the materials present no simplified, easy-to-remember procedural rules to help miners order the complex array of tasks needed to use the device in an emergency.

An innovative training package was developed and field-tested. The data indicate that the new approach has great promise for improved SCSR donning efficiency.

INTRODUCTION

During 1986 researchers and technical staff from the University of Kentucky, the Bureau of Mines, the Mine Safety and Health Administration, the Kentucky Department of Mines and Minerals, and two coal companies conducted a series of related SCSR donning studies. Prior to this research there had been little systematic investigation of miners' ability to put the devices into use, although there had been many evaluations of SCSR durability, reliability, and duration of oxygen supply under various levels of physical exertion.

One exception found in the literature is the report of a field evaluation of the Draeger OXY-SR 60B and the MSA Model 464213.* Donning times for 46 miners were recorded and shown to range from 30 to 192 s. The average time for all subjects was 90 s. This report, although informative, does not indicate the frequency and types of donning errors, times for completion of part tasks, or whether the individuals were given assistance during their performance trials.