

**PROCEEDINGS  
OF THE  
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COAL MINING HEALTH, SAFETY AND RESEARCH**

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## INTRODUCTION

This Proceedings contains the presentations made during the program of the Eighteenth Annual Institute on Coal Mining Health, Safety and Research held at the Donaldson Brown Center for Continuing Education, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, on August 25, 26 and 27, 1987.

The Eighteenth Annual Institute on Coal Mining Health, Safety and Research was the latest in a series of conferences held at Virginia Polytechnic Institute and State University and co-sponsored by the Mine Safety and Health Administration, United States Department of Labor and the Bureau of Mines, United States Department of the Interior.

The Institute provides an information forum for coal operators, mine managers, superintendents, safety directors, engineers, inspectors, researchers, teachers, and state agency officials, and others with a responsible interest in the important field of coal mining health, safety and research.

In particular, the Institute is designed to help mining operating personnel gain a broader knowledge and understanding of the various aspects of coal mining health and safety, and to present them with methods of control and solutions developed through research.