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Technology News

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Proceedings: New Technology for Coal Mine Roof Support

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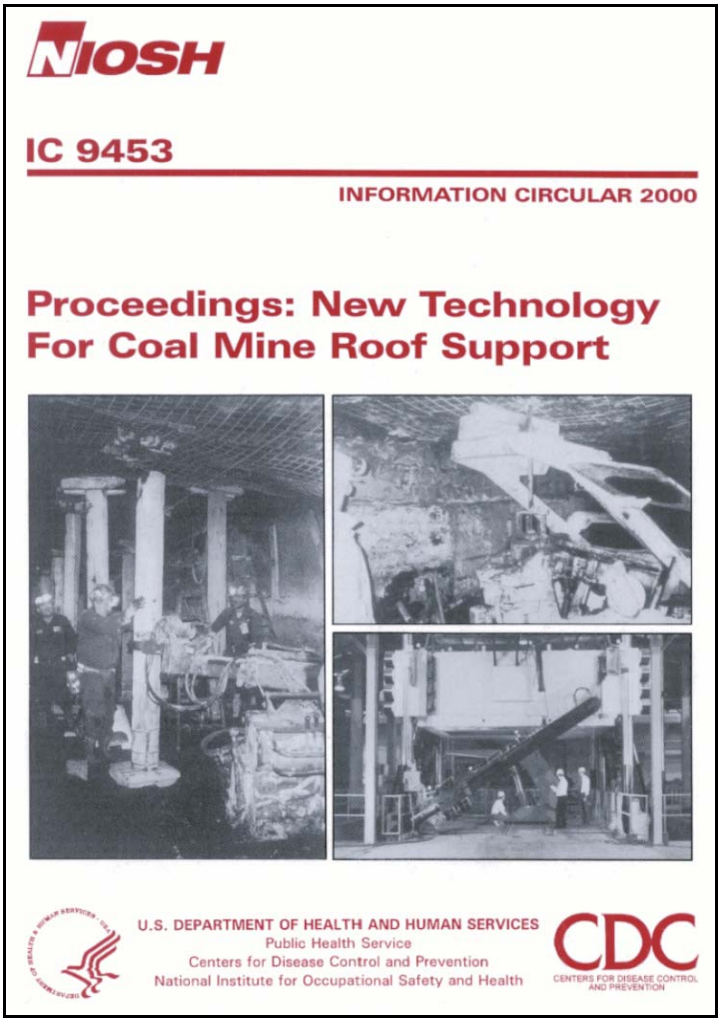
Roof falls continue to be the greatest single safety hazard faced by underground coal miners. During 1996-99, 44 coal miners lost their lives in rock falls and nearly 2,400 were injured. In addition, nearly 6,000 noninjury roof collapses were reported. Roof supports are installed to protect the miners, but support system failures contributed to most of these incidents.

Reducing the terrible toll taken by ground falls continues to be a major goal of research by the National Institute for Occupational Safety and Health (NIOSH). During 2000-01, NIOSH conducted a series of open industry briefings on New Technology for Coal Mine Roof Support in Norton, VA, Charleston, WV, Evansville, IN, Tuscaloosa, AL, Price, UT, Glenwood Springs, CO, and Washington, PA. Drawing on many years of research undertaken by the NIOSH Pittsburgh and Spokane Research Laboratories, the proceedings describe what types of coal mine roof support are available, how they work, and when they should be used. The major subjects covered include roof bolts, standing roof supports, cable supports, and longwall shields. Some special topics are also addressed, including an analysis of roof fall accident statistics, techniques for better skin control, and material handling considerations. The proceedings volume also contains information on several important new technologies, which are described for the first time, e.g., guidelines for selecting roof bolt



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length, pattern, and capacity that were derived from statistical analysis of the roof fall experience at 37 underground mines; a new design method for longwall tailgate supports; and a technique for measuring loads developed within cable bolts.

The titles of the papers in the proceedings are:

- Roof and Rib Fall Incidents and Statistics: A Recent Profile
- Fundamentals of Coal Mine Roof Support
- Trends in Roof Bolt Application
- Assessing Coal Mine Roof Stability Through Roof Fall Analysis
- Load Behavior of Grouted Bolts in Sedimentary Rock
- Summary of Field Measurements of Roof Bolt Performance
- Skin Failure of Roof and Rib and Support Techniques in Underground Coal Mines
- Design of Roof Bolt Systems
- Design Methodology for Standing Secondary Roof Support Systems
- Optimizing Secondary Roof Support with the NIOSH Support Technology Optimization Program (STOP)
- Cable Support in Longwall Gate Roads
- Material Handling Considerations for Secondary Roof Support Systems
- NIOSH Safety Performance Testing Protocols for Standing Roof Supports and Longwall Shields
- Examining Longwall Shield Failures From an Engineering Design and Operational Perspective
- Factors To Consider When Purchasing a New Set of Longwall Shields
- Instruments for Monitoring Stability of Underground Openings
- Evaluation of Ground Support at a Trona Mine Using Instrumented Cable and Rebar Bolts

To order a free copy of these proceedings (IC 9453), contact Donna Opfer at (412) 386-6564, e-mail: **dopfer@cdc.gov**. Or you may complete the order form below, detach, and mail to: Donna Opfer, NIOSH Pittsburgh Research Laboratory, Cochrans Mill Rd., P.O. Box 18070, Pittsburgh, PA 15236-0070, or fax to (412) 386-6891.

To receive additional information about occupational safety and health problems, call **1-800-35-NIOSH (1-800-356-4674)**, or visit the NIOSH Web site at www.cdc.gov/niosh

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