



Centers for Disease Control
and Prevention (CDC)
National Institute for Occupational
Safety and Health (NIOSH)
Office of Mine Safety & Health
P.O. Box 18070
Pittsburgh, PA 15236-0070

December 19, 2007

Mr. Ronald Wooten
Director, Office of Miners' Health, Safety & Training
West Virginia Department of Commerce
1615 Washington Street East
Charleston, West Virginia 25311-2126

Dear Mr. Wooten:

Thank you for meeting with me on December 19, 2007 to discuss information that the National Institute for Occupational Safety and Health (NIOSH) in the Centers for Disease Control and Prevention of the United States Department of Health and Human Services has recently generated that may have an immediate impact on the health and safety of mine workers within the State of West Virginia.

NIOSH conducts a program of mining safety and health research as a part of its portfolio of 32 occupational safety and health programs. Section 13(a) of the Mine Improvement and New Emergency Response Act of 2006 ("MINER Act") requires that NIOSH "provide for the conduct of research, including field tests, concerning the utility, practicality, survivability and cost of various refuge alternatives in an underground coal mine environment, including commercially-available portable refuge chambers."

Section 13(b) mandates that "[N]ot later than 18 months after the date of enactment of this Act (June 15, 2006), the National Institute for Occupational Safety and Health shall prepare and submit to the Secretary of Labor, the Secretary of Health and Human Services, the Committee on Health, Education, Labor and Pensions of the Senate, and the Committee on Education and the Workforce of the House of Representatives a report concerning the results of the research conducted under subsection (a) including any field tests."

Shortly after passage of the MINER Act, NIOSH began to discuss the elements of an appropriate refuge chamber testing protocol with many different stakeholders including representatives from the State of West Virginia. As a result of those discussions, NIOSH agreed to include in the peer-reviewed testing protocol certain parameters designed to assess the ability of refuge chambers to meet certain key regulatory provisions recently promulgated by the State of West Virginia.

NIOSH understood before commencing testing at its Lake Lynn Experimental Mine that the State of West Virginia refuge chamber approvals were based on data and calculations provided by the manufacturers, as certified by a registered professional engineer. Furthermore, NIOSH

understood from a preliminary review of refuge chamber capabilities, and from a meeting between NIOSH scientists and members of the State of West Virginia Task Force, that several areas of chamber performance were of significant concern. These areas were: (1) level of oxygen when miners occupied the chamber; (2) level of carbon dioxide inside the chamber when miners occupied the chamber; (3) apparent temperature inside the chamber when miners occupied the chamber; (4) the "purging" capability of the chamber, i.e., capability of the chamber to clear contaminated air from within the chamber each time the chamber door is opened to the outside; and (5) other specific areas such as set-up time and operating instructions.

NIOSH is now preparing a report entitled "*Report of Research on Refuge Alternatives*" to meet the requirements of Section 13(a) and (b) of the MINER Act. The NIOSH Report will be assembled in December of 2007, submitted to the parties named in Section 13(b) of the MINER Act, and will be disseminated in early January.

However, NIOSH believes that findings in the four areas of chamber performance that are of significant concern to the State of West Virginia and need to be communicated to the State prior to the formal completion of the Report. NIOSH understands refuge chambers mandated by West Virginia Regulation Code, Title 56, Series 4, Section 8 will shortly be moved underground for operational use by miners in the case of an emergency. Since findings from our field testing raise issues about the performance of such refuge chambers, NIOSH believes it is imperative to inform you of our findings as soon as possible before deployment of refuge chambers.

What follows is a brief summary of our findings to date.

NIOSH conducted refuge chamber testing by NIOSH scientists at its Lake Lynn Laboratory. Various phases of the testing of each chamber were observed by representatives from the West Virginia Task Force and the Mine Safety and Health Administration's Approval and Certification Center. Results of testing four refuge chambers from different manufacturers were as follows:

(1) Oxygen (O₂)

Two of the four chambers had an O₂ flow rate less than the specified minimum value.

(2) Carbon dioxide (CO₂)

Three of the four chambers had a CO₂ level in excess of the specified maximum value; and practical difficulties with the process of scrubbing were observed, to a greater or lesser extent, in all four chambers.

(3) Apparent Temperature

Two of the four chambers developed an apparent temperature greater than the specified maximum value.

(4) Purging

NIOSH did not develop and execute a quantitative evaluation of chamber purging or positive-pressurizing ability, but our work-to-date indicates that this could be problematic for all four chambers, and that an alternative may be required.

(5) Operating Instructions

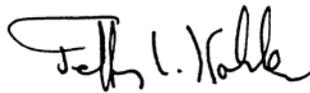
Instructions provided with the chambers were sometimes difficult to understand, and in one case, the instructions for CO₂ scrubbing were erroneous. None of the chambers contained "quick start" instructions and most lacked comprehensive instructions to deal with malfunctions or problems in critical systems.

NIOSH believes that many of the experimentally observed shortcomings can be addressed quickly through improved engineering design, minor technical modifications, and/or the use of improved instructional materials. Indeed, based on our preliminary feedback to the manufacturers, changes may have already been implemented, but we do not have first-hand knowledge of these changes. However, NIOSH would be pleased to evaluate the efficacy of any changes made to improve chamber performance.

As you are already aware, NIOSH is not an approval and certification agency. Findings from NIOSH's refuge chamber testing should be correlated with other sources of data on refuge chamber performance and with the experience of users. NIOSH does believe that laboratory testing of refuge chamber performance may be a valuable adjunct to any governmental refuge chamber approval and certification process.

Thank you for meeting with me on December 19, 2007 to discuss these important findings.

Sincerely,



Jeffery L. Kohler, Ph.D.
Director, Office of Mine Safety and Health

JLK/mc

cc: The Honorable Edward M. Kennedy
Chair, Committee on Health, Education, Labor, and Pensions
U.S. Senate

The Honorable George Miller
Chair, Committee on Education and Labor
U.S. House of Representatives

The Honorable Richard Stickler
Assistant Secretary for Mine Safety and Health
U.S. Department of Labor

John Howard, M.D.
Director, National Institute for Occupational Safety and Health