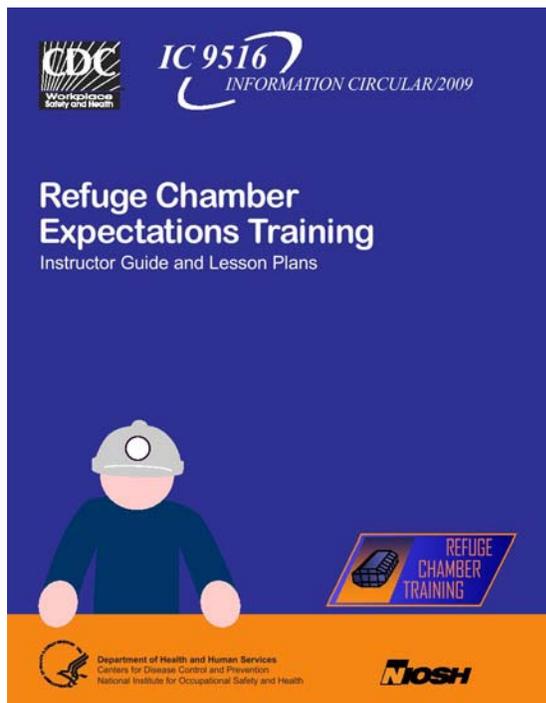


Refuge Chamber Expectations Training: Instructor Guide and Lesson Plans



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Reference: Pittsburgh, PA: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2010-100, Information Circular 9516, 2009 Oct; :1-18

Refuge Chamber Expectations Training IC#9516 authored by Katherine A. Margolis, Ph.D. Kathleen Kowalski-Trakofler, Ph.D., and Catherine Y. Kingsley Westerman, Ph.D. Office of Mine Safety and Health Research (OMSHR) Pittsburgh is a computer based training program for underground coal miners which can be used in miners' mandated annual refresher training or quarterly evacuation training.

The program was developed by a multi-disciplinary team of NIOSH researchers after 2006 when there were two incidents at underground coal mines in WV and one in KY resulting in the deaths of 19 miners. The Sago, WV Mine Disaster, where 12 miners died after an explosion, served as an impetus for changes in federal mining regulations. At Sago, one miner was killed instantly by the explosion which also cut off all communications to the surface. The other 12 miners donned their one hour self-contained self rescuers (SCSR) and began to escape. After encountering smoke, dust, and debris and with no information regarding the condition of the mine, the miners returned to their work area, erected a barricade and awaited rescue. Eleven of the 12 died of carbon monoxide poisoning before rescuers reached them 41 hours later. One miner survived. After Sago, the US Congress passed a law mandating the placement of refuge chambers in all underground coal mines as an alternative for miners if they could not escape a mine after an emergency. Refuge alternatives provide a chamber situated in the mine, isolated from toxic gases, with supplies to support life for up to 96 hours.

Refuge chambers are a new technology that many miners still find unfamiliar and consequently are reticent to utilize. Miners have been trained previously to exit the mine or in rare cases to erect a barricade and wait for rescue. NIOSH researchers developed the training to inform miners about what they might expect psychologically and physically if they found themselves in a

situation where all avenues of escape were blocked and their only alternative was entering a chamber.

Since the beginning of the development of this product, there have been a number of disasters in the mining industry including Crandall Canyon, UT in 2008 where six miners and mine rescue workers died and more recently, the explosion at Upper Big Branch, WV in 2010 where 29 miners died. Thus, mining remains a dangerous occupation and life-saving alternatives such as refuge chambers have their place in the preservation of life.

The training program is 30 minutes in length and is applicable to all skill levels. The program consists of a CD with the lesson for the learner, the Instructor's guide and lesson plans. The training may be used by a mine trainer in the classroom or by an individual learner. It may be downloaded as a ZIP file from the OMSHR NIOSH website.

<http://www.cdc.gov/niosh/mining/products/product183.htm>

Since publication in October 2009 and the receipt of the Alice Hamilton Award in 2010, the program continues to be very well received in the mining industry. Presentations in 2010 have included the Joseph A. Holmes Safety Association, Virginia Beach in May, Pennsylvania State University in Ebensburg, PA in September, and the annual Training Resources Applied to Mining (TRAM) Conference in Beckley, WV at the National Mine Academy in October. TRAM attracts over 500 mine trainers from all over the United States.

NIOSH Webmetrics from the period March 1, 2010 through March 31, 2011 indicate that there were a total of 565 page views by users on the page for Refuge Chamber Expectations Training. During this period there were also 304 visits. A visit is when a single visitor comes to the website and navigates the site. There were 601 page views of the Instructor's Guide. As far as downloads, there were 149 downloads of the Instructor's Manual and 187 of the CBT Training program. The site includes information on ordering the program from NIOSH/CDC Publications. The program was also available to attendees at the National Mine Academy TRAM meeting.

An accompanying peer review publication was published: Margolis, KA, Kingsley Westerman, CY, Kowalski Trakofler, K (2011). Underground Mine Refuge Chamber Expectations Training: Program Development and Evaluation Manuscript Number: SAFETY-D-10-00072R2 Safety Science. Another publication has been submitted and is under review by a peer review journal. Overall, the Refuge Chamber Expectations Training has been met with enthusiasm.

Related Products:

- [Harry's Hard Choices: Mine Refuge Chamber Training](#) - Paper and Pencil Exercise
- [How to Operate a Refuge Chamber: a Quick Start Guide](#) - Safety Talk
- [Emergency Escape and Refuge Alternatives](#) - Safety Talk

Related Documents:

- [Guidelines for Instructional Materials on Refuge Chamber Setup, Use, and Maintenance](#) (PDF, 416 KB, 2009-07)

- [Refuge Chamber Expectations Training: Instructor Guide and Lesson Plans](#) (PDF, 310 KB, 2009-10)
- [Technology News 537 - NIOSH Develops New Mine Refuge Chamber Training](#) (PDF, 182 KB, 2009-11)