



Improving Emergency Self-Escape of Underground Miners via Competencies, Experiential Learning and Virtual Reality Gaming

Mine Safety and Health Administration Brookwood-Sago Mine Safety Grant

The purpose of this project is to develop and use a comprehensive emergency preparedness program for underground coal miners which includes a validated standardized set of core competencies for self-escape; an experiential hands-on competency-based emergency preparedness training curriculum which includes use of the serious game Harry's Hard Choices; and exercise guidance, based on national Homeland Security exercise design and conduct standards, to test and improve miner resilience and support successful self-escape.

Emergency Preparedness & Response Competency Frameworks

To ensure miners can function effectively in an emergency, a train-to-mastery system with competency standards is needed. To address this gap, UA researchers with expertise in mine safety and health and emergency preparedness and response, drafted two com-

petency frameworks; preparedness competencies and response competencies. Both models include the associated knowledge, skills, abilities, and other attributes to provide mining organizations with a foundation for emergency response planning, development of competency-based curricula and training activities, and measuring performance during evacuation drills. The systems based competency models are key components for improving miner resiliency in emergency situations with adverse conditions.

Competency Domains:

Competencies in the following six domains are critical to build and sustain the capacity of individual miners to fulfill their responsibilities and increase their survivability in an emergency situation:

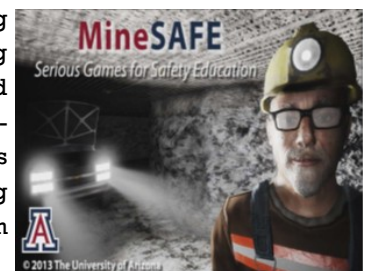
- 1) Leadership & Management
- 2) Communications & Crisis Management
- 3) Hazard Recognition & Avoidance
- 4) Regulatory Compliance
- 5) Worker Safety & Health
- 6) Miner Resiliency



NIOSH vision for a well-balanced emergency response system

Competency-Based Training and Virtual Reality Gaming

The 4-hour competency and capability based training program will provide miners with an experiential learning environment to improve knowledge, enhance skills and assess abilities in leadership and decision making, communications, hazard recognition, and worker safety. Harry's Hard Choices will be used as the virtual reality gaming platform to test self-escape performance and decision making under adverse conditions.



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