Mining Knowledge and Skill Gaps & Solutions

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Mining Knowledge & Skill Gaps

• Demographic data to define and understand the issues
• Engineering capacity in ventilation and ground control
• Techniques and technologies that reach the workforce
  • Social media
  • Just-in-time information
  • Proactive safety and health training strategies
  • Advanced training technologies
  • Realistic training simulations
**Challenge:** Determine the impact of changing mining conditions, new and emerging technologies, and changing work patterns

- Develop a U.S. mining industry demographic surveillance program
- Collect data from mines in different commodity sectors each year
- Update denominator data for demographic and occupational subgroups
- Provide current data to guide mining research and training activities

**National Survey of the Mining Population**
- Serves as basis this new surveillance system
- 2008 survey conducted in Coal, Metal, Nonmetal, Stone, and Sand & Gravel

[http://www.cdc.gov/niosh/mining/features/nationalsurveyofminingpopulation.html](http://www.cdc.gov/niosh/mining/features/nationalsurveyofminingpopulation.html)
Capacity Building Initiatives

**Fundamental Research Funded**
- Ventilation Engineering
  - Research at 7 universities (5th year of 5 years)
  - Total Investment = $8.5 million.
  - New solicitation
- Ground Control Engineering
  - Research at 8 universities (3rd year of 5 years)
  - Annual Investment = $2.0 million

**Future Industry Experts Supported**
- 8 Ph.D. and 15 M.S. Conferred
- 58 graduate students currently supported
OMSHR Social Media

**Twitter**
- ~5,600 followers
- sharing links
- promoting content
- [@OMSHR Twitter](https://twitter.com/OMSHR)

**YouTube**
- videos for sharing
- Example: [Arc Flash Awareness](https://www.youtube.com/watch?v=6H6ILB1kuzg)
- ~20,700 views

**Analytics**
Tweet → Click custom link → web page view → pub download
Mine Site Information Delivery

**Downloadable Info**
How can safety and health information be delivered to the mining workforce when and where they need it?

**Ergonomic Audit Tool App**

- An audit provides a comprehensive measurement of how well jobs and workplaces have been designed

- Topics: 1) small and bulk bagging operations, 2) haul truck operations, and 3) preparation/minerals processing plant maintenance and repair

- Guides observations and provides recommendations

- Currently in development
Changes to Miner Training

- Fewer mentors available per new worker
- Advanced technologies used by miners in the workplace
- Familiarity of trainers and miners with computers/phones as learning tools
- Increasing comfort learning, practicing, and testing in virtual environments
- Desire for more targeted, self-paced, and self-directed learning
- Acceptance of need for blended learning training strategies
- Additional assessment requirements
Advances in Miner Training

OMSHR Research
How should the industry utilize virtual environments for mine safety and health training?

Mine Rescue Team Training
Preliminary Findings

100% agreed this event could happen
100% agreed simulated mine realistic

7.68 increase pre/post in team efficacy
4.15 increase pre/post confidence in team performance in actual event

Data from 6 mine rescue team training sessions (41 miners). Results significant at p<.05 (repeated measures t-test).