Evaluating Mining Safety and Health Training, Technology Transfer, and Communications

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Project Goal: Improve workers' health and safety by facilitating the introduction of new and existing technologies, training, and technology transfer approaches from government and private research facilities into the mining industry.

Evaluation Goal: Determine what measurable criteria from the MISTTI tasks are relevant and can potentially improve health and safety practices in mining.

Massey Energy Complex in Montcoal, WV
Craig Cunningham, Charleston Daily Mail

Six months after receiving a grant to improve mining health and safety, a tragic coal mining accident occurred that resulted in the death of 29 miners, working 1,000 feet underground, 45 miles from the West Virginia state capital. The mining tragedy helped to underscore and reinforce the need for greater health and safety regulations, training, and technology support that this project was designed to address. This evaluation adapts a logic model first used by the National Academies in their assessment of the National Institute for Occupational Safety and Health and Mining Programs (2007*, 2009**) to guide the project team towards strategies that maximize outputs and outcomes for training, technology transfer, and communications. This paper describes the evaluation framework, method, and data collection processes across five diverse project tasks, each led by technical experts. This poster shows how the evaluation activities and outcomes are adapted to each of the five project tasks.

With the intersection of the mining health and safety funding award and the most horrible mining accident in 40 years, this evaluation quickly became linked to a regional, local, and international call for improvements in mining safety. The mining accident did not change the evaluation framework, methodologies, and data collection processes, which are closely tied to the tasks outlined in the project proposal. However, the April 5, 2010 mining tragedy led workers, citizens, and public officials to ask how a company with a pattern of violations can be finally made accountable. For example, more comprehensive legislation to protect worker safety without revised enforcement strategies would not satisfy a community that lost 29 miners who worked for a company that had a long history of safety violations, and whose fines and punishments were not resolved.

Several issues addressed in this evaluation are relevant to areas of active discussion and debate in our field. Evaluators must frequently work across diverse content areas. How applicable are the frameworks and models used in one discipline context to a completely different field? This project illustrates how a logic model developed for high-level, agency-wide evaluation at the National Institute for Occupational Safety and Health (NIOSH) agency was adapted and applied to this mining health and safety technology context.

Strategic Research Goals
(1) Respiratory disease prevention
(2) Noise-induced hearing loss prevention
(3) Cumulative musculoskeletal injury prevention
(4) Traumatic injury prevention
(5) Mine disaster prevention and control
(6) Ground failure prevention
(7) Surveillance, training, and intervention effectiveness

Theory Framework of Mediating Factors

Individual perceptions
Socioeconomic conditions
Knowledge and Capacities

Perceived risks and/or threats

Cues to act, such as education, symptoms, media, group pressure

Perceived benefits minus perceived barriers to behavior change

Likelihood of behavior change

MISTTI Activities and Outcomes
1. Project Administration and Program Evaluation
2. Worker Safety Training
3. Mine of the Future: Modeling Safer Mining Conditions
4. International Mining Health and Safety Symposium
5. Mine Escape and Rescue Technologies

Mining and Industrial Safety Technology and Training Innovation (MISTTI) Project Logic Model

Program Challenges → Activities and Outputs → Outcomes

A
Analysis of Strategic Goals and Objectives:
How does each MISTTI task address the NIOSH strategic goals for mine safety?

C
Review and Assessment of Activities:
What role do different stakeholder groups play in MISTTI project activities and interventions?

E
Review and Assessment of Intermediate Outcomes:
How do MISTTI activities, training, products and reports impact stakeholder policies?

B
Review and Assessment of Inputs:
How will stakeholders have input on the review and assessment of planning and production?

D
Review and Assessment of Outputs:
What publications, reports, databases, tools, recommendations, and innovations have come out of MISTTI research?

F
Review and Assessment of End Outcomes:
What changes in injuries, illnesses, exposures, risks, and practices have emerged from MISTTI research?

*Committee to Review the NIOSH Mining Safety and Health Research Program. (2007, p.208). *Mining safety and health research at NIOSH: Reviews of research programs of the National Institute for Occupational Safety and Health.* Washington, DC: National Academies Press.

**National Research Council. Committee for the Review of NIOSH Research Programs & Institute of Medicine. (2009, p.40) *Evaluating Occupational Health and Safety Research Programs: Framework and Next Steps.* Washington, DC: National Academies Press.