

**Project Title:** Implementation of Risk Management Programs: Identification of Best Practices to Reduce Injuries and Maximize Economic Benefits

**Organization:** University of Arizona

**Partnerships:** Professor Jim Joy, JKTech Pty Ltd

Carmel Bofinger, Minerals Industry Safety and Health Centre, Univ of Queensland

Dr. Dana Willmer, NIOSH Office of Mine Safety and Health Research

BHP Billiton New Mexico Coal

Barrick GoldStrike

Salt River Materials Group

**Investigator(s):** Dr. Jeff Burgess, PI

Dr. Eric Lutz, Co-PI

Dr. Gautam Gowrisankaran, Co-PI

**Focus Area:** Safety and Health Management

## SYNOPSIS

**Problem Statement and Justification:** Mining remains a dangerous profession. Risk management is a cyclical process of identifying operations or activities at high risk for injuries, redesigning operating procedures to reduce risks, implementing these changes and evaluating their effectiveness. Internationally, risk management is a legal requirement in many countries, but in the U.S. safety and health regulations are generally compliance-based. Establishment of risk management in Australian mines has been associated with significant reductions in lost-time injuries, and, in preliminary studies, progressive U.S. mines have also reduced injuries after instituting formal risk management programs.

**Impact of the Research:** Our goal is to determine the effectiveness of risk management interventions in reducing injuries and economic costs in the U.S. mining industry. The proposed research will: identify risk management best practices for U.S. mining operations including determination of the effect of overall risk management programs and component parts on injury rates and return on investment (ROI); develop business cases to help move industry to adopt these interventions; identify critical risks and controls for industry use; and share these resources through a dedicated website.

**Objective(s) and Research Approach:** Our project objectives are to: 1) Evaluate current risk management implementation in the U.S. mining industry; 2) Determine intervention ROI and risk management best practices; and 3) Share risk management tools through a dedicated website. We will work with U.S. mine sites with extensive risk management expertise representing both metal and coal sectors. A risk management survey/data collection tool for scoring overall program implementation and individual risk management interventions will be developed. The survey results will be combined with retrospective longitudinal analysis of company internal data and Mine Safety and Health Administration (MSHA) reported injury claims to determine the effectiveness of implemented risk management interventions. We will also evaluate the costs of program implementation, including direct and indirect program costs and the resulting changes in injury costs. Risk management intervention best practices will be identified by reduction in injury rates and positive ROI.