Using A Safety Climate Inventory as a Management Training Tool in Safety: A Case Study

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Abstract: There are many types of health hazards present in mines. Fatalities in the US mining industry from 2008 through 2017 had an estimated total societal cost of $554.16 million for the 404 fatal accidents (CDC, 2021). Additionally, from 2014 through 2020, metal and non-metal mines in the United States experienced a worker injury rate between 2.11 and 1.59 injuries per 100 workers. Work within a mine, whether open pit or underground presents many risks. As such, risks related to gases, dust, water and fire, explosives, transportation, hand tools, falls, noise and vibration, machinery and materials, and landslides make up just some of the recognized hazards that workers may experience (Kasap and Subasi, 2017). Mine personnel, including managers and safety professionals, work hard to reduce exposure and risks. One of the ways that organizations work to reduce the risk is through having a positive organizational safety culture.

Improving the organizational culture around safety can result in increases in choosing safe behaviors, improved morale, decreased worker turnover, and decreased injuries and incidents. Organizational safety culture is a qualitative concept that is measured through the quantitative means of safety climate. Safety climate is defined as individual perceptions of policies, procedures, and practices relating to safety in the workplace and takes into account organizational and cultural aspects within an organization to yield a proactive indicator of the health and safety programs within an organization. Organizational safety climate includes seven constructs each contributing to overall safety program health. They include management safety priority, commitment and competence; management safety empowerment; management safety justice; workers; safety commitment; workers' safety priority and risk non-acceptance; safety communication, learning, and trust in co-worker safety competence; workers' trust in the efficacy of safety systems. One measurement of safety climate is the 50 question Nordic Safety Climate Questionnaire (NOSACQ-50). This instrument requires the rating of series of statements on a 4-point Likert scale. The NOSACQ-50 has been translated into over 20 languages and is used all over the world. Developers of the NOSACQ-50 recommend that ratings above 3.3 indicate a good level that should be maintained. Ratings 3.0-3.3 indicate a fairly good level where some aspects may need to be slightly improved. Ratings 2.7-2.99 indicate a fairly low level where many aspects need improvement. Ratings below 2.7 indicate a poor level with a need for significant improvement.

Agnico Eagle Mines is a Canada-based gold mining company with mines in Canada, Mexico, and Finland with exploration in each of these countries as well as the US and Colombia. They aim to build a growing, high-quality, low-risk sustainable business through building and maintaining a high-quality project pipeline, developing their people, and operating in a socially responsible manner. As part of their annual management safety training, the managers at the Sonora Mine Cluster completed the NOSACQ-50 in Colombian Spanish. The results yielded an overview of their perceptions of the organizational safety climate within the organization and guided the concepts and conversations within the training.

Overall results indicated a high level of organizational safety climate with scores of each dimension ranging from 3.37-3.56 on a 4-point scale. These data were used to structure a 4-hour management training session focused on educating managers on the aspects of organizational safety climate and the development of actions that could be taken to improve their performance and contribute to continuous improvement of organizational safety climate. At the end of the training, each manager identified two actions they would implement as a part of their organization and regular activities. This work is a part of a continued partnership and is ongoing.

Keywords: Safety Climate, Safety Culture, Case Study, Mining, Management Support, Leadership