CORESafety: A New Direction in U.S. Mine Safety And Health Management

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Introduction

What will it take to improve safety and health performance in the nation's mines? Does it require new laws and regulations, as some propose, or, after more than 40-years of U.S. experience under the Federal Mine Safety and Health Act of 1969, is it time to consider a new model to manage safety and health and drive continuous, sustained improvement?

While U.S. mines made significant progress in mine safety over the last four decades, the industry has stalled in improving its fatality rate and some fear it will cease to achieve continuous improvement in the injury rate. This has led some to question whether the industry could achieve zero fatalities in U.S. mining by relying solely on the Mine Act's framework and its implementing regulations.

The National Mining Association considered these questions and set up a task force to look at impediments posed by the current regulatory regime. Out of that effort was borne **CORE**Safety, Committed to Excellence in Mining Safety, a common safety and health framework that relies on a management system approach to improve safety and health performance. The goal of **CORE**Safety is to achieve zero fatalities and a 50 percent reduction in the rate of injuries in U.S. mining within five years—0:50:5. NMA's board of directors endorsed **CORE**Safety in May, 2011.

CORESafety is built on the Plan-Do-Check-Act model, which has been successfully deployed in other industries to drive continuous improvement in safety and health performance. It includes 20 modules designed specifically for U.S. mining by mine safety and health professionals. (Figure 1) The modules are adaptable to the operations of all mining companies and intended to complement existing safety programs and practices. The system stresses continual improvement and demonstrates the determination and commitment of U.S. mining leaders to remain a model for the world.
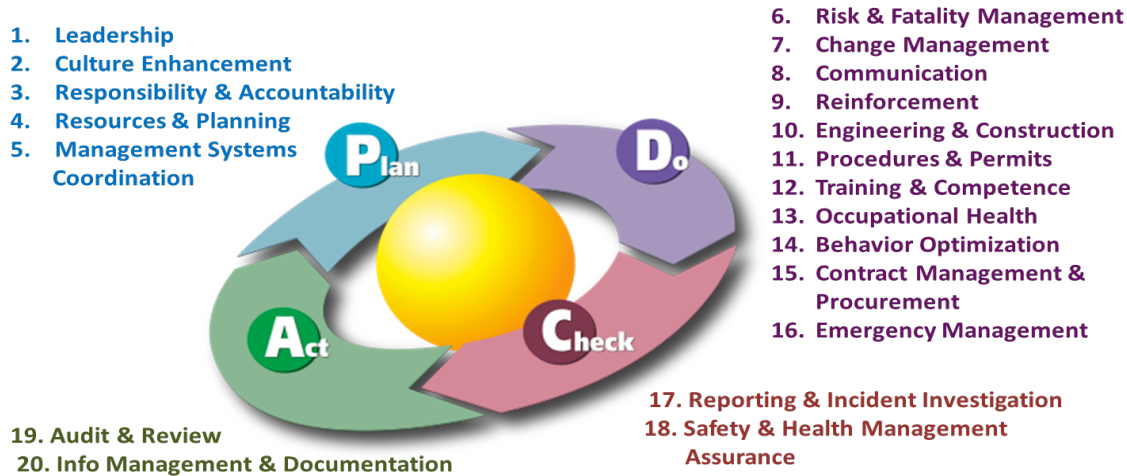
CORESafety Continuous Improvement

1. Leadership
2. Culture Enhancement
3. Responsibility & Accountability
4. Resources & Planning
5. Management Systems Coordination

6. Risk & Fatality Management
7. Change Management
8. Communication
9. Reinforcement
10. Engineering & Construction
11. Procedures & Permits
12. Training & Competence
13. Occupational Health
14. Behavior Optimization
15. Contract Management & Procurement
16. Emergency Management

17. Reporting & Incident Investigation
18. Safety & Health Management Assurance

19. Audit & Review
20. Info Management & Documentation

Figure 1. Continuous Improvement Process (*Source:* CORESAFETY)

What Are Systems and How Do They Operate?

It's often said in the mining industry that safety is common sense however; the complexities of mine safety paint a dramatically different picture. Whether in mining or other hazardous environments, there are dozens, if not hundreds, of factors that can contribute to an injury or illness. To ensure a safe work environment mine operators must gain some degree of control across this multitude of variables. (Figure 2)

How can a mine control so many factors and variables? The truth is it's difficult. As a result, many mines and mining companies do what seems logical and most effective based on their understanding of what causes incidents. Some focus on Mine Safety and Health Administration (MSHA) regulations while others focus on one, two or more key issues they believe are major controlling variables. The reality is, ensuring a safe workplace requires controlling the inter-relationship of many variables inherent in mining operations.

While it is extremely difficult to consistently and completely control so many variables and factors, experience has demonstrated the best option for a mine or mining company is to apply systematic, rather than programmatic, control to as many variables as possible. This requires the use of a safety and health management system -- a structured, systematic means for managing the multitude of variables that introduce risk.
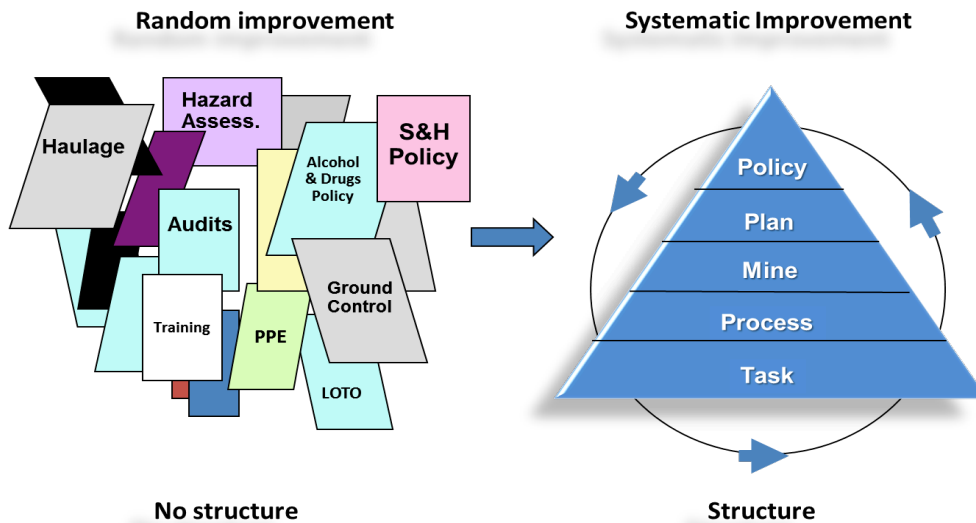
Change Our Way of Thinking

Random improvement

Haulage

Hazard Assess.

Alcohol & Drugs Policy

S&H Policy

Audits

Ground Control

Training

PPE

LOTO

No structure

Systematic Improvement

Policy

Plan

Mine

Process

Task

Structure

Figure 2. Changing Our Way of Thinking (*Source:* CORESAFETY)

How do Programs and Systems Differ?

Safety programs have certain characteristics: they are linear (operate in a series of steps); they tend to be reactive (they emphasize hazards that are already injuring workers and often in response to injuries); and they lack integration both within themselves and between different programs (if a program isn't effective it is unlikely to get fixed until something serious goes wrong). Programs make up the bulk of occupational safety and health regulations in the United States.

Systems, in contrast, are characterized by being cyclical (standard processes that are repetitive and/or continuous); proactive (look for all hazards, even those that haven't caused a problem and deal with them before they do); characterized by feedback (a system isn't a system unless it provides information that indicates whether it's working); and is integrated with other systems (safety system is integrated with the HR system, etc.). (Figure 3)

In the simplest of terms, a safety and health management system is a collection of largely existing processes, programs, procedures, tasks, etc. that function together to produce outputs aimed at achieving a goal. A good management system deliberately links and sequences system elements to produce an identifiable and consistent way to manage safety. A successful safety and health management system also integrates, and is additive to, regulatory compliance, so those activities are not separate.
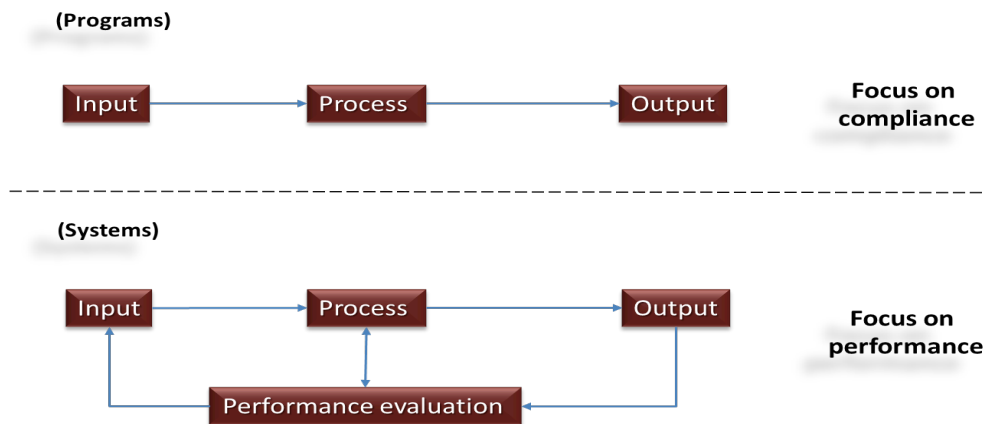
Programs vs Systems

(Programs)

Input → Process → Output

Focus on compliance

- -

(Systems)

Input → Process → Output
Performance evaluation

Focus on performance

Figure 3. Programs versus Systems (*Source:* CORESAFETY)

What are Systems' Common Elements?

No two safety and health management systems are exactly the same. There is a reason for this. Since no two organizations are the same, their management systems must reflect these differences and must be customized to fit the organization. However, many safety and health management systems have numerous elements in common. Elements, or modules in **CORE**Safety, are a way to structure a management system into workable groupings. For example, risk management -- the process of identifying hazards, assessing their risks and applying appropriate controls -- contains many sub-elements that work together to effectively manage mining risks.

It is important to remember an effective safety and health management system must do all of this in the context of the company culture, which is demonstrated through attitudes, accepted norms and behaviors. If the company culture does not recognize or embrace the management system, it is unlikely to be an effective tool. In addition, every system must have and is dependent upon senior management commitment and effective workforce involvement.

What are the Critical Competencies?

The **CORE**Safety system is based on critical organizational competencies, including leadership and culture that are managed through a mining-specific management system with three broad action directives: lead, manage and assure.

Lead: The system relies on and recognizes the central importance of leaders to influence safety and health performance by positively and knowingly affecting the organizations safety culture.

Manage: Assessing and managing risk to eliminate hazards that could have catastrophic, including fatal, consequences and identifying and eliminating at-risk behaviors are all critical to a successful system.

Assure: Unlike the programmatic regulatory model that has driven the U.S. mining industry's safety to date, **CORE**Safety participating companies measure performance against identified metrics to determine if the system is operating optimally or if modifications are required to meet stated goals.

What Lessons Have We Learned?

NMA and the member companies participating in **CORE**Safety are in the early stages of implementing the system. As a result, we are at the beginning of a steep learning curve. Nonetheless, some of the lessons we have learned to date include:

- Leadership is needed throughout the formative stages of developing a safety and health management system; someone has to keep people's feet to the fire and set firm, but realistic, deadlines. NMA was fortunate to have a CEO-level task force made up of mining executives from all aspects of U.S. mining. They were committed to an objective analysis of the shortcomings of the existing programmatic approach to mine safety and health and to finding an approach that would achieve measurable results;
- Companies and individual operations within companies will adopt and implement **CORE**Safety at a different pace. For some, various aspects of **CORE**Safety may already be in place. In fact, some companies have extensive safety and health management systems in effect. Other operations may have a gap in the culture needed to effectively embrace a management system. Despite those differences, all participating companies believe they have more to learn and more they can do to achieve the 0:50:5 goal;
- How people learn must be considered. The fundamental framework of **CORE**Safety—the 20 modules and resources to assist in implementing **CORE**Safety are web-based. We are still working on enhancing the resource materials developed thus far to ensure they are responsive to participants needs; and.
- The enthusiasm and professional commitment of the safety professionals who helped develop **CORE**Safety was invaluable to the overall effort. They believe they are making a real contribution to mining safety -- an opportunity they didn't want to pass them by.

Summary

CORESafety embodies the commitment of the members of the National Mining Association to the safety and health of their employees. More than 125,000 mining industry employees are participating in **CORE**Safety, which is available free-of-charge to any organization. Additional information on **CORE**Safety, including the **CORE**Safety framework and resources, is available at www.coresafety.org.