The CORESafety® Handbook
2nd Edition

Introduction

Purpose: The CORESafety Handbook details the concepts, goals, and expectations of the National Mining Association's (NMA) Safety and Health Management System (SHMS). CORESafety is the only SHMS standard created specifically for the mining industry and applies to mining companies of all sizes, locations, and portfolios. CORESafety provides a system that will lead to improved safety outcomes for mining companies of all types and sizes. This Handbook outlines the requirements under the CORESafety system and is accompanied by additional guidance, tools and resources available on the [CORESafety website](#).

Scope: CORESafety is a global, occupational health and safety standard created specifically for mining operations and is open to NMA members as well as non-members. Companies are certified at the corporate-level and practices are verified by third-party assurers at the site-level. A 'Site' under CORESafety is any operational facility including, but not limited to mines, mills, and processing facilities, smelters, refineries, load-out and infrastructure facilities (such as water storage treatment, distribution; waste storage, treatment, etc.), and maintenance and warehouse facilities. This includes administrative offices to the extent that they are integral to site operations and safety but cannot be substituted for an operational site.

Version: The original CORESafety system was developed in 2011, containing 20 modules with approximately 130 expectations. This refreshed version of the CORESafety system, developed during 2023-24 and published in Fall of 2024, consists of 10 modules with 76 expectations. Despite the consolidation of the system, no content was lost. In fact, new content has been added to reflect the rapidly changing mining industry, including mental health and substance abuse considerations, as well as new information on process safety.

Interpretation Guide: When attempting to interpret how the contents of this handbook may apply to your mining operation, users should consider:
- Companies seeking CORESafety Certification can expect to be audited on all requirements listed under the "Expectations" section of each module. The introduction sections of each module serve as additional information to contextualize the importance

of each topic, but operations are not required to follow any of the guidance listed in these sections.

- Companies seeking to become a CORESafety member company in "Good Standing" are not explicitly required to follow any of the guidance in this handbook, and will not be audited for compliance with the book's content. However, the organization's CEO will be required to sign the CORESafety CEO Pledge, affirming a commitment to the values and principles of the CORESafety system.

For all other resources and information regarding the implementation, governance, assurance of CORESafety, please visit the [CORESafety website](#).

Background on Safety and Health Management Systems

Safety and health management systems (SHMS) provide guidance, structure and coordination through proven methods for managing safety, health and well-being. Systems can be customized for a mining organization and its operations, or they can be variations of established standards (e.g., International Organization for Standardization (ISO) 45001).

SHMSs follow the "Plan-Do-Check-Act" (PDCA) model to emphasize continuous assessment and improvement of processes and their results. These systems are in place all around us because of their success in achieving and sustaining occupational safety and health (OSH) performance.

Plan
- Examine current standards, processes and practices, and where they may fit into a system.
- Identify OSH risks.
- Develop objectives that guide a reduction in OSH risks.
- Develop an implementation plan.
- Assign leadership responsibilities for each part of the system.

Do

- Develop an implementation RACI (Responsible, Accountable, Consulted, Informed) Matrix to support a coordinated system.
- Train leadership and hourly personnel to implement procedures, processes and practices based on specific roles and responsibilities within the system.
- Implement processes (i.e., the system structure) based on the plan.
- Communicate throughout the implementation of each respective module.

Check
- Monitor and measure objectives, legal requirements and other requirements and report the results.
- Check and verify that system modules are meeting expectations and metrics.

Act

- Implement actions to continually improve OSH performance and outcomes.

Examples of inputs that can provide continuous feedback throughout the PDCA cycle include worker engagement and participation, site audits, incident findings and reports, and committees made up of employees at various levels within an organization.

Organizational Factors that Support an Effective SHMS

There are several factors that contribute to or support an effective SHMS. CORESafety® - a management system approach to mining safety and health to prevent accidents before they happen - highlights five factors in particular:

1. **Risk Management Customization (one size does not fit all)**
   - Risk identification, change management, incident reporting and investigation, training, and emergency management ensure that hazards and risks are minimized to the greatest extent possible.
   - An SHMS can and should be designed and customized based on the risks identified within an organization; those at a small aggregate operation will likely look and be executed differently than at a large underground coal operation.
   - An SHMS can be implemented using different communication and evaluation mechanisms to reduce or eliminate risks based on size, location and resources available.

2. **Leadership**
   - Leadership continuously assesses the risks and acts to reduce or eliminate them as a part of continuous improvement.
   - Leadership ensures the system is integrated into all departments and parties within the organization and external to the organization, as necessary.

3. **Everyone has Ownership**
   - Senior management is accountable for managing the system.
   - Site leadership is responsible for implementing and monitoring the system.
   - All employees are responsible for understanding and executing roles in the system.

4. **Assurance**
   - Leadership reviews the SHMS at predetermined intervals to ensure it meets the goals and objectives for the organization.
   - Based on the outcome of these reviews, the SHMS is updated to manage emerging risks.
   - Assessments, whether internal or provided by third-party verification, indicate whether the system is working and how to make improvements.

5. **Communication**
   - Leadership must clearly communicate all aspects of the system so that all people know their roles and responsibilities.
   - All employees provide feedback and recognition for ownership.

Vision Statement – Committed to Excellence in Safety, Health, and Well-Being

Overview of CORESafety

The CORESafety management system is a voluntary framework, consistent with existing standards pertaining to protecting workers' safety, health and well-being.

While CORESafety provides a framework with complementary practices to achieve excellence in safety, health and well-being, it does not specify how each organization will conduct this work. It is up to the organization to take ownership in the design of its system so that there is a stated method to meet the CORESafety expectations and that those methods are known and followed by the employees, contractors and visitors who perform work for the organization. When designing any system, the organization's unique operations, management structure and culture should be considered. CORESafety is a flexible system that has the ability to supplement an organization's current practices.

The CORESafety journey starts with completing a CORESafety Gap Assessment to determine and prioritize improvement opportunities.

The steps listed below can be followed by all organizations beginning the process of implementing CORESafety into their operations:

STEPS	DESCRIPTION
Step 1 Gain "Systems" Knowledge	- Understand the difference between a safety and health management system (SHMS) and a safety and health program - Familiarize management with the overall CORESafety framework's 10 modules - Sign the CEO pledge
Step 2 Define the System	- Conduct a gap assessment to help define what policies, procedures, and processes your company is missing - Develop an action plan to help close identified gaps
Step 3 Develop the Basic Structure	- Ensure strong senior management support and ownership - Assign a leader to have overall responsibility for system development, implementation, and maintenance - Integrate Mine Safety and Health Administration (MSHA) and Occupational Health and Safety Administration (OSHA) compliance requirements into the system
Step 4 Assign Responsibilities and Fix Accountability	- Assign an individual with responsibility for each of the system's 10 modules (this can be done over time) - Integrate the system within the overall organization by providing diversity when assigning responsibilities, e.g., department manager, safety and health professional, member of technical staff or an hourly employee

The CORESafety Framework consists of the following Modules:

- Module 1: Leadership & Leadership Development
- Module 2: Management Systems Integration and Coordination
- Module 3: Risk Management
- Module 4: Training and Education
- Module 5: Organizational Safety Culture
- Module 6: Occupational Health and Well-being
- Module 7: Management of Change
- Module 8: Near Miss and Incident Reporting/Investigation
- Module 9: Operational Controls and Contract Management
- Module 10: Safety and Health Management Assurance

Module 1: Leadership & Leadership Development

Leadership

All leaders must be aware of their potential impact as leaders. Consequently, roles and responsibilities in supporting workplace safety and health must be known and understood. Corporate commitment is key and a corporate letter or mission statement should be drafted, confirming with signature support to the CORESafety Pledge. This letter should be posted conspicuously at company facilities for all employees to witness and should be included as page one of the master CORESafety document.

In addition, leadership development that prepares current and future leaders to perform effectively in their role helps drive continuous improvement. This module element includes identifying and developing employees in leadership positions or with leadership potential who can:
- Influence safety, health and well-being performance improvement.
- Positively and intentionally affect and reinforce the organization's culture.
- Lead the organization to achieve excellence in safety, health and well-being.
- Ensure all employees understand their safety and health management roles and responsibilities.
- Provide sufficient resources and tools to measure and review for continuous improvement.
- Ensure alignment and engagement within company hiring practices and values.

Leadership Development

Identifying Potential Leaders
Identifying leaders for the purpose of achieving excellence in safety, health and well-being will affect organizational approaches to leadership development. Think about leaders in your organization. Is it top line managers? What about staff positions? Is it anyone who can control their own behavior and influence others? If the latter is true, leaders are found across the workforce, including in non-salaried positions. All leaders – whether salaried or not – can benefit from leadership development activities, including training and participation in succession planning. To effectively influence safety and health performance improvements, leaders must:
- Hold themselves and their employees or coworkers accountable.
- Be action-oriented and collaborative.

- Provide effective performance feedback and other communication as needed.
- Have a personal vision that is aligned with and includes employees in achieving excellence in safety, health and well-being.
- Establish goals at all levels of the organization that are SMART (Specific, Measurable, Attainable, Realistic, Timebound).

Linking Leadership Development to Other Processes

Leadership includes managing and aligning human resource activities to achieve excellence in safety, health and well-being. Close alignment and mutual support between line management, human resources and safety and health professionals is vital to success. Examples of alignment activities include:

- Hiring standards
- Conditions of employment
- Employee assimilation
- Collective bargaining agreements
- Succession planning
- Corrective discipline policies
- Documentation management

Recruiting workers with strong personal safety values, ensuring they are fit for duty - which includes being free from the influence of drugs and alcohol (D&A) - mentally and physically prepared to work, and ready and willing to work in compliance with company policies and procedures will greatly increase the potential to achieve excellence in safety, health and well-being. These human resource-related activities should be actively and consistently managed. This includes ensuring alignment between collective bargaining agreements (if applicable) and safety and health policies, as appropriate, e.g., safe work as a condition of employment, D&A testing, health monitoring, etc.

Expectations

1.1 The participating organization must commit to the NMA CORESafety Principles by their CEO signing the NMA CORESafety Pledge. The Signature document must be updated at least every three years or anytime a CEO change occurs.
1.2 Leadership competencies must be defined, communicated, understood and measured.
1.3 All people in leadership roles must be assessed for their leadership competencies at company defined periods and provided with feedback for improvement.
1.4 A leadership development program must exist that supports employee development and succession planning.
1.5 All leaders must have a personal development plan that is reviewed and updated at company defined periods.
1.6 A hiring process must be defined and followed that includes standards and physical demands of each job.

Module 2: Management Systems Integration and Coordination

Organizations should define and budget the financial, time and personnel resources necessary to develop and maintain the SHMS. An important part of an overall SHMS is integration with other

organizational systems and departments such as mine planning, operations, maintenance, contract management, human resources, purchasing and information technology. A key part of these integrations and coordinated implementation is commitment from senior management to ensure leadership and resource support to actively manage and grow the system. A sponsor at the organization's executive level is important to help this integration as well.

Documentation of the various programs that are integrated into the SHMS is necessary to ensure continuity of the system. Documentation helps operationalize the system from text to practice, i.e., balance practical and legal need for documentation with resources required to support documentation. This documentation can also serve as evidence and evaluation of the system's impact on safety and health.

One tool that can be applied to help coordinate the system is the RACI matrix (i.e., Responsible, Accountable, Consulted, Informed). The RACI stands for the four roles that stakeholders might play in the development and management of any system-based project. In other words, the RACI can function as a role and responsibility assignment chart that helps in the planning and execution of each task, milestone or key decision in the system.

Expectations

2.1 Each participating organization must appoint an executive sponsor/owner for the SHMS. In addition, each site location must have the most senior person designated as responsible for the location's implementation and conformance with the SHMS.
2.2 There must be a company safety, health and well-being policy that is accessible and communicated to all employees.
2.3 A document retention schedule must be defined, documented and followed.
2.4 All permits, procedures and key processes must be documented and available to the workforce.

Module 3: Risk Management

The persistence of high severity events demonstrates that continuous risk management processes are necessary to improve health and safety outcomes. The backbone of this effort is the risk management process, which identifies risks associated with specific mining activities and ways to proactively mitigate those risks to prevent injuries and fatalities. The goal of risk management is to reduce risk to the lowest practical level. Risk management processes are used domestically and internationally by many high-hazard industries. This module covers a variety of approaches where a risk management process should be applied including process safety and emergency management. Broadly, this module reviews these varying processes through a risk management framework including:

- Identifying and reviewing all safety and health hazards.
- Assessing and prioritizing risks associated with those hazards, emphasizing risks that could have catastrophic, including fatal, consequences.
- Developing and applying controls systematically to eliminate or minimize negative outcomes.
- Verifying controls remain effective over time and are modified as/if circumstances change (i.e., management of change).

Risk management starts with operation planning; it is conducted on an ongoing basis and is carried through to closure. Risk assessment can involve technical staff (engineers), managers and workers with appropriate knowledge and experience. Identification of work activities and situations that should be subject to a heightened examination should not be limited to those activities for which companies have had prior incidents. The presence or use of the activity, even very infrequently, is adequate justification for inclusion. Specifically, there are two general groups of work activities: 1) High frequency, low severity/consequence work and 2) Low frequency, high severity/consequence work. Both groups require effective risk assessment, controls, and continuous audits.

Companies should determine what should be audited, along with what, how and when tools should be used to manage audits. Each site will develop or adopt and use risk assessment tools, processes, and procedures based on site-specific needs. Regardless of the tools selected, they should be strategically integrated into the identification, assessment and mitigation components of a risk management plan.

High-Risk Procedures: High-risk work requires a greater emphasis on the application of effective controls to minimize the risk of negative outcomes, including fatalities. Each company should define those high-risk activities that are most relevant to their operations and develop a fatality prevention/high-risk program. This includes ensuring internal reporting of high-risk incidents, conducting incident investigations, and root cause analyses, as appropriate. For high-risk work, the application of the *hierarchy of controls* should be used with an emphasis on elimination, substitution, and engineering controls prior to considering modification or confinement over administrative practices and personal protective equipment (PPE).

Manageable Risk: Manageable risk should be defined by management; however, risk-based decisions can and should be made by workers when they have the knowledge, training and experience. Management should make all decisions associated with work that exceeds acceptable risk as defined by the company. Each company should define at what level controls should be prioritized based on the hierarchy of controls, recognizing the strongest, general effectiveness of controls in descending order:

1. Elimination
2. Substitution
3. Engineering Controls
4. Administrative Controls
5. PPE

Major/catastrophic hazards and risks are not always visible or easily identified during observation, inspection and routine work. However, there are keys principles that can help to identify, mitigate and prevent major catastrophes including understanding hazards and risks, managing risks and learning from experience. Committing to process safety is also an aspect of risk management discussed in this module as well pertaining to critical safety risks.

Process Safety as a Risk Management Process

The goal of process safety is to prevent unplanned, unexpected releases of hazardous materials or energy to prevent structural failure or loss of stability that could lead to a major/catastrophic incident. To this end, process safety also includes the identification of the low-probability high consequence hazards/risks – also known as critical risks. Examples include loss of primary containment (LOPC) of a process' solutions and gases, overpressure of a pressure vessel system, and overpressure/explosion of

flammable and toxic gases. The impact consequences have the potential to involve safety, health, environment, financial, community and the reputation of the company.

The term Process Safety Management (PSM) became prominent because of regulatory requirements by OSHA in 1992 and by EPA in 1996, that requested heavy industrial companies such as oil and gas, chemicals, nuclear, petrochemical, pharmaceuticals, etc., to properly manage highly hazardous chemicals to create safe workplaces and prevent unexpected causes of major and catastrophic events. The mining industry is no different in impact potential; since there is also the aspect of the evolving dynamic environment from the mine itself, to the different processing plants, to the final product.

PSM Versus OSH Management

PSM is often confused with safety management, but the two systems can be distinguished by the scale of failure they seek to prevent. PSM aims to prevent large-scale major/catastrophic events. Occupational safety management, on the other hand, aims to prevent more individual-level safety incidents, which normally consist of higher probability/lower consequence events. Occupational safety hazards are more common, but can often be addressed by smaller scale interventions, while process safety hazards generally require a more detailed solution that may involve engineering systems, secondary containment, etc.

PSM Process

PSM focuses on events that have perhaps occurred infrequently in the past, or possibly never. But, if they do occur, they are often catastrophic, expensive and impactful across the organization and sometimes surrounding environment. While it can be complex and expensive to understand these low-probability events, companies should ensure that all aspects of major/catastrophic hazards/risks are identified, mitigated and prevented by consulting other CORESafety modules such as Operational Controls and Management of Change throughout project start up and shut down to general safety reviews and maintenance. If companies complete an assessment and identify critical risks, it is important to consult these supplementary guidance documents to complete the following activities:

- Define and follow a process safety roadmap using baseline assessments that detail and assign responsibilities for actions.
- Train key personnel in PSM (e.g., investigators; safety and health professionals, etc.).
- Establish a process safety structure to support the program (i.e., champion/stewards/etc.).

The implementation of process safety under these key principles is subdivided into different elements. *Although CORESafety realizes PSM is not applicable to every mining operation, having processes in place that can be used to identify critical risks and subsequent controls is a valuable practice and resource to have available.*

Commit to Process Safety: "This is the cornerstone of process safety excellence. Management commitment has no substitute. Organizations generally do not improve without strong leadership and solid commitment." (Center of Chemical Process Safety, Guideline for Risk Based Process Safety)

- Process Safety Culture
- Compliance with Standards
- Process Safety Competency (training)
- Workforce Involvement

- Stakeholder Engagement

Understand Hazards and Risk: "Organizations are better able to allocate limited resources in the most effective manner. Industry experience has demonstrated that businesses using hazard and risk information to plan, develop, and deploy stable, lower-risk operations are much more likely to enjoy long term success." (Center of Chemical Process Safety, Guideline for Risk Based Process Safety)
- Process Knowledge Management Process Safety Information (PSI)
- Hazard Identification and Risk Analysis

Manage Risk: Effectively managing risks involves three main processes:
(1) prudently operating and maintaining processes that pose the risk,
(2) managing changes to those processes to ensure that the risk remains tolerable, and
(3) preparing for, responding to, and managing incidents that do occur. Managing risk helps a company or a facility deploy management systems that help sustain long-term, incident-free, and profitable operations (Center of Chemical Process Safety, Guideline for Risk Based Process Safety)
- Operating Procedures
- Safe Work Practices
- Asset Integrity and Reliability
- Training
- Management of Change
- Operational Readiness that included Pre-Startup-Safety Review (PSSR)
- Conduct of Operation (i.e., Operational discipline)
- Emergency Planning and Response

Learn from Experience: Continually improving through learning from events and applying metrics to measure the effectiveness of our performance and the risk oversight that the senior leadership team provides. It involves monitoring, and acting on, internal and external sources of information
- Incident Investigation
- Measurement and Metrics
- Compliance Audits
- Management Review and Continuous Improvement

Emergency Management
An effective SHMS is designed to prevent incidents from occurring. However, considering the potential for uncontrollable factors such as earthquakes or heart attacks, a well-designed, trained and tested emergency management system is necessary. Emergency preparedness and response plans can prevent an emergency or disaster from worsening and, by protecting responders, can prevent additional incidents or fatalities from occurring. Companies must have the capability to respond appropriately to emergency and disaster situations.

Emergency management includes:
1. **Emergency prevention**—What do we need to do to prevent a non-emergency from becoming an emergency?
2. **Planning**—What can go wrong, both expected and unexpected, and how should we respond?
3. **Emergency resources**—What materials, equipment, information and people do we need to deal with the emergency?
4. **Training**—Who needs to do what when an emergency occurs?

5. **Coordination and communication**—What government agencies and non-governmental impacted parties need to be involved and how do we coordinate to manage the emergency with these key groups?
6. **Media**—Where will the media be staged and how will updates and briefings be provided?
7. **Families**—How will families' privacy be ensured, their needs met, and how will families be segregated from facilities provided for the media? How will communication be conducted with the families?
8. **Recovery**—Once the real emergency is addressed, how do we recover?

These plans should consider potential impacts on the workforce, the public, the environment, and company assets. Decisions should prioritize protecting people and the communities in which a company operates, including considerations around cultural significance.

Expectations

3.1. A risk management process or system must be implemented that identifies hazards and assesses, prioritizes and adequately controls risks. All potentially fatal hazards – including process safety hazards – should be documented on a risk register.
3.2. Each location must have a task-based or front line (on the job) hazard identification and risk assessment tool that assists workers in identifying and controlling risks associated with their tasks.
3.3. Risk reviews must be completed at least annually, or as risks/controls change on scenarios with potentially fatal consequences or process safety risks.
3.4. All risk assessment tools used must be defined, documented and available.
3.5. There must be a defined process to audit high-risk tasks to ensure compliance with procedures or controls.
3.6 Define and document a manageable level of risk which includes evaluation and approval by appropriate levels of management.
3.7 When the location has *significant* process safety risks, a process safety baseline assessment should be completed.
3.8 Emergency Response Plans (ERPs) must be available for the following scenarios: 1) fatalities; 2) multiple injuries; 3) natural disasters; and 4) any potential emergencies at each site.
3.9 Evacuation routes and muster (gathering) points must be established, posted, communicated and understood.
3.10 Resources (people and equipment) must be identified, obtained/designated and maintained to respond to identified potential emergencies that support the ERPs. Consideration should be given to mutual aid agreements with neighboring operations or sites.
3.11 Communications and warning systems with associated procedures must be established to support the response plans.
3.12 Emergency preparedness and response training for all people must be provided that includes protective actions (for example: evacuation, shelter-in-place or lockdown) for likely emergency scenarios.
3.13 All people with assigned roles and responsibilities support ERPs must be trained and verified as competent to perform their role.
3.14 Conduct periodic drills and exercises to assess the effectiveness of emergency preparedness and response procedures. After action reports relative to procedures are considered when performing reviews.

Module 4: Training and Education

Workers who understand the hazards and risks of their assigned tasks, and apply their knowledge and skills, are more likely to perform tasks safely and efficiently. Consequently, education (knowledge) and training (knowing how to apply knowledge) are essential to an effective SHMS. Training should be a continuous process to routinely develop, update, provide and assess worker abilities.

Training Needs Assessment: A training needs assessment should determine the level of knowledge and skill that needs to be learned, how frequently training should be conducted, and the initial and ongoing requirements to establish competency. The needs assessment should also identify competency maintenance training requirements to address skill decay. Once gaps within the training needs are identified, a supplemental training plan must be developed and implemented to address these gaps.

Quality of Materials and Instruction: The training materials and quality of instruction should complement each other. First, subject matter expertise is required for all training but especially operational task training. The SHMS should ensure that operational task training needs are identified and implemented in applicable departments with department heads who are accountable for training plan maintenance. For succession purposes, train-the-trainer development and certification can be utilized.

Training materials should be updated when equipment and work processes change and to accommodate various learning styles. The use of innovative technologies from virtual reality to direct-reading methodologies and sensors and automation can all aid worker competencies in hazard identification and mitigation. When possible, such technologies can be included in routine training to ensure competence of a job task, process or piece of equipment.

Verification: Safety, health and well-being excellence requires more than mandated or discretionary training; it requires verification that those trained are competent by demonstrating the acquired knowledge and skills.

Expectations

4.1. Each company or location must have a training plan that details the amount and type of training required by role.
4.2. On-the-job training must be conducted for new equipment and provided by certified/competent people.
4.3. Training records must be documented.
4.4. There must be a process to verify that every operator and maintainer are competent prior to working without full supervision. People providing training must also be capable of demonstrating competency and be authorized to deliver the training.
4.5. New or transferred employees, visitors, contractors and venders must receive site-based safety and health orientation and other appropriate training before being permitted to work onsite.
4.6. All individuals engaged on a temporary or casual basis to work onsite must be provided the same training and safety and health equipment as employees.
4.7. Organizations must maintain an employee orientation program to assimilate new employees.

Module 5: Organizational Safety Culture

An SHMS is interdependent with the organization's safety culture. Whether the culture is strong and positive depends on the degree to which leadership understands current characteristics, has a clear idea of what the culture should look like— based on vision, values and strategy—and has a process to actively enhance the culture. Culture change takes planning, involvement, inclusion and patience.

One way that culture can be ascertained is through snapshot measurements of the current climate via confidential employee perception surveys and interviews. Companies may elect to conduct their own cultural assessment, use other publicly available tools (e.g., NIOSH), or work with third-party experts. The latter approach ensures confidentiality and optimal data analysis. Once strengths and weaknesses are identified, a culture enhancement plan can be developed and implemented. Embedded in any culture enhancement plan should be the recognition of psychosocial risks, which are increasingly being included in occupational SHMS (e.g., ISO 45003).

Culture can be measured and managed if safety and health remain an organizational value. Additionally, combining psychological safety with diversity, equity and inclusion workplace initiatives has shown a strong, positive impact on safety culture. Small changes that are consistently evaluated and improved over time can yield a culture that has a long-lasting effect on safety and health performance.

Key indicators of a positive, supportive culture include:

- Organization and management values safety and health over production (e.g., people are empowered with stop work authority if presented with critical risks).
- Work environment promotes and empowers workers to freely share their thoughts through interaction, learning and challenging the status quo without fear of retribution (i.e., psychological safety).
- Trust is established and fostered among and between managers and workers.
- Fair and equitable treatment of employees that includes recognition and reinforcement of positive safety and health actions.
- Employees report issues (e.g., hazards, near misses, and incidents) without fear of repercussion and subsequently, there is an interest among management to learn and understand what caused the issue(s).
- People are vigilant for hazard identification and management (i.e., find and fix).
- Leaders use formal and informal positive feedback and mentorship to build trust and confidence in management's safety and health approach and values.

Role of Leadership Communication in Culture

Culture is driven through leadership and permeates through an entire organization. As a result, the attitudes, actions, behaviors and communication of managers have a significant impact on safety culture, but not to the exclusion of workers who participate in and sustain the culture. Site leadership has a role in formal and informal reinforcement. Although positive reinforcement helps create engaged workers, what works for some employees (e.g., public recognition) may not motivate others, who could prefer one-one-one recognition. Sometimes, a simple verbal or written thank you for doing what is right reinforces safe behaviors, improves attitudes and strengthens personal values. However, rule and procedural violations or a lapse in judgement must be assessed by management and addressed in an appropriate, consistent manner.

5.1 There must be a defined set of company values that are communicated to the workforce and visibly supported.

5.2 Confidential surveys or other assessments to monitor perceptions, strengths and weaknesses of the company's safety culture must be conducted periodically and repeated on a defined schedule.

5.3 Survey results must be analyzed to develop, maintain and follow a culture improvement plan.

5.4 There must be a process in place that allows for anonymous reporting of hazards, close calls (near hits), or other safety and health issues.

5.5 There must be a formal but transparent process to reinforce and recognize safer/healthier actions of the workforce *[This would often be referred to as a behavioral based safety program]*.

5.6 The organization must commit to uphold a workplace that is free from harassment.

Module 6: Occupational Health and Well-being

Occupational health and well-being should be treated on par with worker safety. A key difference between a worker injured and one who is impaired from an occupational disease is that injury often occurs very rapidly, while the disease can occur over longer periods of time. Occupational health is accomplished by anticipating, recognizing, evaluating and controlling occupational health hazards leading to illness. In many ways, quality mental health and well-being is also accomplished by anticipating, recognizing, evaluating and controlling hazards through consistent social support and resources.

Newer standards and programs, including the CORESafety update here within, acknowledge worker mental health and well-being as a leading and lagging indicator of worker S&H. Well-being at work relates to all aspects of the job experience including the work organization, organization of work, social factors, the environment, equipment and tasks. ISO 45003 defines well-being at work as the "fulfillment of the physical, mental, social and cognitive needs and expectations of a worker related to their work."

This module encourages companies to treat occupational health, mental health and well-being on par with safety by improving occupational health hazard recognition and mitigation, applying innovative technologies where appropriate to increase exposure assessment and medical surveillance, and developing and fostering employee support programs and resources.

Exposure Assessment

An exposure assessment program 1) includes measures for compliance with regulatory requirements for exposure monitoring; and 2) determines the need for exposure controls. Companies should conduct periodic exposure assessments when employees face potential overexposure to hazards, or when deemed appropriate by a professional industrial hygienist. Hazards may include, but are not limited to: dust, welding fumes and other metallic particulates, noise, acid mists, organic vapors and solvents, ionizing and non-ionizing radiation, diesel particulates, toxic gases, asbestos soluble oil, synthetic mineral fibers, microbiological agents in mold, heat stress, illumination, ergonomic stressors, etc. Exposure assessment should follow validated sampling methodologies and accepted industrial hygiene practices. Many sampling methods have acknowledged the rapid technological changes in the

workplace and integrated new types of direct reading and sensor technologies and other forms of automation to improve assessment and control practices.

For elevated exposures, additional medical monitoring helps guard against lasting effects from any exposure(s). Organizations should determine the need for temporary or permanent health surveillance and conduct appropriate monitoring in line with applicable medical standards (e.g., Audiometric testing, pulmonary function testing (PFT), chest x-rays, dermatitis skin testing, blood or urine metal testing (biological exposure indices)). Recently, MSHA announced a new initiative, "Miner Health Matters" that also discusses health-focused initiatives they support. Further, the National Institute for Occupational Safety and Health (NIOSH) established a Miner Health Program to research, coordinate and promote ongoing and emerging health-related issue in the mining community.

Mental Health and Well-being

Psychosocial workplace hazards have been referenced as a growing challenge to the health, safety and well-being of workers. Regarding mental health and well-being, company leadership should be attuned to the needs of their employees and look for opportunities to provide social support and keep in mind how work is organized to prioritize worker safety and health. According to ISO 45003, psychosocial hazards relate to how work is organized, social factors at work, an aspect of the work environment, equipment and hazardous tasks. Psychosocial risks should be managed consistently with other risks via the SHMS in place. ISO considers psychological health and mental health synonymous in their standard, noting negative health outcomes associated with poor mental health such as anxiety, depression and sleep disorders. Poor mental health can also result in increased absence from work, turnover and reduced productivity. In response to these challenges, an SHMS can be used to inform and implement guidelines and protocols that reflects the organization's respect for psychological health and well-being (e.g., flexible shifts where possible; ensure personal protective equipment is available and accessible for all workers when and where they need it).

Another component of workplace mental health and well-being is the attention on mineworker rates of substance use, misuse and overdose. Organizations must outline expectations for alcohol and other drug use and respond to noncompliant situations at the organizational level. Without empirical resources, an SHMS can help guide the implementation of support strategies and best practices. These strategies should include primary prevention (e.g., fitness for duty programs), secondary prevention (e.g., employee assistance programs) and tertiary prevention (e.g., return to work plans) practices. Routine check ins with employees about mental health and other stressors is vital to maintain open lines of communication. Peer to peer communication and intervention is also important to encourage.

Expectations

6.1. Representative qualitative and quantitative risk (exposure) assessments must be conducted to characterize occupational health hazards and associated risks.

6.2. Results of sampling or exposure assessments must be communicated to affected employees in a timely and understandable way.

6.3. Where sampling or exposure assessments show elevated exposure, additional or improved controls must be implemented to address the elevated exposure.

6.4. Sampling or exposure assessments must be documented for compliance, analysis, and verification purposes.

6.5.   Workforce medical confidentiality must be controlled and protected at all times (e.g., HIPPA compliance).

6.6.   There must be a process to assess the workforce's fitness-for-duty.

6.7.   Mental health awareness education, training, and other ongoing resources must be available and provided to all employees on a periodic basis (defined by the organization or location) to support physical, mental, emotional health, and well-being.

6.8.   An employee assistance program must exist and be available to all employees. The method of how workers obtain help must be provided.

6.9.   A return-to-work process must be defined and followed for all people who return to work after a specific length or type of absence.

6.10.   A company-specific drug and alcohol policy and testing procedure must exist and be followed that prohibits the use, distribution or possession of illegal drugs. Employees must be prohibited from working under the influence of alcohol or prescription medications that could impair performance or safety.

Module 7: Management of Change

CORESafety discusses various types of hazard and risk assessments that should occur, followed by the implementation of new programs or processes to control the risks. However, any changes that occur in the operation or related facilities should not introduce new hazards, negatively change the risk rating of existing hazards, or degrade controls. Organizations must routinely identify changes in the organization and at the operation that may introduce new risks or increase unacceptable risks by proactively looking for and controlling change at every level of the organization and across functional areas, including emergency management – where the full management of change is likely to be unrealistic. As such, management of change and emergency management should be closely coordinated, with the goal of ensuring emergency procedures exercised in response to a crisis or emergency do not introduce additional and unacceptable risk.

Who and What Change is Included

Change that results in unacceptable risk should be managed in the same manner as any other hazard in the workplace – through appropriate and effective controls. Fundamental to effective management of change is training to ensure all affected personnel have a clear understanding of what "change" requires and inclusion in the management process. The management of change process should apply to every functional area and every level of the organization.

Changes that are planned, unplanned, temporary and incremental or permanent should all be included in a plan. Management of change should also include any aspects that affect the operation's plan and/or the facilities and its processes, systems, equipment, products, material, organization and personnel. Organizations must ensure that the SHMS includes provisions to verify that management of change actions have been completed and that they do not significantly result in new, unintended risk(s).

Expectations

7.1 A management of change process must exist that defines what constitutes a significant change and who is required to follow the process. The process itself must include the following aspects:

A. The reason for the change
B. A risk assessment to identify and control any potential consequences both during the change and as a result of the change
C. A review with affected employees or stakeholders
D. Communication with all affected people
E. A defined authorization/approval process
F. A method to ensure controls are implemented and documentation, diagrams and procedures are updated
G. A post-change review to ensure the change did not result in any unforeseen hazards.

7.2 Organizations must communicate the management of change processes to ensure all potentially affected parties understand their obligations.
7.3 Management of change decisions must be documented for ongoing tracking, verification and reference purposes.
7.4 Pre-start up safety reviews must be conducted on all new operations, expansions, processing facilities, major mobile and fixed equipment, and control systems.
7.5 Safety and health management aspects of construction work conducted on organization property must conform to the organization's SHMS standards and expectations.
7.6 A pre-start up safety review (PSSR) must be conducted on all new operations, mines, processing facilities, major mobile and fixed equipment, and control systems.

Module 8: Near Miss and Incident Reporting/Investigation

It is critical for all employees to understand, identify and report recordable/reportable incidents. Integrity in reporting and timely investigation are critical steps for the prevention of future occurrences. After reporting, management should investigate all incidents, including relevant near misses, to establish root causes. Identifying root causes helps capture and document lessons learned for management review and communication to employees to prevent future incidents. Laws and regulations result in two incident categories that mandate different types of reporting:

A. **Incidents reportable to regulatory authorities:** All safety and health incident investigations that are mandated to be reported should be promptly examined to identify means to prevent reoccurrence and communicated to the respective regulatory authorities.
B. **Incidents that are non-reportable to regulatory authorities:** Non-reportable safety and health incidents should also be investigated, analyzed, and corrective actions developed and integrated into the SHMS. Such incidents include near miss events, property damage, and any operational, maintenance or process integrity incidents that could have a negative outcome.

The Role of Reporting and Investigations
Incidents cannot be investigated if they are not reported. Consequently, all personnel should be aware of what a reportable incident is within each company and as defined by regulatory requirements and company policy. All personnel should report an incident to management in a timely manner.

The quality of any root cause analysis is directly related to the quality of the incident investigation.

Companies should ensure personnel are adequately trained to conduct required investigations or maintain close coordination with external resources capable of doing so. **Incident investigation should focus on fact-finding, not fault-finding, with the aim of identifying root causes.**

Expectations

8.1 The workforce must be aware of and follow the organization and regulatory authority's definition of a recordable/reportable incident and their obligation to report incidents.
8.2 All incidents, including near misses with significant potential must be investigated to identify a root cause and steps to prevent reoccurrence.
8.3 Organization assigned investigators (e.g., safety and health professional, etc.) must be trained in effective incident investigation and root cause analysis.
8.4 Lessons learned must be communicated to all impacted personnel.
8.5 Leading indicators must be reviewed periodically to help drive improvement (e.g., root cause analysis, inspection records, close calls, behavior observations, etc.)

Module 9: Operational Controls and Contract Management

Integrating Safety and Health in Operations and Maintenance

Integrating safety and health into operations and maintenance is crucial for predicting and preventing incidents and ensuring a secure work environment. This involves organizing work predictably, specifying procedures and implementing controlled measures for high-risk activities. The key elements are safe work procedures and permits to work. It should be noted that whenever engineering and design codes, standards or regulatory requirements are absent or inadequate, either ISO standards (www.iso.org), American National Standards Institute (ANSI), Australian Standards (AS/NZS) or European Standards (EN) should be referenced and followed to ensure safe work practices among contract and non-contract employees.

Safe Work Procedures and Permits to Work

Safe work procedures provide a specified approach to conducting activities. They are generated from risk assessments and should involve workers, be used for training and be audited by supervisors. Misuse or avoidance should be corrected, while adherence should be reinforced positively. In instances where tasks are not inherently predictable, such as in non-routine work, it is imperative to establish procedures for risk assessment and measures to enhance control and predictability in the work task. *If the safe outcome of the task is uncertain, it should not be attempted until there is certainty.* Examples include hot work, confined space entry, high voltage electrical work, lifting and rigging, energy isolation, etc. Permits offer controlled procedures for high-risk tasks. Misuse or avoidance is addressed through corrective discipline, and adherence is recognized positively.

Role of Line and Senior Management

Line and senior management play a crucial role in preventing incidents. Safety is considered a line function, with a focus on integrating safety and health into operations and maintenance activities. A key area of emphasis for line management within the CORESafety SHMS is to integrate safety and health

seamlessly into operations and maintenance activities. Attaining excellence in mine safety involves executing work tasks in an organized and predictable manner.

Data Collection and Management Records

Collecting safety and health data and maintaining appropriate records, including policies, objectives, responsibilities, audit investigations, and management reviews, is essential. Documentation should align with organizational size, complexity and risks. Further, the SHMS should identify those documents that require retention and maintenance while not detracting from proactive efforts. Finally, consideration should be given to backing up key information in multiple places that are accessible on and off online networks. This practice becomes especially important if there is an emergency.

Designing and Commissioning

Designing, procuring and commissioning new facilities should prioritize safety and health performance throughout the operational life. The "hierarchy of controls" and good design principles should minimize risks. Compliance with standards and regulatory requirements is crucial. As an example, safety and health management requirements should be incorporated as a part of all relevant design reviews for construction, operation and maintenance for new fixed installations, mobile equipment and systems. Importantly, the design and construction for any project should include safety and health management considerations that target regulatory standards as the minimal allowable risk on site.

Contract Management

Contractors are often hired for specific, high hazard tasks and play a crucial role in safety and health management within facilities, whether they are contract workers or involved in project work. However, they frequently encounter comparable, if not greater, risks compared to company employees and have historically sustained more fatalities and serious injuries than mine-based employees. Without proper guidance and instruction on working safely, contractors may introduce new hazards to the workplace, posing risks to both themselves and company workers. Project proposals should include safety and health criteria. Contractors must be pre-screened for safety and health competencies. Ensuring contractors are aware of safety requirements is vital, and factors like selection, orientation, and enforcement contribute to success outlined below:

- **Selection and bidding:** Contractor selection should be conducted using a screening process to ensure adequate safety and health management competencies and experience. Contractors should know the company's safety and health management requirements in the bidding process.
- **Orientation and training:** Once selected, contractors, vendors and visitors should be provided adequate orientation and any ancillary training necessary to understand site rules, safe work and emergency procedures, communication protocols, or other site requirements.
- **Enforcement:** Company employees should be authorized to question the safety and health practices and behaviors of any contractor or other third party working on site.
- **Procurement policy:** Companies should develop a safe procurement policy in which purchases of fixed or mobile equipment include coordination with the vendor to ensure the equipment comes engineered with all necessary safety features and controls, e.g., noise control on

stationary motors and pumps, maintenance access points on mobile equipment, diesel exhaust controls, etc.

A comprehensive approach to integrating safety and health in operations and maintenance involves safe work procedures, permits, management involvement, data management and collaboration with contractors. This ensures a secure work environment and prevents incidents throughout the facility's operational life.

Expectations

9.1 Organizations must have defined criteria for what requires a standard operating procedure (SOP) or other operating, maintenance, or field risk assessment tools and have documented procedures and standards in place to meet those criteria.

9.2 The documented procedures and standards must be used as the basis for on-the-job training and competency verifications and audited against by an assigned individual.

9.3 The documented procedures and standards must be known and followed by all people performing the work, including contractors.

9.4 Sites must have permits for high-risk work (e.g., confined space, hot work, critical lifts) that include an assessment of the risks and sign-off authority.

9.5 Organizations must develop and follow a document management process that includes revision control, approval, and retention.

9.6 Ensure documents are readily available, known and followed.

9.7 Contractors' bid documents must include a general safety and health plan that identifies any associated hazards with potential to cause significant injuries or illnesses as a result of their work and details the controls that will be used to manage these hazards. The cost of this plan should be detailed in the bid.

9.8 The bid assessment must include consideration of the contractor's ability to successfully complete the scope of the work without adverse safety and health impacts.

9.9 Before work begins on any on-site contract, all contractor personnel must be given appropriate orientation and safety and health induction training, including applicable emergency response procedures and incident reporting.

9.10 For all onsite contracting companies, there must be a competent mine operator employee designated as the Contract Owner with responsibility for monitoring and reviewing the contractor's activities and performance. The Contract Owner must also be notified and approve the use of subcontractors.

9.11 There must be a process to ensure that all contractor tools and equipment to be used are inspected and confirmed to be in a safe condition and that any chemicals and other materials brought to site are approved by the contract owner.

9.12 All engineering, design and construction must meet or exceed local legislation and other regulatory requirements.

9.13 There must be a list of critical structures (including fixed platforms, walkways, stairwells and handrails) that:
   A) Are inspected by a competent person on a defined frequency
   B) Have specific criteria that consider all forms of degradation such as corrosion, vibration, impact damage, earth movement and storm damage.
   C) Produces a documented report detailing items that need to be repaired with priorities assigned and actions taken to address issues.

Module 10: Safety and Health Management Assurance

Operations should be in full compliance with statutory and regulatory requirements to ensure value-added regulations are leveraged. This can be best accomplished by integrating an improvement cycle with the company's safety and health management system and applying the **Plan-Do-Check-Act** process to each regulation. Each requirement should have someone responsible for ensuring the requirements are met and working as designed on an ongoing basis. This feedback is essential for compliance.

Periodically assess implementation of and conformance to the expectations of the SHMS to assure an adequate structure exists to analyze the fitness and effectiveness of the modules, expectations and site-specific practices. This process should be overseen by senior management and may involve internal and external audits and assessments. Where nonconformance is identified, corrective action should be taken to ensure continual improvement in both SHMS effectiveness and subsequent safety and health performance.

Expectations

10.1   Leadership must periodically assess conformance with the organization's Safety & Health Management System requirements including compliance with applicable legal (e.g., federal, state, and local legislative and/or regulatory) requirements.

10.2   Safety and health performance must be measured, and information shared with the workforce. The use of both leading and lagging indicators should be used to provide a more complete picture of strengths and opportunities.

10.3   Internal audits using competent personnel to ensure continuous improvement must be conducted. External audits must be conducted by an NMA-approved auditor at least every three years to maintain CORESafety certification.

10.4   Gaps in conformance with SHMS requirements identified during all audits must be understood, documented, and a plan put into place to address gaps in a timely manner.

10.5   A variance process must exist when a standard cannot be conformed to that must be reviewed and approved by senior management. Variances are documented with adequate justification details.

Glossary

Term	Definition
Accountability	The state of being internally accountable or answerable within the organization. Links responsibility for an action with the action's outcome.
Audit	A systematic process for obtaining information and data and evaluating it objectively to determine the extent to which defined criteria are fulfilled or requirements are conformed with. An **internal audit** team consists of an audit team employed by the same company. An **external audit** consists of a team leader who is an independent third-party auditor and team members not affiliated with the location being audited.
Behavior or conditional issue	An action or condition that if left uncorrected could result in an uncontrolled, unintended or unexpected event.
CEO Pledge	Signed document by participating company CEOs that pledges their commitment to the CORESafety system as well as its integration into their existing safety and health procedures.
Certification	The process of third-party verification between the company's safety and health management system (SHMS) and the CORESafety SHMS expectations. It does not imply accredited certification, i.e., that granted by an auditing organization that is formally accredited by a national or international authoritative body.
Conformance	An aspect of the SHMS (system element, sub-element, etc.) that meets the spirit and intent of the expectations specified in the CORESafety Handbook.
Control	An act, object or system that exists to eliminate or minimize a risk so that work can be completed safely.
Contractor	A person, business or corporation that provides goods or services to your Company on your property or under your supervision, under terms specified in a contract or service agreement.
Consultant	A person providing services that require no physical work.
Contract Owner	Person responsible for a contractor's activity.

CORESafety company in good standing	A company that has signed the CEO pledge and implemented the CORESafety management system or externally verified functionally equivalent system.
CORESafety certified company	A company that has good standing, completes a third-party assessment every three years, and submits a letter of recommendation to the NMA from an external auditor for approval or rejection. Certified companies may use the CORESafety logo.
Critical control	A device, system, or process implemented to eliminate or reduce the risk for a task/job, and if missing or overlooked has the potential to lead to catastrophic outcomes such as serious injury or death.
Culture (work culture)	The collective and common attitudes, beliefs and values of an organization or group of people that influence decisions and behavior.
Cultural heritage	Is the legacy of cultural resources that a group or society inherits from a previous generation. Tangible cultural resources include buildings, artifacts and artwork, while natural heritage includes landscapes and biodiversity.
Functionally equivalent	A safety and health management system that meets or exceeds the requirements of CORESafety.
Hazard	A condition, set of circumstances, or inherent situation, which can cause an injury or illness, or damage to property, environment or reputation.
High Risk Activities	Activities where there is credible potential for a fatality.
Implemented systems	Processes, plans, procedures that CORESafety companies have fully applied to their operations, and that detail how requirements are to be met and are documented, available and largely known and followed by employees and contractors
Incident	An event, which was unintended, unexpected or uncontrolled in which a work-related damage has occurred (e.g. injury, illness or fatality, environmental damage, property damage, product damage, cultural heritage site/item damage/loss or non-loss events that are commonly referred to as "close calls" or "near hits.")
Interactions	Often referred to as a safety interaction, it is the process of observing actions of others and providing feedback on what was observed both desired actions and actions that could elevate the risk of injury, illness or environmental/cultural heritage harm. The primary purpose of an interaction is to positively influence future behaviors.

Lead auditor	The person designated as the audit team leader who takes overall accountability for the audit, its findings and recommendations
Management System	A set of interrelated elements that establish and/or support policy and objectives, and mechanisms to achieve those objectives in order to continually improve performance.
Near Hit (near miss)	An uncontrolled, unintended or unexpected event that did not result in damage to people, the environment or the business, but had the potential to cause damage.
NMA-designated contractor	An individual or entity who meets the qualifications of a lead auditor as described in Section I, and who has been approved by the NMA.
Non-conformance	An aspect of the SHMS (system element, sub-element, etc.) that does not meet the expectations specified in the CORESafety Handbook.
Offsite service (off premises service)	Company or person performing work for your company but not under your company supervision or on your property.
Participating Company	Any company that has signed the CEO Pledge and remains involved in CORESafety in either a good standing or certified capacity.
Risk	An estimate of the combination of likelihood of an occurrence of a hazardous event or exposure and the severity of injury or illness that may be caused by the event or exposures.
Significant potential	An event with the capacity to cause serious harm to a person (such as irreversible impairment, surgery or hospitalization).
Site	Any operational facility that is covered by the CORESafety SHMS including, but not limited to mines, mills and processing facilities, smelters, refineries, load-out and infrastructure facilities (e.g., water storage treatment, distribution; waste storage, treatment, etc.), and maintenance and warehouse facilities. It includes administrative offices to the extent that they are integral to site operations and safety but cannot be substituted for an operational site.
Third-party audits	Independent verification of a company's safety and health management system and its effectiveness at managing the safety and health risks present.