

Beyond Compliance: Safety Culture



01

Turning a Priority into a Commitment and a Culture



Turning a Priority into a Commitment

The extractive industry continuously strives towards safe working conditions. Extracting minerals from the natural environment means working in challenging and potentially dangerous circumstances. For decades, companies have made safety a top priority. But doesn't commitment to safety run much deeper than making it a "priority"? Many companies have turned this "priority" into a core value and a commitment – a core value that shapes decision-making all the time, at every level. Every company wishes to run safe operations – but the great challenge is to translate this into action. Written rules, standards and procedures are necessary in achieving a safe working environment, but they alone are not enough. The answer is ultimately found in a company's culture – the unwritten standards and norms

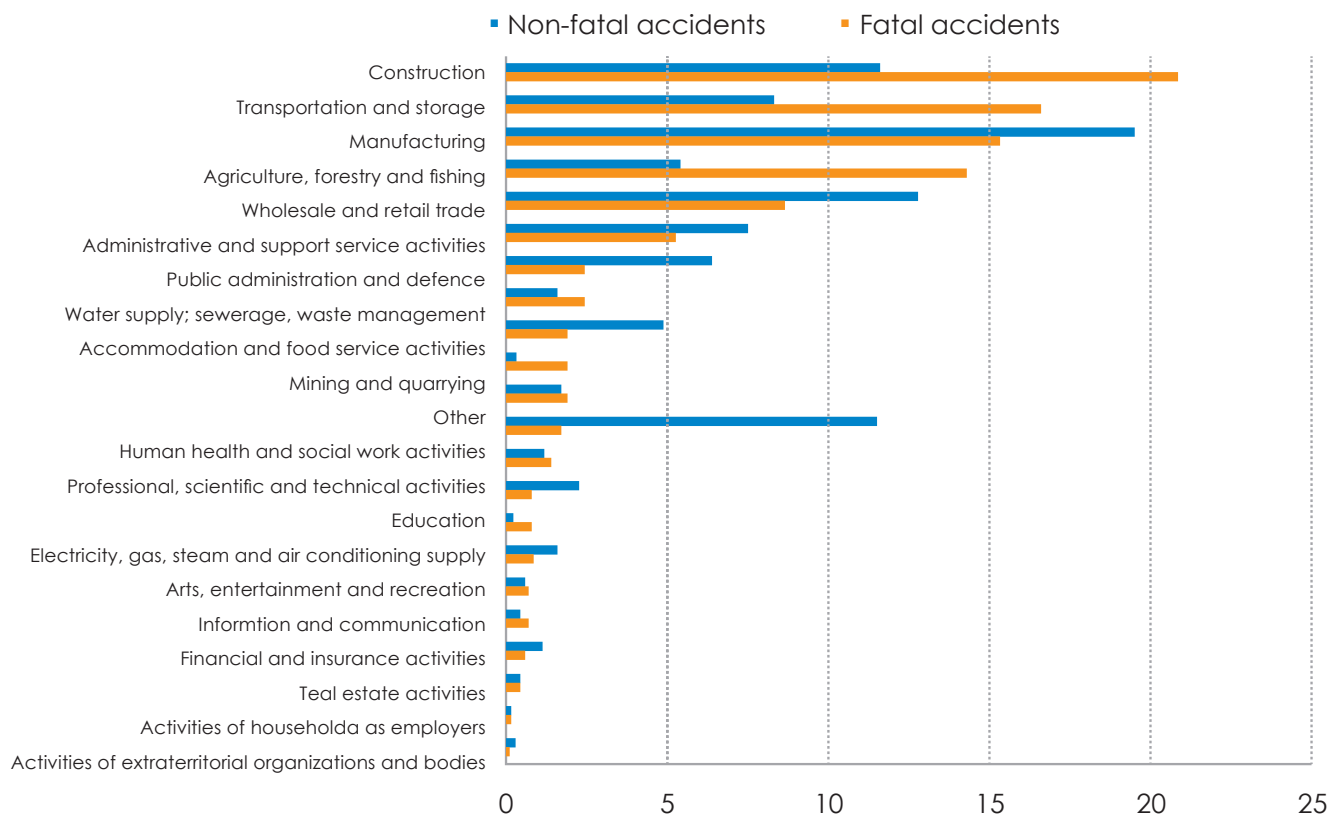
that shape mindsets, attitudes and behaviours.

Working together, mining companies, unions, employees and the regulatory authorities have made significant strides in improving the safety performance of European mines and quarries through so called "Social Dialogue". The work is on-going and challenges remain to be achieved, but the common goal of protecting human life drives the work further.

Since safety is the most important factor in protecting the health of workers, this brochure will focus on the safety culture. Other occupational health management aspects deserve another publication in itself.

Situation in Europe

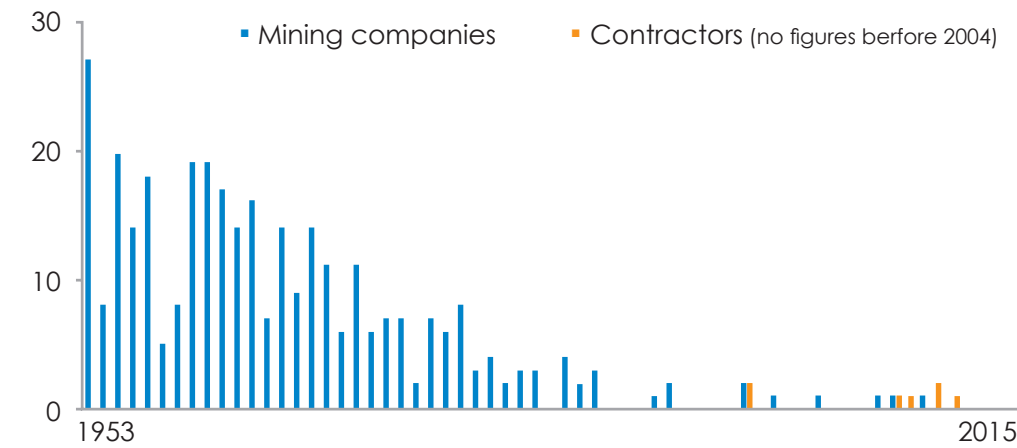
Fatal and non-fatal accidents at work by economic activity, EU-28, 2014 (percentage of fatal and non-fatal accidents)



Source: Eurostat 2016

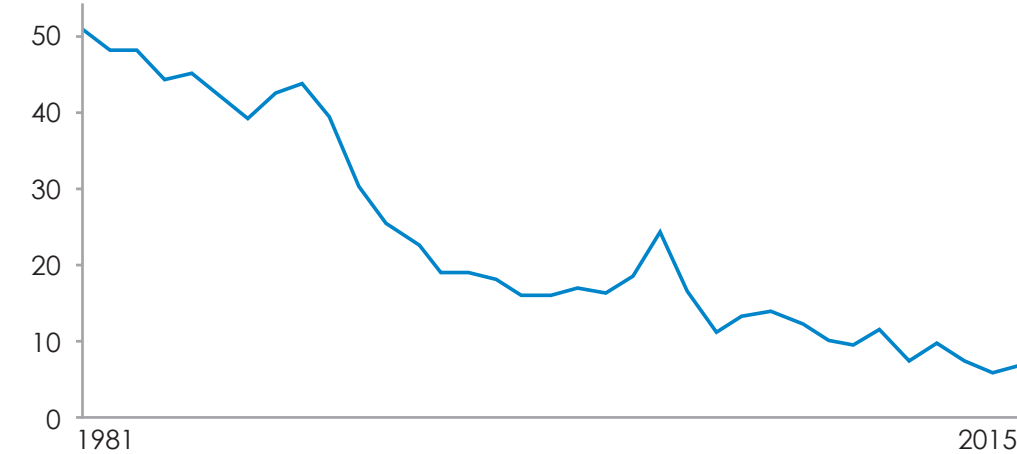
Situation in Sweden

Number of Fatalities 1953-2015
Swedish mining industry (mining companies and contractors)



Source: Svemin 2016

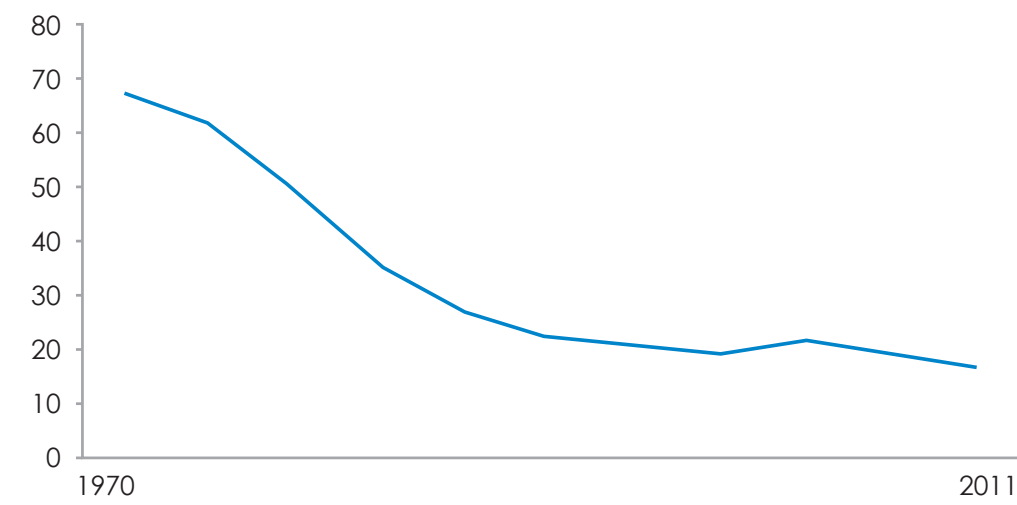
Occupational Accidents
Lost Day Injury Frequency rate 1981-2015



Source: Svemin 2016

Situation in Austria

Injury Frequency in Austria 1970-2011



Source: Mine safety issues - WMC - IOC, Vienna, 2012

02

Hazards, Risks, Assessment & Management



Risks

Every workplace has occupational risks attached to it, but some more so than others. Underground mining, by its nature, presents a range of safety hazards that are different from those in other sectors. That is why safety is at the core of all operations and processes – with every practical and reasonable measure adopted to eliminate workplace fatalities and injuries from mining and metals activities. Key hazards of particular relevance to mining include:

Natural Environment Hazards

The very nature of extracting natural resources means that many businesses may have operations in remote and inhospitable areas in the world, sometimes coupled with a high susceptibility to natural catastrophes (e.g. geological hazards, rock-bursts).

Extraction Related Hazards

Ground control hazards

Extraction of resources means creating voids and may cause instability of the ground which can lead to dangerous geo-technical conditions.

Air-borne hazards

Any air-borne flammable gas or dust in sufficient concentrations can explode.

Hazards associated with water management

Undesired water in ore and waste passes.

Hazards associated with mobile equipment

Risk of collision of vehicles with other vehicles, stationary equipment and personnel by land, sea and air. Mobile equipment malfunctions.

Behavioural Risks

- » Unawareness of rules
- » Unawareness of best practices
- » Inappropriate reactions to risk situations due to wrong risk assessment and exaggerated self confidence
- » Lack of knowledge of working methods
- » Lack of safety culture
- » Rush and stress

Safety Performance

To reduce risk of accidents, industry, employees and the regulator need to work together to bring about important cultural change. While extra safety regulatory resources and legislation are essential, significant reduction in incidents can only be achieved if a resilient safety culture is encouraged and maintained across the extractive industry. Such focus results in decreasing the number of fatalities, occupational accidents and lost working time. Despite all achievements, the industry cannot and will not rest on past performance. It continues to challenge itself and raise expectations.

Main types of accidents:

- » Slips, trips, falls
- » Musculoskeletal injuries
- » Struck by or against an object or falling objects
- » Loss of control of mobile equipment
- » Burns
- » Crush, pinch injuries
- » Rock falls
- » Contact with chemicals

A Safety Management System is important!

- » It incorporates various safety tools, practices and processes into a systems-based approach
- » It provides a roadmap to develop a clear and executable plan
- » It integrates the responsibility and accountability of working safely across all organizational levels
- » It builds shared leadership and participation into decision making

Assessing and Managing Risks

The hazards mentioned above are grouped in general risk categories. Every employer is responsible for the assessment of the specific risks to the occupational safety of employees when they are at work.

Safety risks are characterised by acute consequences, ranging from a minor injury requiring first aid treatment to a more serious lost-time injury through to a permanent disability or even a fatality. They range from relatively low-consequence events that may occur quite frequently to rare but potentially catastrophic events. To prevent these hazards from causing injury at work, mining companies use a combination of risk management systems, leadership, knowledge, experience, training, team, workand establishing a culture of safety.

The standard AS/NZS ISO 31000: Risk management-principles and guidelines provides a generic framework for establishing the context and identifying, analysing, evaluating, treating, monitoring and communicating risk. Its key elements are:

Communicate and Consult

Effective risk communication with internal and external stakeholders is crucial in achieving the best results in the risk assessment and its acceptance by others.

Establish the Context

The context of a risk assessment determines the types of output required, the approach taken and the detail needed. A range of methodologies is available, including qualitative, semi-quantitative and quantitative approaches.

Identify Risks

Most risk information is obtained from experienced operators and subject matter specialists who jointly understand the activities that will be carried out, their potential impacts on the business and the assets in the wider environment.

Analyse Risks

The objective of risk analysis is to produce outputs that can be used to evaluate the nature and distribution of risk and to develop appropriate strategies to manage the risk.

Evaluate Risks

The tools most commonly used to evaluate risks are consequence tables.

Treat Risks

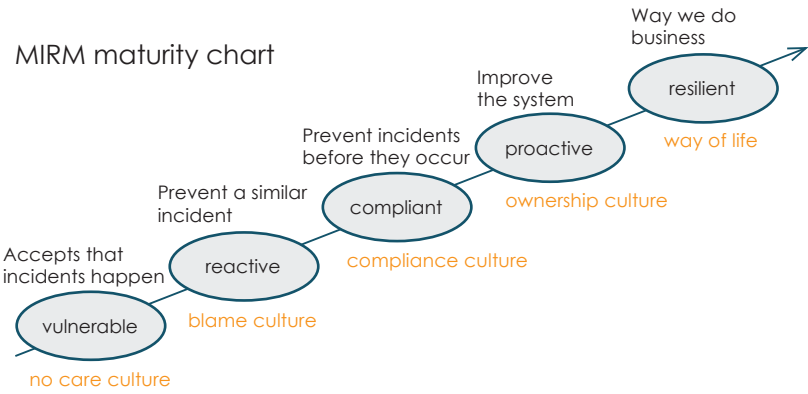
Strategies and plans usually involve the improvement of existing controls or the introduction of new controls to reduce risk.

Monitor and Review

Risks need to be monitored to ensure that the controls have been properly designed, have been implemented as intended and are working effectively.

When deciding which tools to apply, the differences in the state of safety management across operations will have to be considered. Sites at the early stages of safety maturity will require different techniques than those with stronger maturities. The model below is likened to a journey as there is a strong focus on continual improvement and effectiveness of the standards, rather than pure compliance.

MIRM maturity chart



Adapted from: The Safety Journey: Using a Safety Maturity Model for Safety Planning and Assurance in the UK Coal Mining Industry

03

Safety Policy: The Starting Point



Policy and Legislation

Mines and quarries have safety policies in place that first and foremost have integrated EU and national legislation in order to providing legal compliance and set an effective framework of standards in the field of occupational safety.

These safety policies are audited, and many companies have ISO or other certifications.

However often, even with the best policies in place, people's behaviour is governed not only by systems, rules and procedures, but also by their personal beliefs and values, along with their company culture. It is therefore important to have a comprehensive safety policy in place.

European Scope

The European extractive industry is governed by two specialised EU directives on surface and underground mineral-extracting industries and mineral-extracting industries through drilling. Next to it there is a series of generally applicable EU Directives, such as the Framework Directive, which aims to introduce measures to encourage improvements in the safety and health of workers at work. More specific directives concern workplaces, equipment, signs, personal protective equipment, workload, ergonomics and psychosocial risks, physical agents, chemical agents, biological agents and sector-specific and worker-related directives.

The sector is engaged in a voluntary EU Social Dialogue Agreement on the protection against respirable crystalline silica (NEPSI). In 2006, a diverse group of industries and their social partners signed the Social Dialogue "Agreement on Workers' Health Protection Through the Good Handling and Use of Crystalline Silica and Products Containing It". Together, the 15 signatories formed NEPSI, the European Network on Silica, to implement effective

protection measures through good practices and closely monitor the application of the Agreement over the years. This is the first European multi-sectoral agreement.

Numerous health and safety guidelines have been developed over the years by the sector.

National Scope

Next to the European legislation the safety regulations are embedded in extensive provisions of national legislation and mining codes in the EU Member States.

Protocols, Standards & Auditing

Companies develop their own standards and protocols which suit their needs when drilling, blasting, scaling, roof bolting and using machinery. The corporate protocols set the rules for issues important for Health & Safety issues such as:

- » Personal protection equipment
- » Energy isolation & lockout/tag-out
- » Confined space entry
- » Working at heights
- » Operation of equipment
- » Ground control
- » Lifting & rigging
- » Explosives management
- » Hot work (welding/flame cutting)
- » Machine guarding

Other elements of safety management systems can be: responsible mining framework, responsible mining policy, reporting and audit standards, emergency response & crisis management standards and guidance documents. Some companies have adopted Corporate Directives on specific issues such as safety of mixers/ confined spaces/PPE and other requirements. Some companies put extra attention toward obligating their employees to refuse unsafe work.



Modern mining companies invest a lot to secure the safest conditions of work through applying best available technologies and adapting new tools to the sector.

Greater mechanisation and automation on the extractive site of the plant and equipment have resulted in an increase of safety in the industry.

Automation and robotics have often made it possible for workers to work at a safe distance by controlling tools with the aid of computers and remote control devices in order to minimize the risks for any kind of incident.

New machinery with lower emissions, technical assistance on machinery, remote sensing and protective cabins on machinery also reduce exposure to hazards of all kinds.

Most mines nowadays use the best available technology and take advantage of the long years of experience to continually improve its know-how.

Hand in hand with these technical advances, new organizational solutions are improving safety and reducing worker exposure to risk factors:

- » Encapsulated cabins for loader operators, isolated from external conditions
- » Moving positions of operators out of the risk zone
- » Isolated position of operators for remote control of devices
- » Automated continuous miners

05

Building a Culture of Safety

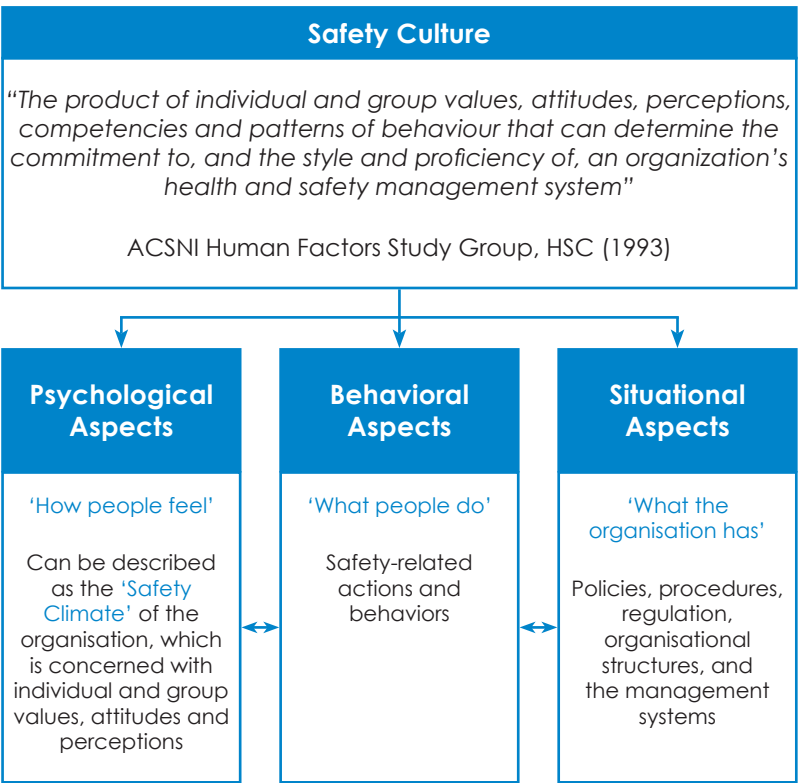


Safety Culture is Key

Working with nature in the extractive industry means that there will always be new situations and the need to adapt to new unexpected conditions and situations.

Over the last 60 years, industry first reduced accident rates by improving: hardware (effective guards, safer equipment); then improved employee performance (selection and training, incentives and reward schemes) and then changed the way they manage and organise – especially by introducing safety management systems. Each improvement reduced accidents.

The next big change in safety has begun and is based on developing good safety cultures that positively influence human behaviour at work. Safety culture is not a difficult idea, but it is usually described in terms of concepts such as ‘trust’, ‘values’ and ‘attitudes’.



Source: Safety Matters! A Guide to Health & Safety at Work, 2010



A safety culture is when rules and regulations, protocols and standards have been internalised to a degree that they have become standard behaviour and will be transferred to any new situation without instructions.

When health and safety is a management responsibility and a spirit shared by all employees, it means they take care of themselves and their colleagues.

Effective Communication

A strong and pervasive Safety Culture is:

- » An informed culture - the organisation collects and analyses relevant data to stay informed of its safety performance
- » A reporting culture – people are confident they can report safety concerns without fear of blame
- » A learning culture – the organisation learns from its mistakes and makes changes to unsafe conditions
- » A flexible culture – the organisation is able to reconfigure the chain of command if faced by a dynamic and demanding task environment
- » A just culture – people understand the boundary between behaviours considered acceptable and unacceptable. Unacceptable behaviours are dealt with in a consistent, just and fair manner.

Source: Adapted from Reason, 1998

This can be understood in more detail under two main headers:

- » Leadership culture and
- » Behavioural culture in the team and towards the supervisor

That is why mining companies devote much attention to

- » Communicating risks and related measures
- » Collecting data on risks and accidents as well as near misses
- » Specialised training

Contemporary risk approaches now place more emphasis on communication at each stage of the risk management. It is important for risk practitioners and managers to fully appreciate the relationship between effective risk management, risk communication and the technical risk assessment process.

The way safety will be communicated also influences whether or not people will understand and participate in the safety process, and the language we use will often determine whether the process is accepted or rejected. Training people to work safely will often not be sufficient. It is important to provide the motivation and publicity to encourage employees to take responsibility for their own health and safety, and that of others. Effective communication is the focal point of a strong safety culture. Companies use various safety communication tools.

Leaders should champion safety improvement and demonstrate genuine commitment to the importance of safety to the organization

Tools	Objectives
Mission statement, OSH policy	Presenting values, expectations, objectives
OSH statistics	Lost time, medical treatment, positive indicators
Safety induction	Work safely from Day 1
Risk assessment	Identify hazards, control risks
Manuals, checklists, operating procedures	Roles and requirements for safe work
Hazards, incidents, near-misses, safety alerts	Investigate, correct the action, report symptoms
Training	Gaps in knowledge, at-risk areas
Website	Safety manual, policies, OSH committee minutes
Brochures, posters, video	Fact sheets, newsletters
Safety week	Promotion of OSH
Public report	Illustrate range of activities, review performance
OSH conferences	Meet, share information, learn

It Starts with Leadership

A **culture of safety** starts with leadership, because leadership drives culture and culture drives behaviour. Leaders influence culture by setting expectations, building structure, teaching others and demonstrating stewardship. Management plays an important role in ensuring a safer work environment by developing effective programmes, policies and practices on occupational health and safety to promote employee well-being. Therefore, the development, sustenance and eventual promotion of strong safety culture rests on the shoulders of the management and leadership in an organization.

There are seven key safety leadership characteristics and associated behaviours that can influence Safety Culture:

- » Credibility – what leaders say is consistent with what they do.
- » Action orientation – leaders act to address unsafe conditions.
- » Vision – leaders paint a picture for safety excellence within the organisation.
- » Accountability – leaders ensure employees take accountability for safety-critical activities.
- » Communication – the way leaders communicate about safety creates and maintains the Safety Culture of the organisation.
- » Collaboration – leaders who encourage active employee participation in resolving safety issues promote employee ownership of those issues.
- » Feedback and recognition – recognition that is swift, certain and positive encourages safe behaviour.

Source: T.R. Krause (2005)

In the extractive industry, the **Safety Culture** is supported by senior management by providing resources, dedicated safety personnel, safety training and technical knowledge for “safety by design”, incident investigations and reporting as well as motivational measures.

With time and commitment invested in the safety issues, companies establish safety management systems, set safety objectives and introduce site-level mechanisms (e.g. hazard analysis, behaviour observation and feedback, incentive schemes, action item tracking systems, and safety committees).

Safety Culture is then supported by the use of accountability systems, which encourage the recognition that safety is everyone's responsibility and not just the responsibility of the safety department. Experience has shown that over time the values and beliefs of the organisation shift focus, from eliminating physical hazards to eliminating work situations prone to human error by building systems that proactively improve workplace conditions to the point where safety becomes a core value of the organisation and an integral part of operations.

Good coaching skills of managers/supervisors and good interpersonal relationships between the participants is key for providing positive feedback on safety and guidance on less safe behaviour. Every interaction presents the opportunity to set expectations, assess the level of employees' engagement and to coach, motivate and inspire.

Keep it simple but effective

Think outside of the box - find new solutions for old problems

Break old habits and norms

Talk, not tell

Employee Engagement – from Compliant to Resilient

Companies within the extractive industry strive to develop a safety culture which involves having people, processes and systems working in unison and everyone being prepared to look out for one another.

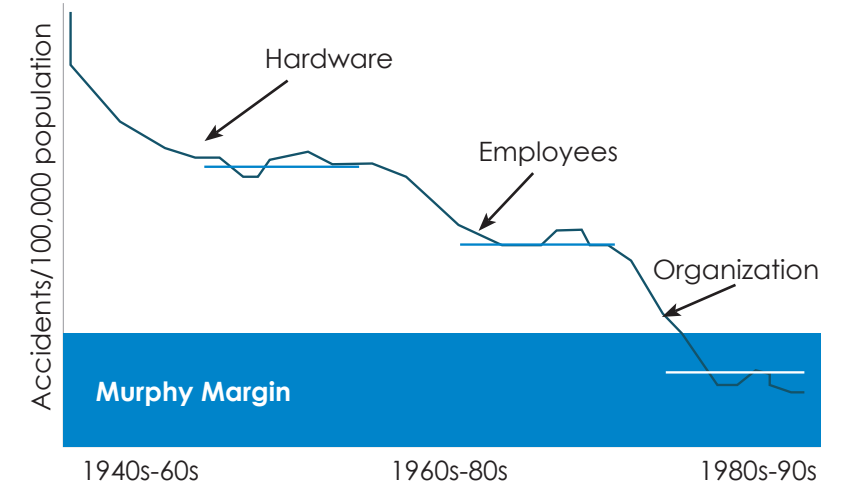
Traditionally, the extractive industry has had a strong emphasis on teamwork, which is rooted in the nature of the workplaces themselves. Often, teams are out on their own in distant locations of the operations, often far away from readily available assistance. Hence, how well the team functions is very important.

Employees should be proactively involved in all areas of safety management and responsible for identifying and managing risks in their workplaces.

Involvement of all employees is reached through various actions:

- » Communication channels between all levels of hierarchy
- » Platforms to exchange knowledge and experience
- » Effective H&S training
- » Individual responsibility of each employee

Research conducted over the past decades shows that engaged employees are safer, more productive, make better use of corporate assets, are more likely to stay and are more supportive of organizational change. They also have lower rates of absence and they work harder to deliver strategic objectives.



Source: Global HSE Conference, Leadership commitment for transforming HSE culture, 2013





Continuous improvement is essential to get where we need to be on safety. In an industry such as the extractive industry – which operates 24 hours a day, around the world – the need to manage risk never ends. Even the best safety framework should be viewed as a work in progress. Developing a culture of safety is therefore a journey with many challenges remaining that push the companies to move forward and to improve. We know that we cannot rest from the objective of driving incidents to zero. This can be achieved by going beyond compliance and creating a culture in which all of the workforce owns safety (not only complies with safety procedures). Mining, a very old and usually reputed “dangerous” sector, has shown that the road of zero harm is possible and all accidents can be prevented.

Beyond Compliance: Safety Culture

Safety is our first value. We place people first.

