

## ***THE IMPORTANCE OF SAFETY CULTURE IN INFLUENCING SAFE WORK BEHAVIOUR IN THE OIL AND GAS INDUSTRY: A PRACTITIONER'S PERSPECTIVE***

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**“Real commitment to safety can't be ‘turned on’ at the entrance gate at the start of the day... a true commitment is developed by promoting safety as a full time effort on and off the job”** Esso Australia Safety Advisor

Major accidents are frequently traced to failures in Safety Management Systems (SMS). Even when significant effort has gone into perfecting these systems, they remain fallible. It is largely for this reason that the concept of safety culture has been receiving widespread attention for a number of decades. A number of researchers in the domain of safety culture focus on assessing, building and evaluating culture, but do not outline best practice for creating lasting behavioural change. This paper seeks to outline some practical recommendations on how to influence behavioural change and embed a culture of safety within the oil and gas industry.

### **THE CONCEPT OF SAFETY CULTURE**

There is no universally accepted definition of safety culture. Uttal's (1983) definition of safety culture captures the key components: “shared values (what is important) and beliefs (how things work) that interact with an organisation's structures and control systems to produce behavioural norms (the way we do things around here)”. All organisations have a safety culture. It is how functional and effective that the culture is in maintaining health and safety that determines how strong or positive the culture is. The reality of safety culture is that it is a complex outcome

resulting from employees and managers at all levels, combined with long held organisational practices, and it cannot be changed quickly (Biggs et al., 2013).

Safety culture is a concept that has been receiving a lot of attention over the past decade. Recent research undertaken in Australia demonstrated that investment into greater protection for workers and engineering a safer work environment does not guarantee any improvement to safety performance in the absence of improvements to safety culture (Feng, 2013). In addition, Reason (2000), a well-known expert in the field of safety culture, argues that the inherent limitations of safety systems are less critical if organisations can develop more robust safety cultures.

The importance of safety culture for the safety conscious organisation operating in a high risk environment cannot be underestimated. It is not enough to think that implementing safe work procedures and providing personal protective equipment is enough in sustaining safety performance. When employees become accustomed to their work environment over time, they are inclined to become complacent and less likely to perceive danger and risk. Considering what employees believe, think is important, and the ways in which they go about their work can provide some valuable insights into safety performance over time.

In order to effectively drive a culture of safety, organisations need to employ a combination of top down and bottom up processes. Establishing a positive culture will not work if senior managers have the attitude that they set the culture, and that employees are expected to comply. Managers need to communicate the safety vision, establish safety priorities and ensure the implementation of appropriate regulations, policies, procedures and practices. In line with this, employees need to be given opportunities to change their attitudes, to be acknowledged as the expert on how to do their jobs, and there needs

to be mechanisms in place for upwards feedback and communication.

## THE IMPORTANCE OF SAFETY CULTURE IN THE OIL AND GAS INDUSTRY

Health and safety management is an integral part of every aspect of the oil and gas industry. Even in recent times, we have seen the catastrophic results of accidents globally. Although the industry is very good at managing risks throughout project life cycles, the reality is that it is a dynamic, demanding and changing environment with a range of complex factors that impact upon safety day-to-day.

Based on the research and TMS' experience in the Australian oil and gas industry, it is evident that the industry is facing a range of challenges in improving safety performance. Some of these challenges include:

- The complex interrelationship among contractor and sub-contractor companies with different sets of specialised skills, cultures and SMS'.
- Some confusion or lack of integration between occupational and systems safety, which can lead to an overemphasis on one type of safety.
- Transient and distributed workforce with little contact with senior management.
- Less than optimal management involvement in walking the talk and participation in safety initiatives.
- Workers continuing to operate plant that has already been identified as unsafe.
- Lack of awareness or understanding about how to identify and manage human factors risks effectively.
- Employee perceptions that it's ok to break the rules when they feel they can circumvent the safe work procedures.

- A perception at middle management levels that they lack the support required from senior management to enforce health and safety policies, practices and procedures and that productivity is more important.
- Poor follow through, consultation and communication when implementing change that may impact on safety.
- Lack of clear roles and responsibilities, and communication strategies between operators, contractors and sub-contractors.

Whilst many of safety risks inherent in the oil and gas industry can be predicted and managed ahead of time, employees need to be switched on every day to ensure they are identifying any changes in their environment and are equipped to respond to the unexpected. Without the right behaviour and attitude on site, employers are subject to ongoing safety risks that could be better managed by having a committed, responsible and safe workforce that is risk aware and not inclined towards complacency and ignorance. Managers and leaders play a central role in setting expectations and understanding how to influence workers to behave in safe and appropriate ways every minute of every shift.

## INFLUENCING SAFE WORK BEHAVIOURS

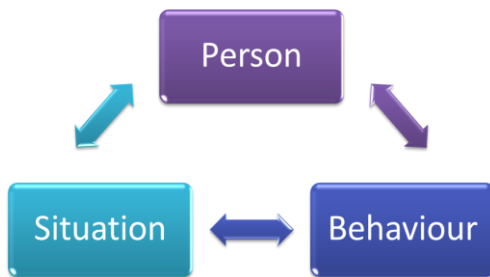
Human behaviour can be quite complex. Understanding how to influence behaviour is a challenge for the most experienced and talented managers and leaders. The mistake that many make is arriving at the wrong assumptions about why employees behave in the ways that they do, and assuming that because employees understand the right way to behave, that when they behave inappropriately it must be intentional.

If managers and leaders are going to have any hope of successfully changing behaviour, there needs to be a basic understanding of where behaviour comes from. In his eminent work in the field of social psychology, Kurt Lewin (1936)

posited that behaviour is the result not just of an individual's characteristics and personality, but also of their environment. This concept was presented in the following formula:

$$B = f(P, E)$$

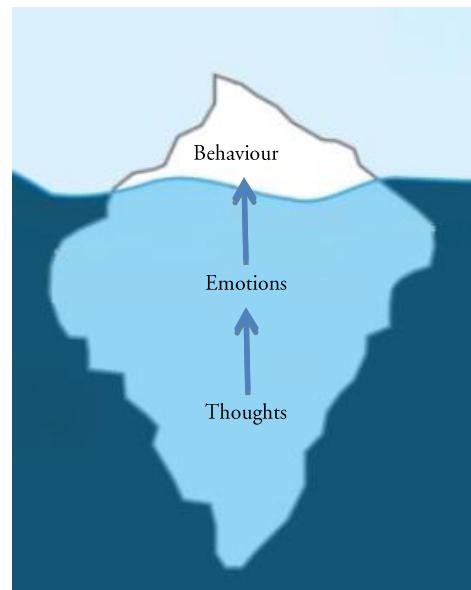
This formula is quite important in the context of safety culture, and is well supported by Cooper's (2000) work in developing a model of safety culture based on Bandura's (1986) work on Reciprocal Determinism.



*Figure 1. Albert Bandura's model of Reciprocal Determinism.*

This model demonstrates that we influence and are influenced by our environment. Cooper (2000) argues that change efforts that do not consider the relationship between these three factors are doomed to failure. This model does provide a good explanation for how safety culture is derived and then maintained in an organisation. As individuals (the person), we have our own beliefs, values, attitudes and motivations. These influence our behaviour. When beliefs and values are shared by a whole team or even an organisation, culture is developed through the establishment of behavioural norms. As new employees arrive in the team, they soon learn about the behavioural norms, and to an extent adopt that shared belief and value system because they are influenced by the situation. Thus, if we want to influence behaviour, we need to focus on changing values, beliefs and the thoughts of employees, as well as the situation in which the individual is operating, i.e. their work environment and the SMS.

This is of course easier said than done. Whilst it is certainly possible to change a person's attitudes, it is not always easy. An individual's attitude, sometimes referred to as a mindset, is compiled of thoughts and feelings. It is very hard to know what a person is thinking and feeling; what is observable is their behaviour. David Rock, world renowned expert on social neuroscience, introduces this concept through the analogy of an iceberg.



*Figure 2. Iceberg analogy*

In understanding safety behaviour, managing performance and establishing a strong culture of safety, managers and leaders need to understand the attitudes that are driving this behaviour. This does not mean making assumptions; this means engaging the employee in a discussion that focuses upon working together to understand why the behaviour is occurring. Working back the other way, consider attitudes such as: "Oil and gas is not as strict on safety as mining" and "It's ok to cut corners and break the rules" What sorts of feelings do these patterns of thinking lead to? What sorts of behaviours are likely to result from these thoughts and feelings? These are the questions that should be at the forefront of the minds of managers, leaders and employees. Revisiting the safety challenges for oil and gas above, most revolve

around attitudes and behaviours. The only way to change behaviour is to change the thinking pattern that sits underneath it; successfully achieving this will go a long way in continuing to improve safety culture in the industry.

In order to develop a proactive and high performing safety culture that is embedded within an organisational culture, the *hearts and minds* of employees must be engaged. Each individual must 'own' safety, and understand the inherent need to change. They need to think and feel that safety is important, they need to want to go home safe at the end of their cycle, and they need to be reminded of the consequences of not returning home safe. In turn, this must translate into an organisation wide desire to achieve a high performing safety culture. Managers and leaders need to make safety personally relevant to every single employee, even those who don't work "at the coal face".

### TAKING IT ONE STEP FURTHER

The importance of safety culture for the safety conscious organisation operating in a high risk environment cannot be underestimated. What many managers and employees struggle with is communicating and understanding why organisations need robust and extensive safety management practices that often involve a high level of design, administration, and consequently, paperwork.

Considering what employees believe, think is important, and the ways in which they go about their work, can provide some valuable insights into safety performance over time. However, we need to start taking some of these interventions one step further. It is not enough to consider the attitudes, beliefs, behaviours and actions of workers; we need to better understand the fundamental ability of the average worker to stay safe. Referring back to Bandura's model, abilities are an important and often overlooked aspect of

the person component. Managers can use the understanding of worker abilities to better influence their behaviours and decision-making regarding safety at work.

### THE LIMITATIONS OF HUMAN PERFORMANCE

In the 21st century, work environments are considerably more complex, technical and dangerous than they were in previous centuries. The human brain is not very well designed for functioning in such environments, with many complex cognitive processing demands and multi-faceted social interactions. Though our brains are essentially survival tools, some of our cognitive functions are counterintuitive in regards to staying safe.

The reality is that humans have a very limited capacity for information processing, which has significant implications in safety. Researchers have suggested that the capacity of our working memory (sometimes referred to as our "consciousness") is approximately 7 units of information, plus or minus 2, i.e. some individuals have better working memory than others, or make more efficient use of their brains. This doesn't mean we can do around 7 things at once time. Working memory should be thought of as a limited resource; when we use all resources, we are at capacity.

As humans, we are exposed to an immense amount of data every second, perceived through our five senses. This includes our internal feelings and signals, such as pain, temperature and our internal thoughts, as well as external information, the things we see, hear, smell etc. Given that we have a very limited capacity to consciously attend to all this information, Cognitive Psychologist George Miller (1956) suggested that we can only consciously attend to approximately 0.3% of the stimuli in our environment, meaning that we consequently miss an overwhelming amount of information.

There are many implications of our severely limited information processing capacity. Our drive for increased productivity means that workers are increasingly feeling the pressure to work harder, do more with less, and juggle multiple complex tasks simultaneously. Yet, the concept of multi-tasking is a pure myth, at least we can attempt to do two tasks simultaneously, but we certainly wouldn't be undertaking either effectively. The brain handles tasks sequentially, switching backwards and forwards, or "toggling". The brain has the ability to switch between tasks quite quickly, but more quickly for some than others. The more complex the tasks, the more of our attentional resources are required, and the less effectively we can do two things at once.

Because of our extremely limited processing capacity, we don't have a very good attention span. We are prone to missing important information, and can forget information easily when we are distracted. In fact, we may often miss things that are "right in front of us"; this is referred to as inattention blindness. Driving and operating plant and equipment is one area in which inattention can have serious consequences. We need to be as focused as possible when operating a vehicle, which means giving our full attention to the task at hand. However, there are many distractions that can impact our operating ability, such as mobile phones, radios, other workers or passengers, even our own thought processes can be distracting.

Transport Canada's Ergonomics Division conducted a study to track the eye movement of drivers taking on a hands-free system versus those not. Drivers engaged in a conversation on hands-free had a significantly limited field of visual focus, used their peripheral vision less, checked their driving instruments less, and looked at traffic signals less. In this situation, it would be a lot easier to miss important information that could result in a vehicular incident (National Safety Council, 2012). The simple activity of

having a conversation requires a large proportion of our attentional resources, thus limiting our ability to attend to driving.

Our limited capacity for attention also results in difficulties with detecting slow changes that occur in our environment, particularly when we don't have additional cues to direct our attention towards items that may have changed (Rensink, O'Regan and Clark, 1997). Experiments with slowly changing images shown to participants in safety workshops demonstrate that when individuals are shown a picture of an image in which a change occurs slowly over a period of seconds, most individuals are not able to detect it as they tend to scan the scene, and do not have the capacity to simultaneously attend to all the details of the scene.

The other important element to attention is the degree to which we are able to sustain it over time. This is known as vigilance – our ability to maintain focused concentration over periods of time. In regards to vigilance, we are not all created equal. Some individuals have a naturally greater ability to sustain their attention than others. For the average individual, our ability to remain vigilant decreases more rapidly than most would realise. In relatively complex tasks, we can sustain our attention for as little as 15 minutes before we start to experience the impacts of distraction, stress, fatigue and other factors that impact on our cognitive abilities (Teichner, 1974).

In addition to attention, there are also challenges with the ways in which we perceive information. When it comes to dangers in our workplace, we need to be able to notice the hazard (attend to it), perceive that there is an element of risk, and then take action to mitigate that risk. Where risk is concerned, our brain becomes accustomed to exposure to danger over time, and so we give less and less of our attention to noticing these factors in the workplace. This is often referred to as "habituation". We simply don't notice risks any

longer because they are not unusual and our response to them is automatic, or subconscious.

In addition to habituation, our perception of risk can be altered by complacency. When we are continuously exposed to danger, the brain becomes progressively desensitised. We trick ourselves into thinking “that will never happen to me” and thus can underestimate the potential for harm to occur. Complacency alters our ability to effectively evaluate the hazards that are present in our work environment by downplaying the level of risk. This is an issue commonly reported in heavy industries, particularly on sites where significant safety incidents haven’t occurred for some time; we start to believe that they will never happen and become lax in our behaviour.

The implication of the limitations of our brains is that, on any given day, we are not well positioned to detect and evaluate risks in our work environments. In order to counteract some of these challenges, controls have been put in place to help protect workers, such as the use of risk assessments to direct attention towards factors present in the work environment that may be potentially harmful. However, it is the safety culture that will ultimately influence worker attitudes towards such practices, and determine whether or not a high degree of compliance occurs.

If workers were to better understand the key drivers of such health and safety practices in the oil and gas industry, a higher degree of compliance and engagement in safe work behaviour would likely occur. This is the justification for developing an integrated approach to safety culture.

### THE CORE ELEMENTS OF SAFETY CULTURE INTERVENTIONS

For organisations wanting to embark on efforts to develop a stronger safety culture that supports strong health and safety priorities, a range of elements must be taken into consideration when

designing safety culture programs. Effective safety culture programs tend to be those that focus on helping workers to understand why safety is important, the attitudes that we have towards safety that we may not realise are influencing our behaviour, and more effective approaches to remaining safe at work. Programs tend to be targeted towards workers with additional programs targeted towards developing effective safety leadership.

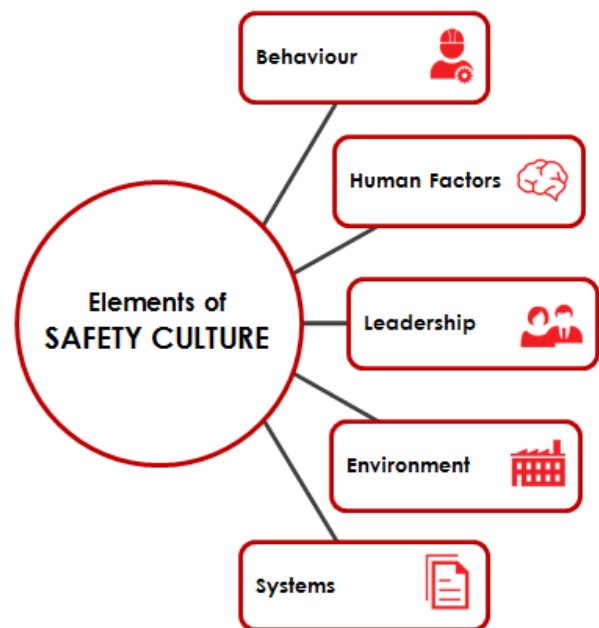


Figure 3. TMS Elements of Safety Culture Model.

A best practice approach to developing safety culture would integrate a range of factors (see Figure 3) on a much broader scale than behaviours and attitudes, but also consider a range of human factors including the limitations of human performance and cognitive psychology, the interaction of workers with their physical work environment, the organisation’s SMS, and the practices and procedures that are inherent to the ways in which organisations do safety.

## KEY LEVERS TO EMBED A CULTURE OF SAFETY

Once an organisation has started working towards the development of a positive safety culture, the next step is to develop the capability to embed the desired culture in every day health and safety practices. In order to ensure lasting change, it is critical that changes to the SMS are also embedded alongside cultural interventions. TMS' model (Figure 4) outlines seven key levers that an organisation can use to embed lasting change and drive a high performance safety culture. As depicted in the model, each of these levers is inter-related, or networked, with every other. The most effective strategy for embedding behavioural change is to ensure that each of these levers is utilised in combination with each other.



*Figure 4. TMS High Performing Safety Culture Model*

Outlined below are some recommendations for how these seven core areas can best be leveraged to assist in improving safety culture.

## LEADERSHIP

Leaders and managers play a critical role in influencing culture in organisations. Often the influence that leaders and managers have on employee behaviour is underestimated and the implications of this are not clear. In order to embed a high performing safety culture, leaders need to engage and consult with employees to establish relevant and meaningful safety goals and objectives and a safety vision. Further to this, Leaders must be visible in applying the agreed upon safety vision in all decision making processes. Employees must believe that management places a high value on safety and is willing to live according to the agreed safety vision.

Leaders and managers also need to be able to walk the talk. They need to continually communicate safety messages and behave in ways that are consistent with what is being said. Employees are very quick to identify any inconsistency between what their manager/leader says and does, and this can quickly undermine safety interventions.

## ORGANISATIONAL DESIGN

As a leader, it is important to ensure that the ownership of safety is appropriately assigned within the organisational structure. This means that all employees and managers within the organisation have a formal responsibility for safety as part of their role, and that this is enforced. It is important to avoid an attitude amongst employees that safety isn't their job, and that it is the responsibility of Health and Safety Managers and Advisors. This can be achieved by ensuring that employees have appropriate safety KPI's and that safety responsibilities are included within employment contracts and position descriptions. Further to this, it is of the utmost importance that all contractors and sub-contractors are aware of their roles and responsibilities with regard to safety and have goals in common with the operator.

## PERFORMANCE MANAGEMENT

A failure to implement and utilise appropriate performance management practices is one of the greatest detractors of safety culture. Good performance management practices will see managers communicating the consequences of unacceptable behaviour and work practices, seeking to understand why poor performance is occurring, and taking positive actions to support the worker to change their behaviours. This can be further enhanced by focusing on building a just culture, and developing individual performance plans for workers when necessary. In regards to the performance of contractors, sub-contractors and other relevant parties, it is important to ensure effective risk management is occurring between all parties. This can be confirmed by monitoring the same safety performance targets and having a common understanding of non-conformance and deviations.

## COMMUNICATION

Communicating safety messages and related business wide information is an important way to keep expectations in the forefront of the minds of employees. When the importance of safety is not regularly revisited, there is a tendency for employees to become complacent. Communication practices can be enhanced by having a strategy that involves a range of different communication mediums; this ensures that over time employees don't become too desensitised to the same messages and therefore ignore them or "tune out".

Safety-related issues should be considered in meetings at all levels of the organisation on a regular basis, and should be centred on discussing near misses/hits as well as incidents, consideration of emerging trends, and brainstorming strategies to minimise risks. Pertinent safety information should be communicated in a timely manner and in a way that is focused upon making positive changes in the future, rather than placing blame and

dwelling on what should have been done differently in the past.

To ensure effective communication between external parties (i.e. contractors, sub-contractors, etc), the implementation of a communication plan is imperative. This plan must outline strategies to alleviate any confusion about who should make decisions regarding the safety operations and when these decisions need to be made; as well as general communication strategies to ensure direct lines of communication between all personnel on site.

## REWARD AND RECOGNITION

Getting reward and recognition right is a surprising challenge for organisations. Inadvertently rewarding the wrong behaviours, or using the wrong reward systems, can have a significant and detrimental impact on efforts to influence and embed the right attitudes within organisations. It is important to consider what message is being sent through the practices implemented and what change this is resulting in. For example, many workers are rewarded for achieving safety KPI's and participation in safety programs with monetary bonuses and celebrations.

Behaviour change is more likely to occur and be sustainable when we can tie it onto the individual's value and belief system, rather than these external outcomes that come and go. The benefit of safety performance should not be a bonus, it should be appreciation for the opportunity to return home safe from every shift of every work cycle. The rewards do not need to be monetary in nature, it could simply involve acknowledgement of a job well done – this makes us feel good and we will be conditioned to continue to seek this response. Humans like a high degree of certainty and seek to understand why. Good recognition practices ensure that employee successes are attributed to characteristics of the employee or team, which can positively impact motivation.



## REPORTING AND IDENTIFICATION SYSTEMS

It is critical to have appropriate reporting and identification systems in place for safety risks, and to ensure that employees understand their importance and know how to use them. The key challenge in implementing a culture of good reporting practice is in how the information is used. It is fairly common in the heavy industries to hear workers complaining about how risk assessments and risk reporting are a waste of time, because management tends not to do anything with the data. There is no point having the data if you aren't going to use it, and at the same time legislation stipulates that it is mandatory to have processes in place for the identification and management of safety risks. Therefore, the best way to use these systems to embed a culture of safety is to make use of all opportunities to demonstrate to employees what actions have occurred. With every report, follow up with the employee to thank them for the information and to advise them what steps have been taken to manage the risk. Information on safety reporting and associated actions should be collated and fed back to the team on a regular basis.

## LEARNING AND DEVELOPMENT

There are a range of strategies that organisations can implement to ensure that employees are kept up-to-date on important safety policies, practices and procedures, as well as developing a body of knowledge that can only be acquired on-the-job. Good strategies for learning and development recognise that approximately 10% of what workers learn is obtained through formal training, and remainder is acquired through guidance from others and performing the job itself. In providing on-the-job learning opportunities, organisations can consider implementing strategies such as infield coaching programs; using coaches to work with employees

and managers to help them consider how to better influence and communicate with their colleagues and employees. Formal mentoring programs can also be used to increase transfer of safety knowledge for more experienced to less experienced workers. Furthermore, when implementing learning programs, they should be innovative and engaging programs that create awareness and educate employees about some of the attitudes that may be hindering the team from improving safety performance.

## CONCLUSION

Safety at work is everybody's business, but instilling a culture of responsible safety behaviour can be challenging. Too often, organisations rely on the existence of an SMS to provide a safe workplace. A proactive safety culture is vital to the continuing success of a SMS - it gives the dynamic energy needed to ensure that the system will provide a cycle of continuous improvement.

Managers become frustrated that 'the system' has not prevented incidents occurring, but also need to look at the role they play in creating a safety culture that brings management systems alive. In order to develop a high performing safety culture, workers and leaders need to understand what safety culture is and why it's important.

Interventions to develop safety culture should encompass a range of factors related to safety behaviour and performance, as well as integrating aspects of the organisation's SMS and working environment.

In summary, embedding safety culture in organisations requires robust top down and bottom up processes, and an understanding of the core drivers of safety behaviour. Management need to establish a safety vision and priority, they need to be committed, they need to be able to walk the talk, and the importance of safety needs to be communicated. Employees need to have a desire to participate in safety, provide feedback up through the chain of command, and reflect on

why safety is personally important and relevant in a meaningful way. Setting a standard and demanding compliance will not achieve positive results in the absence of a culture of safety; persuading workers to see safety as an investment rather than a cost is the way forward.

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