



Piper Alpha offshore production platform explosion
image copyright safety4sea.com

“SAFETY CULTURE” – WHAT IS IT AND WHY SHOULD YOU PAY ATTENTION TO IT?

The “Safety Culture” in an organisation will be a major area of study in all investigations into catastrophic incidents and has been shown to have a strong relationship with safety performance. Major accident investigations into root causes invariably conclude that safety culture was a major factor in the failure of the safety management system. But, what is safety culture? - In this article we shall explore the concept of safety culture and why it is so important to safety performance.

Why is “Safety Culture” important?

The cost of getting safety wrong can be huge and many catastrophic accident investigations have cited safety culture deficiencies as one of the major causes of the accident.

In 1988 the Piper Alpha offshore production platform explosion and subsequent fire resulted in the loss of 167 lives with many more injured and reported financial losses of £2 billion at the time. The subsequent public enquiry and resulting Cullen Report listed a poor safety culture as one of the 7 contributing factors.

In 2005 the fire at the Texas City Refinery resulted in 15 fatalities and 180 injuries with a reported financial loss of over \$3 billion and the subsequent Baker-Panel report highlighting significant deficiencies in the corporate and process safety culture as a major contributor to the accident.

In 2010 the Deepwater Horizon explosion and fire resulted in the loss of 11 lives and a reported total cost to BP in excess of \$65 billion. The subsequent oil spillage has been described as the worst environmental disaster in US history and the Chemical Safety Board (CSB) in their investigation report found that this was not just a case of technical failure or individual negligence, but a failure in safety culture.

So it is clear that there should be a very strong financial and moral case for ensuring a healthy safety culture in organisations involved in high risk industries but, even for organisations with a lower risk profile, there are still many claimed additional benefits including:-

- Lower absenteeism.
- Reduced repairs, re-working and waste.
- Happier workforce with lower staff turnover
- Reduced risk of fines
- Reduced insurance claims and premiums
- Improved productivity, quality & profitability
- More satisfied clients & stakeholders

Having established the value of working towards a healthy safety culture let’s look at it in more detail.

What is “Safety Culture”?

The Advisory Committee for Safety in Nuclear Installations (ACSNI) set up a human factors study group as part of the UK’s response to the Chernobyl Disaster. This was one of the first bodies to link an organisation’s culture to its safety performance and it brought the importance of safety culture to the attention of the health and safety profession. Since then, safety culture has been widely studied and specific aspects and practices have been developed for a range of industrial and health care activities.

Safety culture basically deals with the organisational structure of health and safety in an entity. Organisational structure failures are now recognised as being as important as mechanical failures or individual human errors in causing major accidents.

In their third report(1) the Human Factors Study Group of the ACSNI recorded :- “The safety culture of an organisation is the product of individual and group values, attitudes, perceptions, competencies, and patterns of behaviour that determine the commitment to, and the style and proficiency of, an organisation’s health and safety management. Organisations with a positive safety culture are characterised by communications founded on mutual trust, by shared perceptions of the importance of safety and by confidence in the efficacy of preventive measures.”

The safety culture concept was further explored by Cooper (2) who described safety culture as a sub-component of corporate culture for some industries and suggested that for some high-risk industries, such as the petroleum and petrochemical sector, it should be the dominating characteristic of a corporate culture. Based on the work of Cooper the UK HSE in 2005 published a review of safety culture and safety climate literature for the development of the safety culture inspection toolkit (3) and reported a useful framework to distinguish between three interrelated aspects of safety culture, specifically:

- Psychological aspects (How people feel: concerned with individual and group values, attitudes and perception and is often called safety climate)
- Behavioural/Organisational aspects (What people do: safety related actions and behaviours)
- Situational/Corporate aspects (What the organisation has: policies, procedures management systems etc.)

The situational/corporate aspects are usually the easiest to tackle first and will form the basic building blocks to develop an effective safety culture by setting the rules by which the organisation has to operate. If this is done in isolation, compliant behaviour will be the outcome, often referred to as a “have to” type culture. Achieving compliant behaviour is usually reinforced by extrinsic factors such as supervision, training, rewards, audits, sanctions etc. This will have limited effectiveness in terms of achievable performance and the actual performance will plateau quickly with time (and may even decline) if policies, procedures and systems are not regularly reviewed and updated.

The psychological and behavioural aspects are more complex and usually take more time to develop. These aspects are looking to tap committed behaviours in all employees to develop a “want to” culture where intrinsic factors such as ownership, respect, understanding and personal motivation play the major role. This allows organisations to tap the discretionary performance of employees which will contribute to significant improvements in overall safety performance.

Safety Culture and Leadership

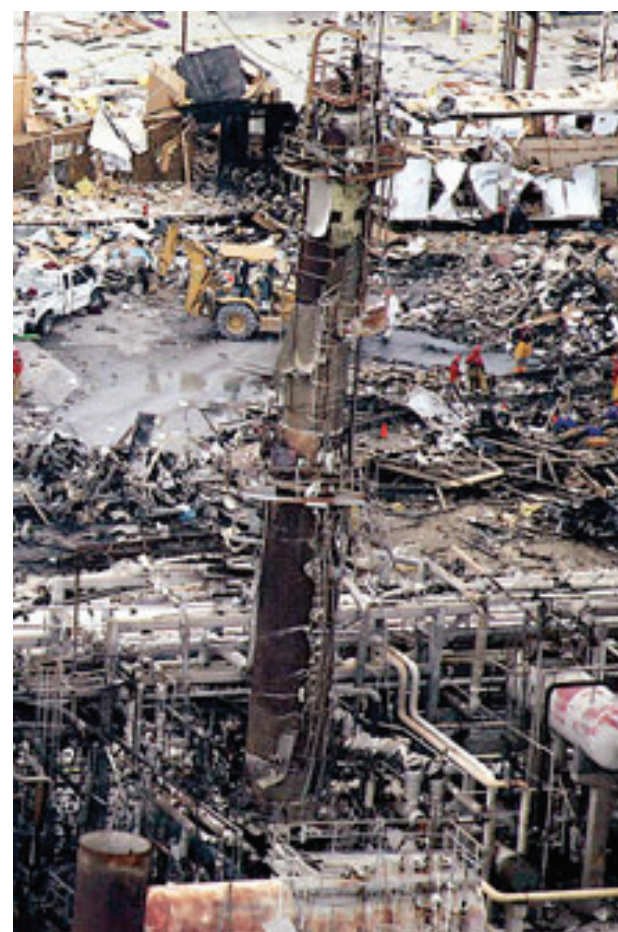
In many organisations if you ask employees who takes the lead on health and safety the reply will often be the safety manager or the health and safety team. Unfortunately, this is not the answer you would like to hear in an organisation with an effective safety culture.

In many of the incident investigations cited here it was noted that the organisation involved had not provided effective leadership in making certain its management and workforce understand what is expected of them regarding safety performance.

While safety may not be their primary role, the CEO of a company is the most important safety officer. It is their leadership that sets the tone of a safety culture that informs and influences how everyone in the organisation values and thinks about safety. Leaders at all levels of the organisation must be fully committed to safety culture and “walk the talk” rather than display a “do as I say, not as I do” attitude.

Edgar Schein identified the following leadership practices as being the primary means by which an effective culture is created and sustained: -

- What you pay attention to, measure, and control on a regular basis.
- What you role model – behaviour communicates ‘unwritten rules’ and values to others.



Texas City Refinery fire

image copyright cen.acs.org

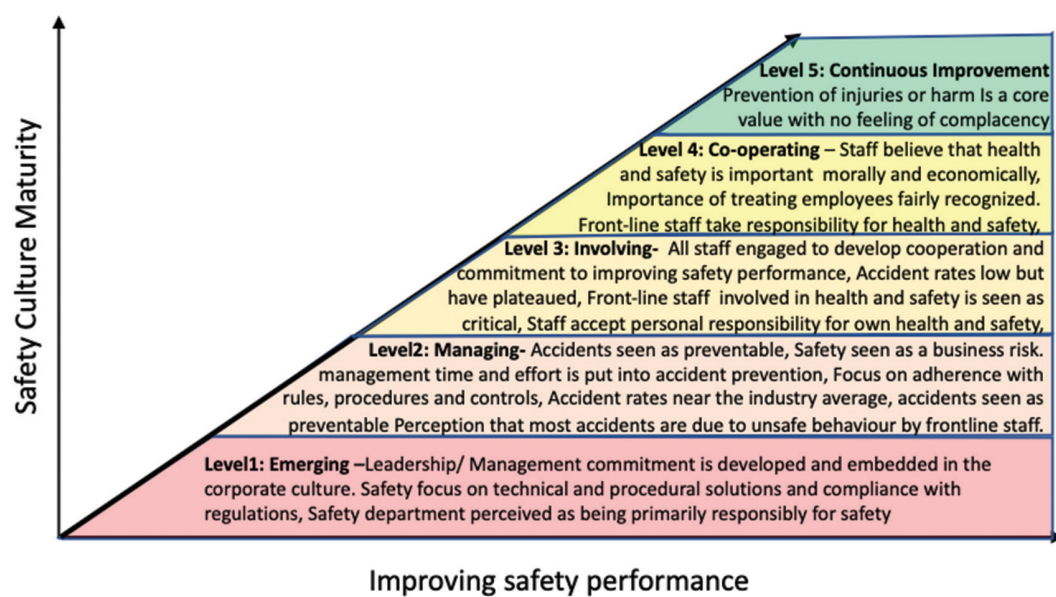


Figure 1: The relationship of safety culture maturity with improved safety performance

- How you react to bad news, incidents and organisational crises.
- How you allocate your time and resources.
- How you allocate rewards and status.
- How you recruit, select and promote people.
- How you are perceived to include/exclude people.

So, it is clear that committed safety leadership at all levels of an organisation is critical to developing and maintaining an effective safety culture and demonstrates that culture is created by interactions between people at every level of an organisation—from the board of directors down to the worker at the front line. In organisations with strong safety culture leadership every employee can be expected and empowered to be a safety leader and participate in developing, delivering and maintaining the safety commitments.

Attributes of a Safe and Reliable Operating Culture

There are many factors and features which have been identified as being important for a good safety culture and in one approach these have been distilled into five attributes which are:-

- **Mindful:** All employees are aware of, and knowledgeable about, hazards, risks and controls. There is a continuous awareness of the potential for things to go wrong and a “what if” dynamic risk assessment attitude fostering preparedness to deal with the unexpected.
- **Informed:** There is good two-way communication and interaction across the organisation. Management listens to the workforce and knows what is really going on and how people really feel about things. People share information and safety concerns openly and freely
- **Learning:** Incidents (internal and external) are thoroughly examined to develop and apply lessons learned. Lessons learned are seen as opportunities to drive improvement, take corrective actions and to be shared. Procedures are under constant scrutiny and assumptions are systematically challenged. People are able to acknowledge mistakes, learn from them, and take action to put things right. People freely and openly report and there is a clear process to drive continuous improvement.
- **Fair:** People know and agree on the difference between acceptable and unacceptable behaviour. People know what they are responsible for and they are held accountable. People are treated equally and consistently.
- **Respectful:** People are honest, polite, give recognition and are open to giving and receiving honest and constructive feedback. People are encouraged to participate and their ideas are sought out and valued. People listen to each other and defer to knowledge and expertise, regardless of status.

Assessing and Developing an Effective Safety Culture

The five attributes listed above form a good basis for a cursory assessment of safety culture and there are many other approaches

in the literature including tools for assessing the current status of the safety culture in an organisation (4)(5)(6). These tools often use extensive questionnaires to probe the current state of the safety culture at all levels of the organisation and use the responses to determine the maturity level of the organisation's safety culture.

The concept of safety culture maturity is reported to have evolved from practices developed by the Software Engineering Institute to improve the way software is built and maintained and their concept has been adapted as a useful tool to identify the actions required to improve performance in many other domains. The maturity model concept has been widely applied to safety culture development within the oil, gas and petrochemical industries. (6)

In addition, consultancies specialising in safety culture assessment and development are available and can provide a “fresh pair of eyes” and independent recommendations and solutions for improvement if needed.



Deepwater Horizon

image copyright researchgate.net

A typical safety culture model illustration of how safety performance increases with evolving safety culture maturity is shown in Figure 1 and identifies five levels of maturity (6) with selected key features for each level. Greater detail on these level features and behaviours can be found in the literature and online (5)(6).

Once an organisation has identified where its strengths and weaknesses lie in terms of safety culture maturity, and therefore where efforts need to be concentrated, it can decide what action is needed to improve performance and begin to develop an effective safety culture. However, safety culture development is a complex often slow sequential process that requires certain key elements to be embedded before the next steps can be taken and therefore requires careful planning and implementation. Organisations need to concentrate on the priority issues and develop key actions that will move the culture towards the next level and not attempt to address every issue.

Even when all the key level indicators are in place and working the job is not complete as safety performance can plateau or even decline unless steps are taken to ensure and monitor continuous improvement.

Du Pont, the global chemicals-based company, was an early adopter of safety culture and developed their own in house four stage model and approaches to safety culture assessment and development which is referred to as the Bradley Curve approach. This approach has been developed by Dupont Sustainable Solutions (DSS) to provide a safety culture consultancy service (8) and in 2009 a DSS study using the Bradley Curve approach showed a direct correlation between organisational safety culture and improved safety performance such as injury frequency rates. Using data collected in since 1999 in the DSS Safety Perception Survey they claim the DSS Bradley Curve shows that a successful safety culture empowers people, while improving quality, productivity and profits. In their analysis they report that the indirect costs of injuries at work can be as much as five times the direct cost. (9)

Summary and Conclusion

It should now be apparent that the safety culture you work within should be important to all employees in the oil, gas and petrochemical space. The safety culture of an organisation has a strong link with safety performance and major accident investigations invariably conclude that safety broke down as a result of a poor safety culture and therefore creating a strong safety culture is a key factor in the prevention of accidents and incidents. Behaviours and interactions between groups are bound by culture and reflects the norms, beliefs, expectations and the view of “the way things work around here”. Leadership commitment and consistency is critical at all levels of the organisation to create a strong collective culture where every employee and contractor are clear about expectations and committed to delivering safety in operations. Changing individual attitudes is extremely difficult but collective practices and behaviours can be influenced in more predictable ways. Personally, I believe all employees should be aware of what a strong safety culture looks like and specifically think about the safety culture in which they work. This can be done simply by checking their view of their organisation against the attributes listed in this article or using one of the guides or checklists referred to in this article.

References.

- (1) Anon. (1994). ACSNI [Advisory Committee on the Safety of Nuclear Installations] study group on human factors Third report: organising for safety. United Kingdom: Health and Safety Executive.
- (2) Cooper M D, Towards a Model for Safety Culture, Safety Science 36 (2000) p111-136
- (3) UK HSE Research Report 367. ISBN 0 7176 6144 X
- (4) UK HSE Safety Culture Checklist <https://www.hse.gov.uk/foi/internalops/fod/inspect/mast/safetychecklist.pdf>
- (5) UK HSE Research Report 365. ISBN 0 7176 6142 3
- (6) Railway Safety and Standards Board Safety Culture Toolkit <https://safetymaturitytoolkit.rssb.co.uk/>
- (7) UK HSE Offshore Technology Report 2000/049
- (8) The DSS Bradley Curve <https://www.consultdss.com/bradley-curve/>
- (9) <https://www.consultdss.com/bradley-curve-infographic/>

Author Contact Details

Tom Lynch, Tom Lynch Analytical Consultancy • Cricket House, High St, Compton, Newbury, RG20 6NY
• Email: tomlynch.lynch@btinternet.com



Read, Print, Share or Comment on this Article at: petro-online.com/Article

