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Introduction

The Health and Safety Laboratory (HSL) has been at the forefront of understanding organisational safety culture and its impact on business performance for many years now.

Not only did we develop the highly respected Safety Climate Tool (SCT), we also help employers like you to measure and improve their safety culture through the application of evidence based approaches and effective behavioural change programmes.

Whatever the business sector, whatever the company size, we know that every organisation has the potential to improve their safety culture. Our work with a wide range of organisations, including the Olympic Delivery Authority, has demonstrated that making safety an asset, rather than a liability, will not only improve your health and safety performance but strengthen your business performance too.

In order to know where to begin, HSL and Cardinus, our first official sales partner, have created this document to help you understand organisational health and safety culture and how it can be improved.



About the authors



Dr Caroline Sugden
Technical lead
Health & Safety Laboratory

Caroline Sugden is technical lead on human and organisational factors, working in HSL's Human Sciences Unit and has more than 18 years' experience in the field of human factors (HF). Caroline is a Fellow of the Institute of Ergonomics and Human Factors and has worked in consultancy and the rail industry.

Her work interests include human factors in the major hazards sector, including assessment of HF issues in COMAH safety reports, human reliability assessment, control room assessment, alarm handling and competence assurance.

Recent work includes the revision of HSL SCT, identification of good practice case studies on the construction of the Olympic Park, and consultancy work on safe and reliable operations.



Karen Roberts
Product Manager
Health & Safety Laboratory

Karen Roberts is a product manager at HSL. Karen works with the laboratory's scientific and technical experts to turn the knowledge they generate into a range of product solutions that help industry become healthier, safer and as a result more productive.

Karen is currently working to take the HSL SCT on-line, and has recently launched products in a diverse number of subject areas including publications on load security for the transport industry and hazardous area classification software for organisations with responsibilities under the Dangerous Substances and Explosives Atmospheres Regulations (DSEAR).

Prior to her current role, Karen was a business development manager at HSL for the UK chemical, pharmaceutical and manufacturing sectors.



Mark Preston
Head of Safety Consultancy
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Mark Preston is the head of health and safety consulting at Cardinus Risk Management. He has more than 25 years' experience in providing environment, health and safety guidance and training to a wide range of commercial, industrial and public organisations. Mark has worked in a number of European countries and the US advising on international safety management. He has been invited on joint UK and US safety delegations to China and Eastern Europe. He has worked with a number of major blue chip organisations including Microsoft, The British Museum, Thames Water, Air Canada, BP, Mastercard, Dell, and Wembley London Ltd. He has developed a number of safety management systems (SMS). His experience includes a number of serious incident investigations. He has a BA in Economics and Politics is a chartered member of the Institute of Occupational Safety and Health, a member of the International Institute of Risk and Safety Management, a lead auditor and a member of the American Society of Safety Engineers. Mark has run a number of safety behavioural development programmes within construction. These programmes have helped to develop the health and safety culture within a number of companies.

Background

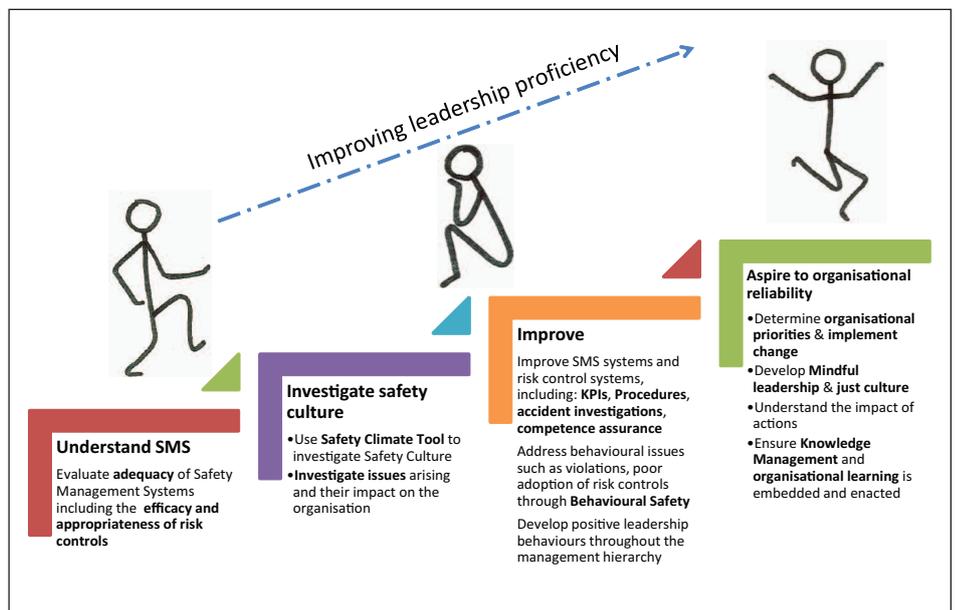
Understanding safety culture is part of the journey towards improving organisational reliability. Organisations have responsibilities for the management of their risks, and to ensure adequate and appropriate risk mitigation. Obviously, the Health and Safety at Work Act and the Management of Health and Safety at Work Regulations exist to protect employees of all UK organisations.

Central to the effectiveness of safety management is the concept of safety culture. Figure 1 provides a model developed by HSL that shows the steps to becoming a successful and highly reliable organisation.

The first two steps: ‘understand safety management systems’ (SMS) and ‘investigate safety culture’, are the elements about understanding the status quo; determining whether the processes, standards and systems are adequately designed and implemented. The assessment of safety culture will provide information that will help you to understand the efficacy of the safety management systems and help to prioritise the improvements to your organisation.

The next step following an investigation would be to ‘improve’, which could involve developing KPIs and procedures, or improving accident investigation, based on signposting from your safety culture evaluation or your SMS audits. Other steps could include the development of behavioural safety programmes to address unsafe behaviours, once organisational readiness has been determined and tactical improvements derived from the safety culture assessment have been delivered.

The endpoint of this journey would be an organisation well on the road towards being labelled a ‘High Reliability Organisation’ – a term used to describe an organisation that has avoided major catastrophes while engaged in high risk activity. The name comes from studies conducted in the aviation and nuclear power industries in the 1980s, as described by Lekka and Sugden (2011).



What is safety culture?

‘Safety culture’ is defined as “the product of individual and group values, attitudes, perceptions, competencies, and patterns of behaviour that determine commitment to, and the style and proficiency of, an organisation’s health and safety management” (HSC, 1993).

Put another way it’s “the way things are done around here”. It’s a combination of all the attitudes, beliefs, values, taboos, peer pressure and perceptions that your organisation or subsections of your organisation hold, that influence how something is actually done where you work, rather than how it should be done. Importantly, our attitudes, or our culture, influence our behaviour, and in turn our behaviours influence the efficacy of risk control.

An organisation’s culture will influence human behaviour and human performance at work. Poor safety culture has contributed to many major incidents and personal injuries. Indeed, the culture of an organisation can be just as influential on safety outcomes as the safety management system itself.

Traditionally ‘safety climate’ was used to describe a snapshot of the safety culture at a particular time point. However the terms ‘culture’ and ‘climate’ are now used interchangeably.

Where does the concept come from?

Safety culture, as a phrase, was first used by the International Atomic Energy Authority to describe the issues at Chernobyl at the time of their major incident (IAEA, 1986). The interest in culture arose in response to a realisation that organisational structure (i.e. the roles and their relationships, rules and procedures) was limited in achieving an organisation’s health and safety goals.

Since Chernobyl, a number of other major disasters including King’s Cross, Texas City and more recently Deepwater Horizon have highlighted the impact of organisational factors on safety performance, with numerous inquiries identifying ‘safety culture’ as having a definitive impact.

Safety culture, or the way safety is perceived, valued and prioritised in an organisation, not only has an obvious and direct effect on accident rates, it also impacts on productivity, reliability, competitiveness and even employee morale.

And it’s not just major hazard industries that need to be concerned about safety culture, organisations from all industry sectors with an effective safety culture have realised that by making safety an asset, rather than a liability, brings positive, demonstrable results throughout their business.

Legislation

There are legislative requirements regarding employee involvement, management arrangements and competency assurance but not for culture per se. So although safety culture and its assessment is not a legal requirement, safety culture assessment is recognised as important as it has a direct impact on the safety of employees, contractors and the public. In fact, a number of regulatory and industry bodies, including those in the rail and air traffic control sectors, recommend the assessment of safety culture and it was a requirement during the construction of the Olympic Park to guide the development of a positive safety culture. Although safety culture is not directly required, it is considered to be a side effect of good demonstration of legislative requirements; the high profile accidents outlined earlier highlight consequences of a poor safety culture.

Following the investigation into the Clapham Junction accident (Hidden, 1989), Sir Anthony Hidden suggested that development of a 'positive safety culture' was the key to improving safety in the railway network (Clarke, 1998). It had become generally accepted that a high proportion of accidents, incidents and near misses on the railways follow unsafe acts by people, whether frontline workers or managers.

The Southall and Ladbroke Grove train crashes, that happened in September 1997 and October 1999 respectively, led to three separate public inquiry reports. The inquiries took a fundamental look at the generic issues surrounding safety in the British railway industry. A principal conclusion focused on the improvement of safety management, specifically safety culture:

“... the need for a positive safety culture is the most fundamental thought before the inquiry.”

(HSC, 2001a, page 60).

The reports resulted in 295 recommendations. A section of the recommendations fell under the title 'Culture, Safety Leadership and Health and Safety Management'. This section presents twenty-five recommendations relating to the internal structures of companies, safety culture, and the management of health and safety.

Following the recommendations made from public inquiries into the Southall (HSC, 2000) and Ladbroke Grove rail crashes (HSC, 2001); Her Majesty's Railway Inspectorate (HMRI) requested that a safety culture inspection toolkit be developed. The toolkit was required to provide a pragmatic approach for the measurement of safety culture.

The toolkit states that safety culture itself is not enforceable, and interventions are generally

reserved for receptive companies, or as part of an overall incident investigation. However there can be enforcement to address outcomes of poor safety culture. For example, if a company is unsuccessfully relying on procedural controls to avoid major accidents, there could be enforcement of management arrangements to either ensure compliance or provide alternative safeguards through the hierarchy of control.

It is not just the rail industry where assessment of the safety culture may be investigated. An investigation into cultural factors took place as part of a broader investigation following three incidents in 2000 at BP Grangemouth.

Whilst it is not, in itself, a legal requirement, standards of safety culture can be investigated following an incident and could contribute significantly to any prosecution, including a corporate manslaughter prosecution. Putting in place a programme for measuring and improving such culture will therefore have a positive impact not only in reducing incidents but in helping show that the organisation takes health and safety seriously.

“If an organisation has the right culture in place, it will find the right people and the right technology to deliver safe and effective performance.”

(HSC, 2003).

Can safety culture be measured?

The good news is that it can. Safety climate is typically measured through questionnaires that explore an individual's attitudes and perceptions regarding safety.

In 2010 HSL launched its Safety Climate Tool (SCT). The HSL SCT is a revision of the Health and Safety Executive's (HSE) original Climate Survey Tool, produced in 1997. The original HSE tool quickly became a byword for best practice in companies.

Using its specialist knowledge of organisational safety culture, HSL refined the HSE tool to make it a more reliable and robust psychometric instrument for measuring safety climate.

The HSL SCT consists of 40 statements which map onto eight key factors and measure employee's attitudes on health and safety issues.

The HSL SCT is accessed via an on-line account. After creating an online account, users access the questionnaire wizard (Qwizard) to produce and customise a questionnaire that can then be printed or distributed electronically across their organisation.

The questionnaire can be customised to reflect the look and feel of an organisation. It can incorporate a company logo, include statements of support from management and tailor the language to that used by the workforce.

Once the survey is complete, the tool produces a series of automated charts that allow detailed analysis of the results.

The software also generates a summary report highlighting the key findings from the survey, and providing hints and tips to improve the organisation's safety culture.

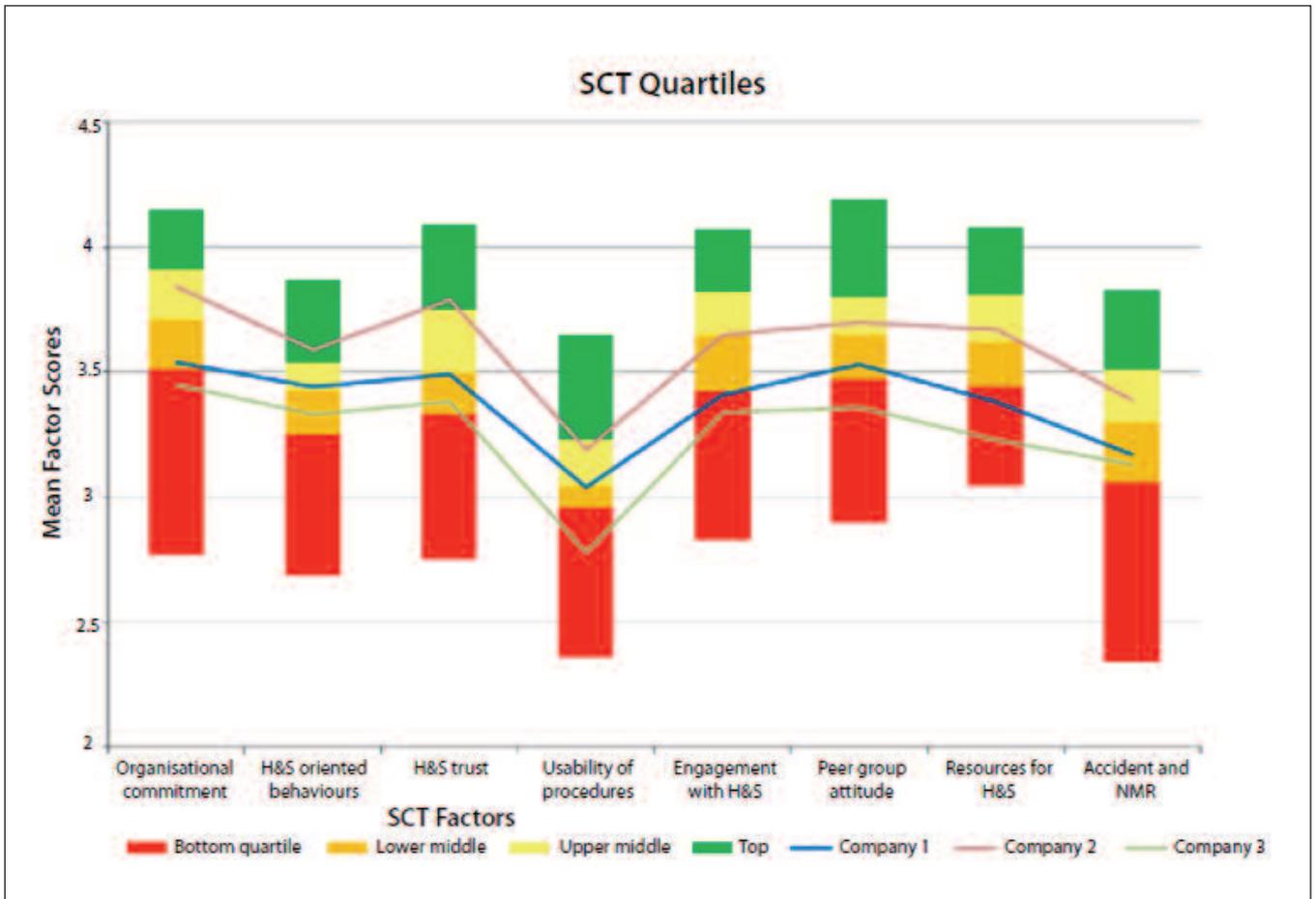
Learning about the safety culture within an organisation has many benefits. The information generated can, among other things:

- Assist with the proactive management of health and safety - the results provide objective data that allows companies to highlight areas of concern as well as good practice.
- Demonstrate credentials as an organisation continually striving to improve its health and safety performance.
- Raise the profile of health and safety - participating in a survey engages the workforce and encourages them to talk about health and safety issues.
- Indicate organisational readiness for embarking on behavioural safety programmes.
- Provide a baseline measure - outputs from the tool can help to assess where to invest resource and evaluate whether subsequent initiatives have had the desired effects on performance.

Benchmarking

HSL is exploring the use of SCT data as part of a benchmarking service, to allow users to compare the safety climate of their own organisation to those of other organisations of similar size, within the same industrial sector, or to all other organisations as a whole.

At present HSL can map an organisation's SCT performance relative to 4 quartiles derived from their all industry dataset. This allows an organisation to understand their performance relative to other organisations.



Safety Climate Tool in use

Since its launch in 2010, the HSL SCT has been used to survey more than 40,000 people, from organisations across a range of industry sectors, including manufacturing, construction, rail, mining and other major hazardous activities. Companies can use the SCT to ‘track and trend’ their performance, and to ensure that they are constantly improving. The Vale case study below provides an illustration of how the SCT can be used to target areas for improvement, and to carry on the pursuit of excellence in the area of health and safety.

Case study 1: Vale

Vale is a global mining company and a leading producer of iron ore, potash, nickel and other base metals. The Clydach Refinery is in Swansea, Wales and employs about 300 people. It produces high purity nickel products.

The problem

As a responsible employer and as an organisation aiming to become the largest and best mining company in the world, Vale recognised the impact that improving safety culture could have on its business. At the core of a series of initiatives to encourage employees to communicate more frequently and identify issues before they became problems, was the recognition that safety must be everyone’s concern. The assessment of the prevailing safety culture was therefore seen as the first step in the development of a sustainable programme of continuous improvement, so Vale chose the HSL SCT to do this.

Actions

- HSL worked with Vale to tailor the SCT question set to ensure that the survey was specific to its circumstances.
- HSL provided impartial analysis of the survey’s results in order to identify the key issues.
- HSL human factors specialists used the key issues from the survey as the basis for a series of staff focus groups and interviews.
- HSL used the information from the focus groups and interviews to make recommendations to the Senior Management Team for a strategy of continuous improvement.

Outcome/benefits

2010 became a year to remember for Vale’s Clydach refinery. It established a new record low for work-related injuries – down 20 per cent from the previous year. However, the most impressive thing about this statistic was that for the first time in the refinery’s 108-year history, none of the injuries represented a lost-time injury. Not a single worker from the 200 full time employees or 100 contractors who work at the refinery missed work due to a work-related injury.

This is an outstanding achievement for us and demonstrates our commitment to the safety of our employees. Measuring the perceptions of our staff to safety was key to understanding where improvements could be made. We won’t be resting on our laurels though, as the challenge now is to sustain this performance and move closer towards our goal of zero harm. The Safety Climate Tool will be instrumental to us achieving this.

Chris Thomson, Environment, Health and Safety Manager, Vale.

Case study 2: Safety culture during the Olympic 'Big Build'

London 2012 was an iconic project, attracting world-class workers and contractors from across the construction industry, and providing a once in-a-lifetime opportunity for health and safety practitioners to learn from what was achieved.

Preparations for hosting the London 2012 Olympic and Paralympic Games involved large scale construction programmes to deliver new venues and fit-out existing buildings and infrastructure.

The Olympic Delivery Authority (ODA) was committed to ensuring this was the 'safest and healthiest build on record'. Its aim was unambiguous: to raise the bar for health and safety across the UK construction sector, to prove that excellent health and few accidents were achievable on a programme with a tight timetable, a complex site and a clear budget.

The workforce on the Olympic Park site in East London peaked at 12,000 and a total of some 30,000 people worked on the project.

The construction industry has been known for contributing disproportionately to reported workplace accidents and resulting injuries, so achieving excellent health and safety performance on such a huge project was a challenge.

If the UK Olympic Delivery Authority's programme of construction mirrored the sector average, there would have been approximately 1000 accidents reportable under RIDDOR (HSE 2012) on the project with a considerable number leading to major injuries and permanent disabilities. These projections are taken from an Institution of Civil Engineers article, *Delivering London 2012: health and safety*.

The HSL SCT was used to explore safety culture on the Olympic Park. The development of a climate that values workers, fosters fairness (i.e. 'just' consequences for unsafe behaviours) and invests effort in actively managing relationships and recognising and rewarding workers' contributions helped to increase health and safety trust during the Big Build.

This environment encouraged positive worker attitudes towards health and safety, and an appreciation of the importance of usable procedures and positive peer group attitudes. This in turn influenced the attitudes that also relate to other areas captured under the HSL SCT, so that positive attitudes and actions in one area could affect other areas, with a collective effect.

The outcome of the project was an accident frequency rate on-site of just 0.16 per 100,000 hours worked – far less than the building industry average of 0.55, and less than the all industry average of 0.21. There were no work related fatalities on the whole London 2012 construction programme.

Lessons to learn

SCT data from the Olympic Park has been compared with HSL's 'all industry' data set, and the Park was found to excel. This suggests there is a valuable legacy of safe behaviours and working practices from London 2012 that can be adopted and applied to other projects. Workers on the Park were keen to promote these standards and see the practices become embedded on future sites. In fact, there is evidence that this pride within the workforce of their health and safety performance became a key driver for improvement in the standards in the latter stages of the projects, when there was always the countervailing risk of rushing to complete.

The practices used on the Park were not unusual; many of the initiatives are familiar and even typical. However, the key difference was the persistent effort devoted to leadership and engagement of staff, such that the desired behaviours and attitudes became embedded on site.

Leaders on the Park were aware of the risks of lapsed attention to health and safety, and constantly reiterated its importance and relevance to workers, investing effort into refreshing communications. Hence these initiatives and the style of implementation allowed the Olympic Park safety culture to develop.

London 2012 could be considered exemplary. The Olympic Park has demonstrated that it is possible and feasible to develop high standards of health and safety, and a culture that supports this aspiration within the construction sector.

Although these areas of good practice were already recognised, they were previously cited as being too complex to apply to the construction sector.

This work has proved that it is possible, through engagement, worker involvement and organisational commitment, to develop health and safety trust, and positive peer group attitudes, supporting a strong safety culture.

In addition, a commitment to continuously strive for excellence, alongside the recognition that health and safety is dynamic and long-term and an appreciation for the impact of consistency throughout the supply chain, all contributed to the successes on the Olympic Park.

“ The climate surveys were invaluable to us. Too much time is spent discussing both culture and leading indicators in vague and imprecise ways - prejudice not evidence. The data we obtained from each project team and across the programme's workforce meant that we could take specific initiatives to develop the safety culture, and we knew that attitudes and perceptions on-site were a wonderful pain-free surrogate for reacting after accidents had occurred. The data and its analysis told us where we were going, and identified opportunities for improvement. ”

Lawrence Waterman, Head of Health and Safety, Olympic Delivery Authority.

Improve your Safety Culture with the HSL Safety Climate Tool

Gain invaluable insight into the 'safety culture' of your organisation and take the steps needed to improve it.

Understand the attitudes, values and perceptions of your workforce to help you evaluate the effectiveness of your occupational health and safety management.

HSL Safety Climate Tool

- An online survey of 40 statements underpinned by research demonstrating that the survey is a reliable and valid psychometric instrument.
- Suitable for all sizes of organisation.
- Can be tailored towards your organisation by incorporating your company logo and terminology.
- Up to nine demographic questions and an additional six open questions can be added to the survey to suit your needs.
- Data is automatically analysed to produce a written report and a series of charts.
- Data allows detailed filtering to suit your requirements.
- Provides hints and tips to improve performance where identified.

Call Madelaine Udall today to request a FREE online demonstration of the HSL Safety Climate Tool.

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HSL also offers a full range of consultancy packages to help your organisation achieve a positive safety culture.
Call us now for more information.



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LABORATORY**

