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SIX LEADERSHIP SKILLS FOR IMPROVING SAFETY CLIMATE: A HUMAN FACTORS MANAGEMENT PERSPECTIVE

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Six Leadership Skills for Improving Safety Climate: A Human Factors Management Perspective

Executive Summary

Changing minds and hearts is a lot different than introducing new equipment. Safety culture change is a complex operation, requiring ongoing, active commitment from leaders at all levels. It takes time and effort to gain buy-in and momentum to achieve organizational change, and progress is often measured in years, rather than in weeks or months. Leaders, formal and informal, are key players in the work of directly influencing individuals at a personal level within their own teams.

The end goal of culture change is typically to improve both performance and reliability. Based on the results of careful research and field work, this paper posits that these results can be achieved most effectively by making two strategic decisions. The first is to focus resources and attention on safety climate, as creating improved safety and communication on a small scale within teams and departments can perhaps counterintuitively lead to faster and more sustainable gains. The second is to embed human factors management principles into organizational leadership's approach to safety, especially in regard to safety climate.

The local effects of a healthier safety climate can be leveraged to spread improvements throughout the organization, building organizational change gradually as systems and individuals experience the effectiveness of human factors methods. And taking a human factors-centered approach will allow leaders at all levels to effectively understand the drivers of a positive safety culture and then make meaningful improvements in their floor-level engagement with frontline workers.

This paper will provide definitions for safety culture and safety climate that are supported by research and will apply in almost any workplace setting. Given that workplace systems generally require at least some people present, the effectiveness of the organization will depend in part on the people systems such as communication processes, team effectiveness, supervisory skills and employee engagement in safety. SafeStart's research led to the identification of six success factors for safety climate, which have been in use in the field since 2018, including new data from a number of industries. After examining the six elements and related field work examples, this paper will highlight some ways they can be used by organizations to assess progress and drive ongoing improvements.

Introduction: The Origin of the Safety Climate Success Factors

In 2018, the SafeStart research team began identifying proven drivers of safety and leadership effectiveness in a range of industries. This was in part a response to client requests for training for their line supervisors, many of whom were stepping into a leadership role with no experience whatsoever in leading a team. The research scope included studies of organizational development, leadership development, safety leadership, safety culture, and safety climate. While each of these subject areas are somewhat distinct from each other, there is also considerable overlap in the topics and concepts studied in each. With decades of insights from using human factors techniques with everyday workers, SafeStart's research team then analyzed recent safety research and identified safety climate as the most salient topic area of value to companies seeking to improve the skills of their leadership at all levels. Using this focus, their analysis was distilled into the SafeStart Safety Climate Success Factors.

The six success factors provided the scaffolding for developing the evidence-based safety and leadership program for supervisors, called SafeLead. The program delivers training and mentoring to frontline leaders on specific skills for safety, leadership, and communication that contribute to an improved safety climate and safety outcomes.

In 2022, we reviewed our findings from several years of field application and expanded the research with more recent studies. The purpose of this paper is to summarize our findings on leadership's role in safety climate based on five years of research and extensive results from the field. While there are many competing influences on peoples' behavior, the influence of the organization's leadership at all levels is a necessary ingredient for preventing injuries and fatalities in the workplace. Leadership creates the values, goals, budgets, metrics, rewards, safety processes and communication practices that produce safety outcomes. Even line leaders, who are not involved in strategy decisions, are key influences on how well frontline workers adopt new safety processes and techniques. When all leaders—from the C-suite to line supervisors—are personally doing the practices that improve safety, the organization's safety results will improve. Our research has found that the six elements being presented here enable not only top-down drivers of safety, but they also create conditions for indirect, decentralized influence on safety between individuals, because the employees have internalized the value of keeping everyone safe.

Definitions

Organizational Culture and Its Role in Safety

In this paper, we will distinguish between safety climate and safety culture. Safety culture is an important element within an organization's overall culture. As such, safety culture is unavoidably entwined with broader organizational culture and contexts. Culture is "how things happen around here." It can be characterized as the "personality" of an organization, a complex blend of facets that are interconnected, one of which is safety. These facets include the value placed on safety, and the extent to which people take personal responsibility for their safety and that of their coworkers.

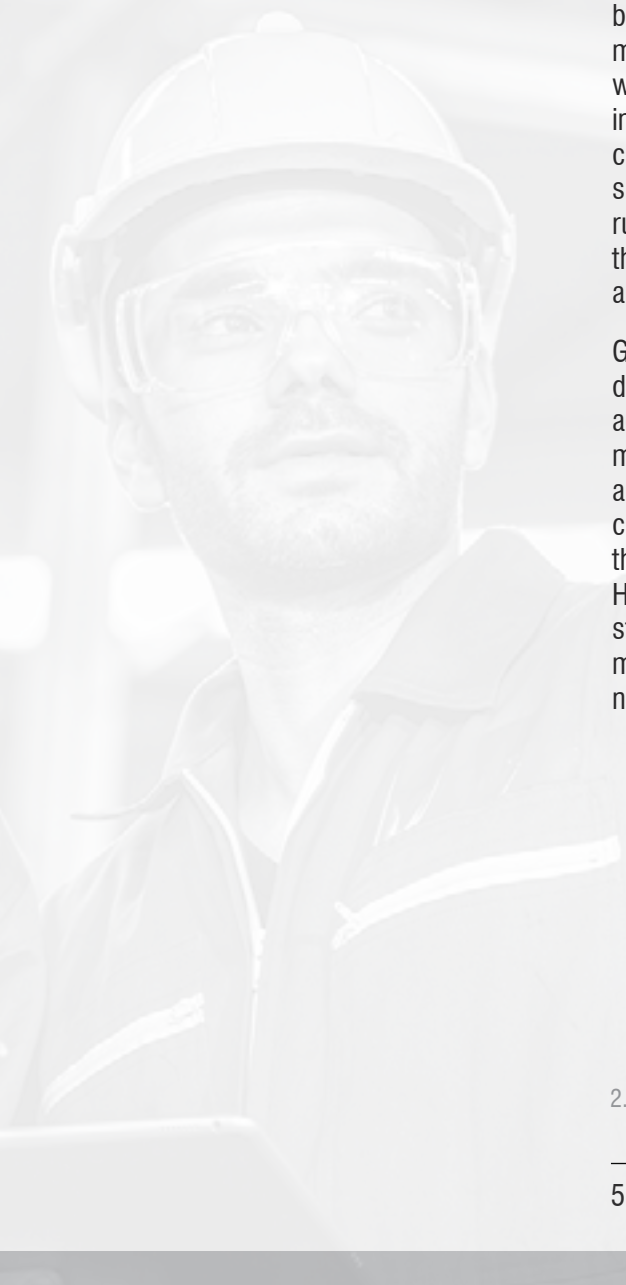
Leaders who take a systemic approach to safety coupled with a no-blame mindset are likely to develop a workforce that is positively engaged in safe work practices. However, this is not the only benefit of having a strong safety culture. It is also likely that such an organization will have a culture that places a value on other characteristics such as communication, effective leadership, respect, trust, and the positive behaviors that reinforce them. All of these organizational characteristics are contributors not only to safety, but also to more consistent and predictable performance.

How Safety Climate Differs From Culture

SafeStart uses the term "safety climate" to describe the collective perceptions of and experiences with safety within an organization at a particular point in time. In other words, safety climate is "how we feel about safety right now." One can think of it as the organization's current mood about safety. Among other things, it's a snapshot of employee perceptions of how important it is in their organization that they prioritize safety while performing their jobs.

From a practical standpoint, safety climate is distinct from safety culture and organizational culture, although there are similarities and overlapping elements in the research. However, in popular media the terms and concepts are frequently applied interchangeably, which can create confusion. We align with Zohar, Neal and Griffin's definition of safety climate: "employees' perceptions of policies, procedures and practices as they relate to the value, importance and actual priority of safety in the workplace".[1] Safety climate is experienced locally, such as within a team or department; within an organization there can be a variety of safety climates depending on the leadership and norms of each team. It's not unusual to have a pocket of weak safety climate due to a particular manager who sees injuries as a cost of doing business, or a strong safety climate on a team that's actively preventing injuries and "having each others' backs," leading to a better safety record than elsewhere in the organization.

1. Jiang



Safety climate can be influenced. It responds to recent events, good or bad, and can change quickly for better or worse. If a worker was seriously injured yesterday, their team's safety climate today will reflect people's level of upset. It may also reflect a temporarily heightened awareness of safety. If a department has just rolled out visible safety advances that meet workers' needs, the department's climate will be more positive. This type of improvement, even if only seen at first in small areas, can eventually spread throughout the organization and can be a springboard for improved organizational culture and performance.

Organizational culture, on the other hand, is a set of overall organizational characteristics, the product of what gets rewarded and why. In short, it's "how work gets done around here." There are far too many lists of characteristics of organizational culture to include in this paper, but a brief summary may assist with articulating the distinction from safety climate. One foundational difference between climate and culture is that an organization's culture is the sum of multiple characteristics interacting with each other over a long period of time as work processes and systems change in response to organizational and external influences. Cooper's meta-analysis of safety culture summarizes common safety culture characteristics from multiple sources as the following: management/ supervision, safety systems, risk, work pressure, competence, and procedures/ rules.[2] The characteristics of culture are so interconnected that it's difficult to change them without long-term effort that considers how the elements are interconnected, and that they may all need to change if any of them is to do so.

Given that safety climate is defined as employees' perceptions of safety in their daily work environment, safety climate presents opportunities to start taking small actions that can improve individuals' immediate experience of safety. One team member or one leader can affect their team's safety climate. And when training and coaching for the skills that improve safety climate are available, the desired changes can be planned and delivered quickly, with measurable results. Over time, these planned, localized improvements lead to changes in organizational culture. However, sustaining positive changes in safety climate—and then culture—requires strategically driven interventions from leaders at all levels. Resilient organizations must prepare their leaders with the technical, interpersonal and leadership skills necessary to continuously drive cultural changes in the right direction.

2. Cooper, p. 14

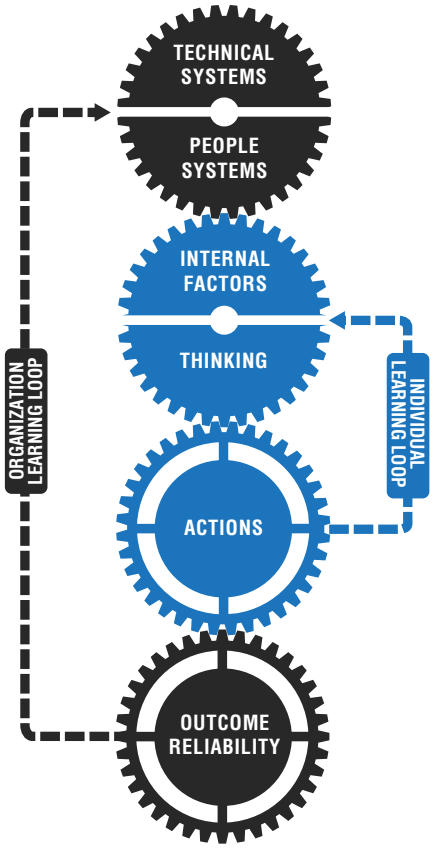
Climate + Events Over Time = Culture

There is a large body of research on safety climate and safety culture, and the evidence confirms a direct relationship between safety climate and the behaviors that keep people safe. In lieu of presenting a meta-analysis in this paper, the brief citation below will serve to affirm that there's plenty of research indicating that safety climate affects safety outcomes.

> "The most compelling evidence of safety climate's relationship with safety outcomes emanates from a series of meta-analytic studies across a multitude of countries and industries (e.g., manufacturing, commercial fishing, off-shore drilling, etc.) concluding that safety climate is positively related to safety behaviors and negatively related to key safety outcomes."[3]

Our field work is in agreement with the quote above—organizations with a positive safety climate will have more desirable behaviors like near-miss reporting and open dialogue at all levels, and fewer undesirable outcomes like serious injuries, fatalities and property damage.

3. Taylor



The SafeStart Human Factors Framework

After more than twenty years of field experience with human factors in safety, SafeStart introduced a framework to help organizations improve their safety systems as well as their organizational performance outcomes by managing human factors. This safety climate paper will include a brief description of the human factors framework to situate climate improvement activities in an overall organizational context. For a deeper dive into the human factors framework, see A Framework for Managing Human Factors.[4]

First, a definition of human factors: SafeStart defines human factors as "the people elements of individual and systems conditions that influence performance and reliability." This is the foundational concept underlying the framework.

The color coding makes a distinction between two types of drivers of organizational performance (including safety) using a human factors lens. The black cogs represent organizational elements, such as equipment, standards, organizational structure, and processes. While at first glance these may seem unrelated to human factors, whenever humans are doing the work, their humanness is part of the process. Humans design systems. Humans interact with processes, equipment and other people. It's inevitable that physical and mental human factors will influence how the systems are designed, implemented, and function on a day-to-day basis.

The blue cogs represent human factors elements that are individual, such as technical skills, training, interpersonal skills and adaptability. Ideally, an organization learns from worker input and makes improvements to systems to make them function better. Individual workers are provided with opportunities to offer ideas for improvement and training on how to work safely and at a high level of quality.

In high-performing organizations, there is a leadership commitment to continuous improvement of the systems and for the safety and performance of individual workers. The framework depicts this process as two "learning loops," both of which need to be working well and tightly aligned to achieve reliable outcomes. The accountability for keeping the learning loops working together resides with leadership, and especially with line supervisors, because they are the communication bridge between workers and management. The human factors framework is also a useful lens for assessing and identifying continuous improvement opportunities in the elements of an organization's safety management system.

The research shows organizations need to make progress in understanding and taking action on the drivers of safety climate if they want to improve organizational safety and, over time, culture and engagement.

4. Bryce

Examples of People Systems

- Communication skills, dialogue, transparency
- Responsiveness (contrasted with reactiveness, a less desirable characteristic)
- Problem-solving capabilities
- Understanding and use of human factors
- Training and development at all levels to deliver safety and performance
- Common language

Safety Climate Influences Safety System Implementation

Well-designed safety systems are essential for achieving safety outcomes, with the caveat that human factors are bound to affect how those systems are implemented on the shop floor. For example, stop work authority (SWA), when it's acted on as described in the OSHA standard, supports the concept that high-performing organizations have a culture in which any person who feels that work is unsafe is authorized to stop the work until such time as the safety issue is resolved. SWA originates in the organizational learning loop. The SWA concept is usually introduced to organizations as a value, desired behavior, safety belief or tenet, suggesting a level of commitment beyond the fact that it's a regulatory standard. Many organizations have a program document to describe what it should look like in their work environment.

That said, in the individual learning loop, internal factors affect an individual's thinking and they may decide not to take SWA-related action when unsafe conditions arise. This action (or lack of action) can lead to an undesired outcome such as an injury, property damage, or a production or quality deviation. Leaders can and should understand the human factors that influenced the decision. For example, lack of confidence, fear of another person's reaction or lack of technical knowledge related to the activity are human factors that could prevent someone from intervening when they observe a situation that they perceive as unsafe. In short, an ineffective safety climate affects how well the safety systems work in both individual and organizational activities.

People Systems and Safety Climate

When it comes to organizational safety using the human factors framework, the technical systems are typically well supported by safety regulations, operational standards and continuous measurement against performance goals.

However, the existence of acceptable technical systems and processes isn't enough; people have to use those systems safely and follow the processes consistently to achieve the desired safety and performance. Having a near-miss reporting system doesn't mean the organization will succeed at learning from its near-miss data to prevent injuries. There has to be skillful application of the processes, and that requires effective communication that accounts for human factors in reporting and analysis. For example, someone discussing a near miss with a worker needs to ask about a variety of contributors to the incident rather than oversimplifying it or blaming the worker. And if a simplistic cause such as "not paying attention" is identified as a factor then further questions should be asked, such as "What was going on that drew your attention away?" or "Aside from not paying attention, what else might have contributed to the near miss?"

The field work has shown it is less common for organizations to have purposeful, well-developed people systems than to have robust technical systems. People systems include the elements listed on the left of this page, which tend to be treated as "softer" in nature than technical systems, and are less likely to be tracked and measured through leading indicators. Instead, they are typically tracked using lagging activity indicators such as training hours/year ("bums in seats") or the number of communications distributed rather than having clear standards, processes and effective training in the related communication and leadership skills.

These elements are not typically tracked in standard safety systems, but we've found that they can indeed be observable, measurable and trackable for the level of quality (e.g., how well did the team solve the problem? How well are leaders demonstrating the use of a problem-solving process rather than moving directly to blaming an individual during incident investigations?) as well as outcomes achieved.

It isn't possible to have high-functioning technical systems without strong people systems. It is broadly understood that:

"It is critical to recognize that systems cannot progress up the ladder without culture progressing in parallel and vice versa. Gordon et al., 2007, states that if there is a safety management system but no real commitment or culture towards safety, then the management system will not be effective, as decisions will not prioritise safety. Similarly, if there is a good safety culture, but no management system, then the way that safety is organized may be inconsistent, under-resourced and not seen as business driven."[5]

It's recommended that organizations start at the systems level to put conditions in place for safety climate activities to be effective.

5. Foster, p. 63

Best Practice: Establish Non-Negotiables for People Systems

While non-negotiables for safety compliance are common (e.g., cardinal rules, stuff that can kill you (STCKY) lists), having them for people systems is less so. This aligns with Cooper's analysis showing that only the following safety climate elements are backed up by evidence-based research: "systems and structures, goals and action".[6] When people systems elements are clearly defined, it becomes easier to spot misalignment and to hold all levels of employees accountable for living up to non-negotiables. Of primary importance is leadership commitment and consistency, as noted by Zohar in his study of safety climate:

> "Using a sample of more than 40 manufacturing companies, Zohar and Luria (2005) found significant within-company variation between departments."[7]
>
> Additionally:
>
> "As members of both individual units and the organization as a whole, employees will perceive signals both from senior management regarding policies and their local supervisor regarding how these practices are operationalized in their immediate job context. The result is perceptions regarding both an overall organizational climate as well as a local group-level climate where these two climates may be well aligned and consistent or quite inconsistent and discrepant. As these discrepancies arise, employees perceive a lack of internal consistency among policies, procedures, and local practices. This inconsistency will further inform climate perceptions." [7]

Non-negotiables for safety climate are sometimes implemented as an employee pledge or list of required actions. When creating these for people systems, it's not necessary to have an exhaustive list, and it's more important to have a small number that are clear and that address how people work together. An example of a safety climate non-negotiable might be "look out for each other" or "identify and report near misses immediately."

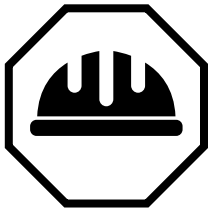
Organizations may identify these non-negotiables without having an organizational culture that supports employees in acting on those expectations. By building the capabilities outlined in the safety climate success factors, organizations can develop the people systems to continually reaffirm expectations, monitor people as they demonstrate desired actions and provide specific feedback. Consistent reinforcement of the skills and best practices for building a strong safety climate will ingrain these actions into the organization's culture.

6. Cooper (2016), p. 24
7. Zohar (2010), p. 1518–1519

What a Strong Safety Climate Looks Like: An Introduction to the Safety Climate Success Factors

In order to influence safety outcomes by improving the safety climate, clarity is required about what a positive safety climate includes. In 2018, our research team analyzed dozens of studies, identified the six factors below as the top influences on safety climate, and created a development program for supervisors to learn a variety of techniques that contribute to those specific safety, communication and leadership skills necessary for a healthy safety climate.

The 6 Safety Climate Success Factors



1. NO-BLAME MINDSET

a. Acknowledge the impact of habituation and autopilot as how human brains work.

b. Pause, think, respond, rather than reacting in the moment.

A no-blame mindset improves safety climate in a number of ways. First, it acknowledges that workers are humans and thus human factors will be present wherever people are doing work. As noted earlier, an organization's systems are developed by humans, humans interact with the systems, and processes are dependent on correct execution by humans in order achieve desired outcomes. It may sound obvious to think this way, but if an organization is overly focused on creating injury-proof systems without considering how the system will work when workers are affected by physical and/or mental states such as being fatigued, working faster than usual or experiencing upset conditions, they may be surprised when those human factors amplify the level of risk and contribute to a safety incident.

Human factors come into play in another way that affects individuals' safety. The human brain develops pathways for familiar activities in order to reduce cognitive load. These pathways act like "autopilot" and are helpful for being able to do complex tasks using habits (e.g., driving a vehicle) without having to relearn all of the skills every time you perform the task. While there are clear positive outcomes from the brain creating strong neural pathways for familiar activities, when it comes to safety it can lead to unsafe behavior, given that our subjective feeling of risk gradually reduces as a dangerous task becomes more familiar. When a dangerous work task feels habitual, workers can let down their guard, especially when nothing bad has happened recently. In these instances, they're not deliberately choosing to be unsafe in the moment, as some approaches to safety tend to assume. Rather, they're behaving in the normal way that human brains manage familiar tasks. There is little point in punishing a worker for having a human brain. Moreover, blaming workers doesn't prevent similar incidents in the future.

The no-blame mindset is situated in both learning loops in the human factors framework. Reporting processes are an example of a systems element that can easily foster a blame mentality. At one client site, a supervisor said "We used to go out on the floor for the sole purpose of finding somebody to write up." Their systems set the expectation that a safety check was about looking for individuals to discipline. In the individual learning loop, a no-blame mindset affects how individuals manage themselves, as well as how they manage other peoples' mistakes. By having the mindset to help, not blame, they are far more likely to develop the trust that will help prevent the next mistake.

When awareness of human factors becomes embedded in a company's safety climate, it's no longer a question of who made the mistake that caused an injury in order to start asking which human factors and environmental conditions contributed to the injury. This is where taking a more considered approach is helpful. Rather than reacting with a blame-centered outburst (e.g., "What the @#&$% were you thinking?!"), the situation can become an opportunity for genuine dialogue. When supervisors are trained to pause, think, and respond with genuine willingness to listen, it opens the potential for candid conversations about how the organization's systems and processes may have been contributing to ineffective human factors such as fatigue, distraction and rushing, to name a few.

2. FRESH EYES

a. Look at hazards and risks in new ways.

b. Bring a human factors perspective to safety and performance.

In the same way that a no-blame culture mitigates human factors relating to habituation, the concept of fresh eyes mitigates inattentional blindness. The human brain often develops expectations about the surrounding environment, to the point where the brain can fail to cognitively register things that are factually present because it's focused on something else. The classic example is the "selective attention test" available online, in which viewers are shown a video of a group of students passing a basketball and are asked to count the number of passes one team makes. With sufficient concentration on that task, viewers miss something else that happens, which won't be revealed here. Suffice it to say the majority of viewers do not see the unexpected event. (To try this, search "selective attention test.") This clever example drives home the point that any of us may not see what's right in front of our faces. In a workplace context, this phenomenon, generally known as inattentional or perceptual blindness, can cause employees to overlook seemingly obvious sources of risk.

As noted by Koen:

"We are learning that we do not see with our eyes, but with our brains. This means that our eyes are not serving as active video cameras, capturing every detail of the world around us. Rather, our pre-conscious brain is constantly sending our eyes out on 'looking missions' to check out and verify what our brains predict is going on 'out there.' … According to neuroscientists, that means our eyes and our brains are more likely to see what they expect to see, rather than the reality of what is going on in the external world."[8]

8. Koen (2015), p. 2

When we consider how this function of the brain could affect people's safety, there is all the more reason to find ways to look at hazards and risks with fresh eyes and different lenses, and in particular the lens of human factors. For example, a hazard analysis form could include questions such as "What injuries might this hazard lead to if workers are being affected by negative human factors?" and "How would you rate the likelihood of injury if there are elevated levels of human factors involved?"

Another way to look at the concept of fresh eyes is informed by research into mindfulness. It is unfortunate that the word "mindfulness" is sprinkled around in popular media with little context, given that there's considerable scientific research into how mindfulness works and how it can be seen on an fMRI as it changes brain function to make people more resilient. Below are a few examples from mindfulness research. Consider how each of these mindfulness elements might influence a person's safety.

> The "Trait mindfulness…is defined as 'a receptive attention to and awareness of present events and experience.'" (Brown & Ryan, 2003)[9]
>
> "Research has demonstrated that mindful people tend to make more accurate judgements, display high problem-solving abilities, and have high task performance." (Dane & Brummerl, 2014; Kiken & Shook, 2011)[10]
>
> "Herndon (2008) indicated that trait mindfulness is associated with decreased cognitive failures, (e.g., distraction, overlooking and carelessness) which, in turn, lead to high task performance and fewer accidents."[10]

When organizations are purposeful in bringing fresh eyes and a human factors perspective into their systems, processes, and personal interactions, it is possible to shift the organizational safety climate, improving both safety and performance.

9. Kao, p. 2
10. Kao, p. 3

3. SYSTEMS AND DATA

a. Learn from reporting, team input and analysis.

b. Integrate human factors concepts and measurement into systems.

This element of safety climate is clearly situated in the organization learning loop of the human factors framework. Its relevance to the individual learning loop might appear less obvious, but to have a high-performing organization, the idea of learning from individuals' experiences is central. In particular, the learning loops function best when the people in charge of the systems listen to workers, who are the people at 'the pointy end of the stick', and work with them to develop relevant, realistic solutions to the frontline's problems.

In the safety research literature, there is abundant support for the importance of systems to prevent unintentional human errors that can lead to injuries and poor business performance. A human factors approach acknowledges that not all mistakes are intentional deviations from standards; some are based on how the human brain works, which is to say that they are natural neurological functions in humans that can sometimes reduce our ability to respond to danger. Under pressure, a human brain genuinely may not remember rules or processes in a moment of high risk. As Cristian Sylvestre summarizes it, "When a cue for a threat registers, a surge of neurochemicals is released, resulting in a change to the way we are able to respond… Simply put, when there is immediate danger, neurochemicals block out what is not needed for survival (conscious intervention), while supporting what is needed (subconscious action)".[11] The nature of the brain's stress response underlines the ongoing importance of not only having systems but also preparing workers with tools for managing high-risk situations and upset conditions.

11. Sylvestre, p. 116–117

The aviation industry is an exemplar in using operational checklists, and even more importantly, in realizing that there needs to be a culture in which crew members actually use the checklists. It's a norm, something that they do in everyday situations, not just when there's an emergency. As Koen notes, "It's not the checklist alone that produces performance reliability in aviation. Rather, it's the recognition amongst pilots that they're fallible. It's the commitment to not operate from memory, because human memory is not reliable. And, most importantly, it's the system of having two people cooperate in working through and cross-checking each critical task".[12] A checklist used with thought (and not completed by rote) can support the organization's effectiveness in using its systems.

At SafeStart, we make a distinction between technical systems and people systems. As noted earlier in this paper, technical systems tend to be rather well supported. Typically, organizations provide an ongoing investment of resources into technical systems for engineering, work processes, equipment and maintenance, and safety management systems. There are internal and external standards for performance, as well as a range of methodologies for measuring outcomes. In most cases, senior leadership can describe how their production, quality, maintenance, safety incidents and so on are tracked, as well as the cadence for how often performance in each area is assessed, and what the processes are for improving their outcomes.

On the other hand, people systems are necessarily part of any organization with employees, but there may not be awareness of what those systems are or how to improve them. They include the practices for how people and teams work together, how information is communicated within the organization, the expectations for supervisors interacting with their people, and other activities that contribute to organizational culture. In some cases, there may be clear standards for people systems, such as processes and tools for cascading communications effectively, requirements for documented, structured bi-weekly one-on-one meetings with direct reports, and well-defined behavioral parameters for physical and psychological safety in the workplace. However, in many instances, the people systems are nowhere near as well developed as the technical systems.

The SafeStart research team has found numerous examples of studies that show that safety climate and organizational culture are heavily dependent on having effective people systems. While the term "people systems" is SafeStart's own, the elements that contribute to people systems appear frequently in the research literature. In beginning to consider defining and measuring people systems, a combination of both qualitative and quantitative leading indicators can be useful in tracking progress. As Cooper states, "research has shown the greater the degree of ownership and use of leading indicators, the greater the degree of injury reduction".[13] An awareness of the impact of people systems provides organizations with the potential for significant improvement in safety and performance by putting focused effort there.

12. Koen (2017), p. 2
13. Cooper (2009), p. 15

Workplace Example: No Blame Mindset / Fresh Eyes / Systems and Data

A global business developed a program to reduce serious injuries and fatalities. The basic premise of the program was to encourage everyone to identify high-potential near-miss events and follow the prescribed investigation process to determine root causes and precursors.

The program required senior management to be informed within eight hours of a high-potential near miss. When the program started, high-potential near misses were reported and then the executive leader would call local leadership and scold them for the incidents, even when no one was hurt. This blame-first mentality immediately reduced the reporting of high-potential near misses, thereby eliminating learning opportunities. Leadership was only notified when people got hurt.

When a new leader assumed responsibility, the climate changed. The high-potential near misses were celebrated and leaders called them “golden nuggets.” This climate led to more high-potential near misses being fed into the organizational learning loop and allowed the system to identify meaningful insights regarding potential future incidents. The outcome was a dramatic reduction in serious injuries and fatalities.

4. TRUST AND ENGAGEMENT

a. Engage coworkers with open communication.

b. Listen in order to understand, then clarify and confirm.

Effective, open communication is essential to a strong safety climate, and is dependent on having a culture that doesn't default to blaming individuals when mistakes occur. When there is open communication about safety issues and unsafe conditions, workers will be willing to speak up about what's really going on rather than trying to conceal safety issues and near misses. When leaders are role models for candid conversations about their own mistakes and advocate for solving underlying conditions rather than pointing a finger to blame someone, they not only earn trust but also receive more accurate information from workers regarding safety issues. Open communication sits in the organization learning loop in the human factors framework. It leads to trust and engagement as workers see an ongoing demonstration that the leaders in the organization listen to worker input and then do what they say they will do to keep everyone safe.

In contrast, an environment of low trust can lead to workers being non-compliant with safety practices that prevent injury. When employees look around and see that nobody else is adhering to safety regulations then they may feel social pressure to take unnecessary risks. Research affirms this, as Peck notes that "Excessive peer pressure could influence the way work is carried out".[14] Further evidence is found in the work of Dom Cooper, an expert in safety climate. Behaviors classified as "excelling" in Cooper's Behavioral Safety Maturity Matrix include "two-way constructive, open dialogue to identify and resolve issues and unsafe behavior".[15] This openness feeds the individual learning loop, in that workers are able to ask questions, offer suggestions for changes, and, if their input is not going to be acted on, they need leaders to provide the reasons why not and what is being done instead. Effective communication keeps both learning loops functioning.

14. Peck
15. Cooper (2007), p. 17

As Cooper noted in 2007, dialogue is a key component for building trust. Recent research continues to support this, and "The daily interaction between employees and management is therefore considered as one of the building blocks of safety climate".[16] In current work environments, that interaction may occur face to face but can also include instant messaging, texts or whatever mode of connection is available if in-person conversation isn't an option. Another key factor is that in order to have real dialogue, the skill of listening is important so the "conversation" is not just one-way delivery of the leader's information or opinions. When a leader can listen well and then ask skillful questions to confirm understanding of the worker's perspective, it will be easier to develop the kind of trust that keeps everyone safer.

16. Bronkhorst, p. 294

5. PERSONAL COMMITMENT

a. Demonstrate that you care about keeping your people safe.

b. Ensure that your people have the training and skills to do their jobs safely and to standard.

Both the organization and its individual leaders need to demonstrate a personal commitment to employees. This is not about being nice, but rather it's about the importance of recognizing human factors in the workplace. What does it mean to care about keeping your people safe? It means organizational accountability for creating safe conditions for workers, and individual leaders taking action on not only external conditions but human factors that may be affecting their team members' safety. In the context of this paper, leadership's personal commitment is the driving force that affects both learning loops. The onus is on leadership to create the conditions for both organizational and individual learning. The organization's responsibility is to demonstrate personal commitment by having leaders who pay attention to worker input, fixing safety issues quickly, and communicating improvements in order to demonstrate to workers that the company walks the talk of caring about their safety.

While some human factors originate outside the workplace, they can affect workers at any time, so having a boss who offers support and tactics for staying safe regardless of the source of human factors can have a huge influence on workers' well-being. Those factors may be physical, such as fatigue, injury or illness, or they may be mental, such as decision fatigue or distraction due to conditions beyond their control. Workers are unlikely to have a strong sense of well-being if they have good reason to anticipate that they could be seriously injured at work, having seen that there is no active workplace commitment to minimizing the risk of incidents. Our research has made a clear connection between happiness/well-being at work and better safety outcomes.[17]

17. Wagner

In addition to awareness of the everyday human factors listed in the above paragraph, people systems structures must be in place to ensure that employees have sufficient training, experience, and supervision to perform their jobs correctly, safely and to the required standard. Moreover, employees need to have the opportunity to learn and practice procedures enough to use them confidently. As Koen states: "In most industries, the use of operating procedures is given verbal emphasis (as in, 'make sure you follow procedures,') but not action emphasis (as in practiced or drilled steps of work)".[18] It is an act of organizational and leadership accountability to ensure this practice is being followed.

Here is an example regarding the effects of employee fatigue and the consequences of an organization failing to demonstrate the commitment to managing them. In ideal conditions, the executive function of the brain is actively engaged in "conscious cognition, producing analytical, reasoned, reflective, and thoughtful actions".[19] However, an employer can create conditions that increase the risk of injuries and poor performance: "Recent evidence from functional MRIs (fMRIs) has definitively proven that brain fatigue causes performance impairment.

Examples of Performance Impairment

- Attention to detail
- Impulse and risk inhibition
- Accurate memory recall
- Problem analysis
- Conceptual thinking
- Planning ahead
- Decision making

All of the above capabilities reside in the executive function, and when fatigue causes impairment, as Koen states, "…employees cannot effectively 'think ahead' or conceptualize solutions for problems that start to emerge... [and they] lose their self-awareness capabilities when cognitively fatigued, resulting in the inability to assess how impaired they actually are".[19] This fMRI evidence underlines the necessity of an organization and its leaders to demonstrate personal commitment to keeping their people safe.

18. Koen (2016), p. 2
19. Koen (2016), p. 3

Workplace Example: Personal Commitment / Trust and Engagement

"In organizations with mature safety processes, all levels of the organization are committed and engaged. However, I think when you're talking about your senior leaders, your CEO, your C-suite, the executive leadership team, their level of commitment needs to be that much greater than everybody else as they set the tone for the rest of the organization.

Little mundane things like starting every meeting with a safety topic, highlighting emergency exits when you're in a conference room together, those are nuanced things that leaders do that may not seem like a big deal, but can have a big impact on the overall culture and how they see safety. The other element that really is critical is how leaders react when they're faced with a safety incident, whether it's an accident or a regulatory agency visit, when that becomes the primary thing they're working on, it shows the organization how important safety is.

For us at [company], one of the things the leadership does extremely well is that we have a bi-weekly safety council that is led by our CEO, has all the members of our C-suite participating, and each site's functional leader, where we share best practices, we share our metrics and performance, and then we share incidents and the investigations that we've taken into those to make sure that everybody across the organization can learn from those lessons.

The last piece which is really great is that our CEO does a monthly GEMBA walk, a shop floor walk, out there where he is engaging with the workforce, discussing safety, and we're able to provide to him many of the projects that we're doing that supports our safety strategy and our safety culture. And it's a wonderful time for our CEO to provide recognition and rewards to our team members who are big parts of our safety process."[20]

20. Anderson

6. ACTIVE LEADERSHIP

a. Inspire action through what you do and say.

b. Take action on input in a timely manner and communicate results.

Numerous studies and safety maturity matrices identify ongoing, visible engagement of leaders in supporting safety as a success factor. This support must be active, both in the leader's words and personal actions, and in the commitment to investing in safety reduction in a timely manner. All levels of the organization need to see members of the leadership team—from senior levels to supervisors—demonstrating their personal and business commitment to safety. Researcher Dom Cooper says it this way: "Various managerial behaviors (or the lack of) are consistently the root cause(s) in approximately 80% of safety issues that result in process safety and personal injury incidents".[21]

In workplaces where there is no current practice of senior leadership visiting the shop floor to talk about safety informally with workers, a best practice is to assign leaders to do safety rounds. It can be helpful to provide leaders with a simple structure for safety conversations during discussions with workers (e.g., a friendly greeting and a couple of open-ended questions about safety). When workers see leaders asking about safety frequently on the floor, listening to worker suggestions and then providing resources to solve safety issues, it goes a long way to proving that the company's commitment to safety is not just lip service. Showing up on the floor to do safety rounds resonates with employees, inspiring action on safety. In addition, the conversations provide in-the-moment information that can feed organizational improvements, and leaders have the opportunity to go back out on the floor to share the good news. Both learning loops benefit.

21. Cooper (2016), p. 23

Examples of Visible Engagement Include:

- Consistent presence of employee-centric communications about safety in the regular workflow: meetings, updates, newsletters, media, etc.
- Clear articulation of accountabilities for safety at all levels
- Regular follow-through on those accountabilities (analyze, take action)
- Investment in safety-related improvements
- Celebration and communication of successes
- Personal involvement such as sharing their own safety stories on the floor and attending training classes with employees

One leader, manager or supervisor can have a significant influence on the climate of their own team, for good or for bad. Many of us have had the experience of an ineffective or toxic leader who fosters an environment of frustration and disengagement for their team. The shared misery is palpable. With safety, ineffective leadership is not only unpleasant but it also puts workers at risk. On the other hand, an effective leader can influence safety climate within a team quite quickly, creating a shared experience of looking out for one another and working together to solve safety problems. These individual pockets of effective safety climate can eventually add up to an improved employee experience of safety in the organization, as noted in a number of safety climate studies. As one example:

"An additional attribute of organizational climate stems from its definition as shared employee perceptions regarding psychologically meaningful attributes of the organizational environment… Previous reviews identified two primary antecedents likely to promote the emergence of shared climate perceptions, i.e. symbolic social interaction and supervisory leadership." (Ostroff et al., 2003; Schneider and Reichers, 1983.)[21]

As discussed previously, safety climate is heavily dependent on people systems. Active leadership is a key contributor to effective people systems. The activities outlined above—building relationships with employees through conversations, being on the shop floor to ask about safety, and then acting on improvements—are all contributors. There is another element of safety climate that hasn't been included here yet: psychological/psychosocial safety. According to Zohar:

"Effective leaders who have established high quality relationships with their unit members care about their psychological welfare. Such caring extends to physical welfare in situations involving heightened risk. The resultant supervisory practices have been shown to affect the very targets of safety-climate perception (i.e., perceived priority of safety vs. competing operational demands, resulting in the abovementioned relationship." (Hofmann et al., 2003; Zohar, 2002; Zohar and Luria 2004; Zohar and Tenne-Gazit, 2008)[22]

In the context of improving safety climate, we're considering everyday behaviors that can either amplify stress responses or help workers to be resilient. Leaders who personally demonstrate self-awareness about everyday human stressors and risk, actively improve conditions for their teams (both technical and people systems), and provide tools for individuals to improve their personal awareness and resiliency will positively influence their team's safety climate and work performance.

22. Zohar (2010), p. 1519

Metrics

If a business wants to use the human factors framework and safety climate success factors, it is important to develop metrics that will monitor improvements. Effective metrics should be proactive and designed to guide desired actions. Metrics should also evolve over time as the climate and culture mature.

Safety contacts—leaders going to the shop floor with the primary purpose of discussing safety—are a common activity that will help drive the six safety climate success factors. Early in the journey, it is common for organizations to monitor the number of safety contacts over a certain period.

As an organization's climate improves, the metric to monitor safety contacts should also improve. The metric may evolve to measure the number of positive observations compared to improvement opportunities. As the organization reaches an even higher level of improvement, the metric may evolve to measure the number and quality of peer-to-peer interactions.

Once the safety contact program reaches an acceptable level of maturity, other metrics can be developed, to drive new behaviors and improve other aspects of safety leadership. These can include pre-job safety planning, capabilities building, or assessing the effectiveness of specific training programs. Ideally, they will strengthen the interconnectivity of the elements of the organization's safety management system using various aspects of the human factors framework and safety climate success factors.

The table below includes examples of effective and ineffective climate characteristics to show how introducing new safety leadership behaviors over time can achieve improved reliability in safety as well as organizational performance and engagement.

	Ineffective Climate	**Effective Climate**
No-Blame Mindset	People consistently blame coworkers, other shifts, or other departments when things go wrong. Workers are afraid of being blamed by supervisors.	People understand that human factors affect everyone and feel that their supervisors foster a supportive safety environment.
Fresh Eyes	Hazards are identified and addressed only after injuries or equipment damage. Near-miss reporting is infrequent or nonexistant.	Individual workers regularly identify hazards proactively and understand the value of near-miss reports.
Systems and Data	Incident investigations are superficial and safety people are viewed as “police.”	Incident investigations include human factors and workers believe these investigations happen for their benefit.
Trust and Engagement	Manager feedback to individuals is corrective, negative, judgemental, and workers are hesitant to report safety concerns to management.	Workers believe that management has their best interests at heart, and management communicates regularly with employees about safety issues.
Personal Commitment	Individuals believe that no one else is looking out for them and supervisors do not contribute to a sense of collective safety.	Safety is seen as an organizational value and coworkers regularly look out for each other.
Active Leadership	Leaders are rarely present in the field interacting with the team. Leaders tend to go to the field to find blame when something undesireable occurs.	Leaders attend safety training and lead the way by example.

How Effective is Your Safety Climate?

Now that you've been introduced to the characteristics of an effective safety climate, you are in a better position to accurately evaluate your own organization.

Read the examples below and consider how likely they are to occur consistently in every department of your organization.

No-Blame Mindset

A supervisor spends time every day on the shop floor "catching workers behaving safely," especially in conditions such as unusually hot weather or at the end of an extra-long shift when workers are more likely to be dealing with amplified human factors.

Fresh Eyes

A worker reports a near miss that resulted from production pressures and is confident that their supervisor and team will work together on mitigating the risk of an incident in the future.

Systems and Data

An incident report identifies that a piece of machinery regularly malfunctions, causing production delays, frustration and unsafe workarounds, and the machinery is replaced as a result.

Trust and Engagement

A supervisor asks the team for input about solving for a potentially unsafe condition causing frustration in their area, then reports it to management and follows up with the team to update them on the corrective actions taken to improve conditions.

Personal Commitment

A worker with a new baby at home feels comfortable to tell their supervisor that they are extremely tired today, and the supervisor is authorized to adjust work assignments accordingly.

Active Leadership

A new employee uses their stop work authority. The plant manager takes time in the next all-hands meeting to thank them and update everyone on new changes to prevent the issue in the future.

If scenarios like these don't happen consistently throughout your organization, then you could achieve considerable positive benefits by taking action on the six success factors to improve your safety climate and, ultimately, your culture.

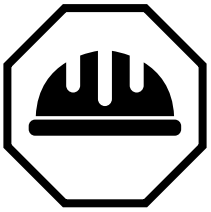
Summary

While it is no surprise that organizational culture is about human factors, the SafeStart human factors framework illustrates how various human factors interact to affect everything from systems to communication to business outcomes. Safety systems require more than technical and process excellence, they require skilled leadership that is committed to a strong safety culture.

This paper has considered the distinction between safety climate and safety culture, and a rationale for leadership's role in influencing culture through purposeful, measurable actions based on six safety climate success factors. As the research indicates, organizational culture is too complex to change overnight. Even with enthusiastic leadership commitment, it's a slow process.

Our research and field work have shown that by focusing more locally on safety climate, and in particular the six safety climate success factors, organizations can begin to see measurable changes more quickly. These six factors can be supported through simple leadership actions that are tactical and tangible. With ongoing effort over time, the practices that contribute to effective safety climate spread, gradually becoming the norm for the organization, leading to improved safety and culture.

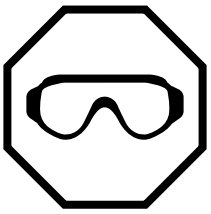
SAFETY CLIMATE SUCCESS FACTORS



1. NO-BLAME MINDSET

a. Acknowledge the impact of habituation and autopilot as 'how human brains work.'

b. Pause – think – respond, rather than reacting in the moment.



2. FRESH EYES

a. Look at hazards and risks in new ways.

b. Bring a human factors perspective to safety and performance.

3. SYSTEMS AND DATA

a. Learn from reporting, team input and analysis.

b. Integrate human factors concepts and measurement into systems.

4. TRUST AND ENGAGEMENT

a. Engage coworkers with open communication.

b. Listen in order to understand, then clarify and confirm.

5. PERSONAL COMMITMENT

a. Demonstrate that you care about keeping your people safe.

b. Ensure that your people have the training and skills to do their jobs safely and to standard.

6. ACTIVE LEADERSHIP

a. Inspire action through what you do and say.

b. Take action on input in a timely manner and communicate results.

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Safety climate provides the practical building blocks to creating a sustained culture of high performance. SafeStart is an expert in addressing the critical activities that drive increased reliability and ensure that safety climate consistently operates to move the culture dial in the right direction.

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