

Building Safety Culture



Three Practical Strategies

By Earl H. Blair

The topic of safety culture has received much attention, and for good reason. Research and experience demonstrate that the level of safety performance an organization can achieve is dictated by its culture. Petersen (2001) sums it up succinctly, “The culture of the organization sets the tone for everything in safety” (p. 123). Safety culture is an important subculture stemming from an organization’s set of practices and underlying assumptions.

Cultural Contributions to Disasters

In the few decades, several spectacular and tragic events have occurred, followed by thorough investigations made available to the public. From these detailed reports, it has been recognized that organizational culture and the resulting safety culture are often implicated as primary causes in these incidents.

For example, the explosion of the space shuttle *Challenger* in 1986 demonstrated

that even a state-of-the-art organization had cultural issues that affected safety performance. The term *safety culture* had been recently coined, and the investigation revealed communication issues at NASA, including a top-down, command-and-control culture that inhibited both engineers from communicating up the line and upper management from listening to communication from lower levels in the organization.

The BP Texas City refinery explosion in 2005 was also thoroughly investigated. Hopkins (2008) describes in detail the cultural issues that contributed to the tragedy. It is possible that decisions made at the top levels of BP contributed more to the explosion than did the proximal causes at the Texas City site. Furthermore, organizations appear

IN BRIEF

- This article discusses practical strategies to develop safety culture, including short case examples to illustrate key points.
- Focus is given to the most important actions leadership can take to build a safety culture.
- Practical methods are provided to gain leadership support and enable organizations to establish systems to enhance and sustain the safety culture.

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to have some difficulty learning from the past (e.g., BP's *Deepwater Horizon* explosion in 2010). A learning culture is desirable for enhancing safety performance and preventing injuries.

The strategies for building safety culture are relatively simple. However, one should not confuse simple with easy. This analogy helps illustrate the distinction: For overweight individuals, the concepts for losing weight are simple: use more calories than you consume. However, the experience of many illustrates this is not necessarily easy to accomplish. Many distracters, variables and complexities make weight loss challenging for many people. Likewise, it can be challenging, yet worthwhile, for an organization to systematically develop its safety culture.

Three Practical Strategies for Building Safety Culture



Strategy 1: Work Toward Being a 100% Reporting Culture

One reason organizations do not experience higher numbers of reports on minor injuries and near-hits is that employees fear

subsequent blame and punishment. It is human nature to avoid being blamed and to try to stay out of trouble. For injury prevention, a reporting culture should be more highly valued than a punishing culture that is quick to administer discipline. Traditionally, many organizations have focused on reactive discipline rather than on strategies and techniques to increase accurate reporting.

Disciplinary procedures are an example of why it is not easy to build a safety culture. Emphasizing discipline over reporting may not contribute to a better safety culture, since this focus may cause many incidents to go unreported. Underreporting may improve the safety record, but it does not contribute to a stronger safety culture.

Employees may also hesitate to report near-hits and minor injuries because of the extra time, work and perceived red tape involved. People tend to avoid extra work, especially if employees are not sold on the value of reporting for safety. If an organization does not follow through and respond rapidly to reports, it devalues reporting. Thus, if an organization values reporting, it should establish and use a system that encourages reporting and appropriate follow-through.

Slogans such as "All injuries are preventable" create a major obstacle to employee reporting. As Geller (2001) suggests, humans cannot be expected to be error-free. Consider these 12 additional reasons to avoid this slogan:

- 1) The focus is downstream (injuries).
- 2) It does not prescribe how to improve the safety process.
- 3) It can be a feel-good statement for management.
- 4) Many employees do not believe it.

5) It can make people who report minor injuries feel bad for being an exception to this "infallible truth."

6) It can lead to underreporting or even nonreporting of injuries.

7) It may result in injury management instead of safety management.

8) It may provide a false image of a site's safety performance.

9) It can reduce risk perceptions.

10) It can hurt morale.

11) It may reduce employee efforts for safety since perfection is outside their control.

12) In most cases, it probably is not achievable over time.

A distinction must be made between believing that all injuries are preventable and repeating it as a slogan. It is acceptable to hold the belief that all injuries are preventable. If the belief inspires management's vision to strive for optimal performance, then it could influence positive results. Optimal performance and perfection are not the same thing. Since few employees believe the slogan, and perhaps many in management do not believe it either, the slogan becomes counterproductive.

Four factors encourage a reporting culture:

1) Indemnity: security against disciplinary action as far as practical.

2) Confidentiality: deidentification on incident reports.

3) Ease of reporting: user friendly and limited red tape.

4) Rapid feedback: follow-up and practical, meaningful feedback to all concerned (Reason, 1997).

If employees underreport or do not report incidents, an organization may be unaware of many exposures and risks that exist. Integrity in reporting allows an organization to solve the issues and be proactive in preventing future exposures and related injuries.



Strategy 2: Develop Safety Awareness With Meaningful Safety Rules

Hopkins (2005) relays the story of a train wreck that occurred near the Glenbrook Station in New South Wales (NSW) Australia

in 1999. Just beyond the station, the *Indian Pacific* train was stopped. A city commuter train coming through the station ran a red light and did not know the *Indian Pacific* was stopped just around the bend ahead. The commuter train slammed into the stopped train, killing seven passengers.

As with most tragic incidents, the investigation uncovered multiple causes and influences. Most immediately prior to the incident, investigators discovered casual and poor communication between the driver and the signaler.

Several cultural deficiencies also allowed the tragedy to occur. Hopkins (2005) lists five cultures

that permeated NSW Railways and influenced the incident:

- 1) a culture of rules;
- 2) a culture of blame;
- 3) a culture of silos;
- 4) a culture of on-time running;
- 5) a risk-blind culture.

The one positive culture was that of on-time running. This level of service was a focal point and the railway reported a high percentage of success. However, the on-time culture was not counterbalanced by a risk-aware culture.

Interestingly, Hopkins (2005) believes the culture of rules produced several negative outcomes, such as a deadened sense of risk awareness, a sense of employee disempowerment and a culture of blame. This incident is an example of excess regarding safety rules. NSW Railways' rule-focused culture left its employees overwhelmed by eight volumes of rules. As Hopkins states:

This focus on rules tended to deaden awareness of risks. Moreover, when accidents occurred, the aim of accident investigations appeared to be to identify which rules had been violated and by whom. The obsession with rules led to a pronounced tendency to blame. (p. 28)

Specifically, the abundant safety rules presented several problems:

- The organization appeared to hold the illusory reliance on rules as a means of averting incidents, and seemed to believe that a rule could be developed to cover every conceivable risky situation.
- The company had eight volumes of safety rules, and amendments were circulated weekly for recipients to update their manuals.
- The sheer volume of safety rules made them virtually unknowable and impractical in daily use.
- The rules were not written in a user-friendly format. They were written in convoluted, complex language designed to cover all possible risks. Each rule covered several pages and read like a piece of legislation, or was vague and difficult to interpret (e.g., used phrases such as "use extreme caution").
- Rules were cross-referenced in such a way that even the trainers often did not understand them. In one case, a person had to reference no fewer than 84 rules to select the correct course of action.
- The rules were written by people with no practical experience in the topics about which they were writing. Consequently, many rules were totally impracticable.
- Based on all of these factors, most employees had little use for the safety rules. They could see no relationship between the content of training for safety rules and actual task performance.

•Because the rules were impractical, they were rarely enforced either internally or by rail inspectors.

Admittedly, this case study reflects the extreme. However, one may recognize symptoms that prevent an organization's safety rules from providing optimal impact:

- 1) Are safety rules used primarily to protect management?

- 2) Are the rules cumbersome, impractical and not user-friendly?

- 3) Does the organization tend to enforce safety rules mostly after someone is injured?

The following suggestions for enhancing safety rules are based on Reason (1997) and Hopkins (2005; 2008). Safety rules must be:

- 1) dynamic;
- 2) developed with input from end users;
- 3) practical and relevant;
- 4) effectively communicated;
- 5) monitored and enforced;
- 6) regularly modified and updated;
- 7) continually improved.



Strategy 3: Ensure That Leaders Understand How to Consistently Act to Develop Safety Culture

Schein (1992) researched culture and leadership extensively and concluded that:

Culture and leadership are two sides of the same coin in that leaders first create cultures when they create groups and organizations. . . . The bottom-line for leaders is if they do not become conscious of the cultures in which they are imbedded, those cultures will manage them. Cultural understanding is desirable for all of us, but it is essential to leaders if they are to lead. (p. 15)

Schein (1992) also discusses how leaders embed and transmit culture. He lists six "primary embedding mechanisms" that create an organization's climate and six "secondary articulation and reinforcement mechanisms" (pp. 230-231).

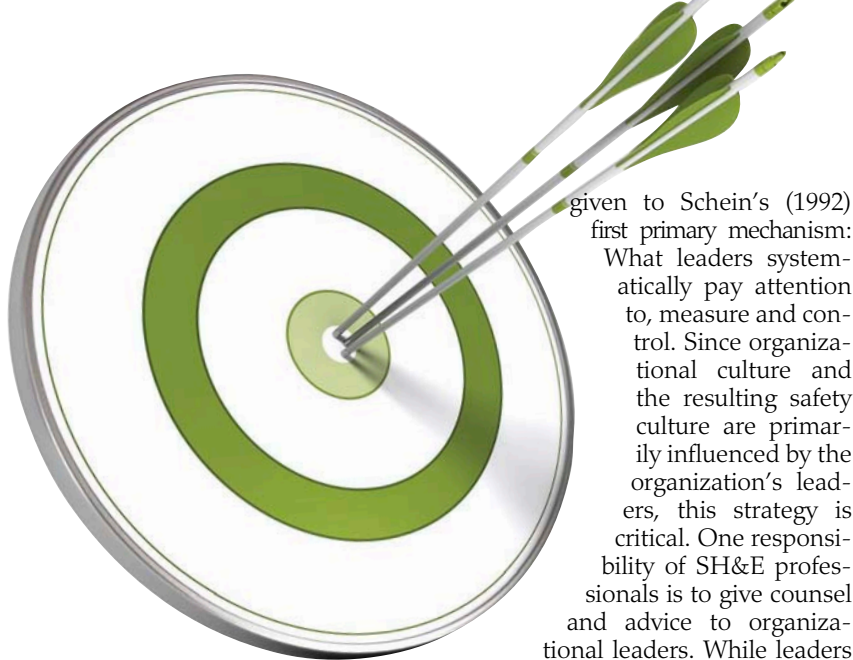
Primary Culture-Embedding Mechanisms

- 1) what leaders systematically pay attention to, measure and control;
- 2) how leaders react to critical incidents and organizational crises;
- 3) observed criteria by which leaders allocate scarce resources;
- 4) deliberate role modeling, teaching and coaching;
- 5) observed criteria by which leaders allocate rewards and status;
- 6) observed criteria by which leaders recruit, select, promote, retire and excommunicate organizational members.

Secondary Articulation & Reinforcement Mechanisms

- 1) organization design and structure;
- 2) organization systems and procedures;
- 3) organizational rites and rituals;
- 4) design of physical space, facades and buildings;
- 5) stories, legends and myths about people and events;
- 6) formal statements of organizational philosophy, values and creed.

To develop a safety culture, emphasis should be



The best way for leaders to learn what is happening in the workplace is to walk around, monitor and listen.

given to Schein's (1992) first primary mechanism: What leaders systematically pay attention to, measure and control. Since organizational culture and the resulting safety culture are primarily influenced by the organization's leaders, this strategy is critical. One responsibility of SH&E professionals is to give counsel and advice to organizational leaders. While leaders are often intelligent and well educated, they may not automatically understand specifically how they can best influence the safety culture. Safety professionals can give leaders specific information on how to best develop the safety culture.

From 2001 to 2004, a comprehensive study was conducted at Indiana University to cross-validate a safety climate survey (Seo, Torabi, Blair, et al., 2004). Perhaps the most significant finding of the research was that all other factors on the safety climate scale were influenced by two factors: management commitment and supervisory support. "In terms of practical implications, this finding suggests that more emphasis should be made on the role of management commitment and supervisory support among various aspects of accident prevention efforts, considering their substantial influence on other dimensions of safety" (Seo, et al., pp. 442-443).

Stewart (2002) states:

Management commitment is undoubtedly the foundation of safety. Without it, the rest of the agenda for excellence cannot be effective . . . it must be real, sustained, determined and believable. It means that the leaders understand safety, believe in it with a passion, and see that their passion is embedded in the company's culture. (p. 185)

Since management commitment is intangible, the issue involves determining the visible manifestation of management commitment? What behaviors and activities can be, and should be, measured?

Stewart (2002) notes that safety improvement efforts often do not focus on the most important things. These are not necessarily the physical or system deficiencies that are the easiest to see. Rather, the most important things are the intangible elements that may be difficult to see and measure, such as lack of management commitment, a low level of worker involvement in safety activities and a failure to enforce safety rules.

Leaders must focus on specific behaviors to strengthen safety culture (Blair, 2003). Part of the SH&E professional's role is to influence leaders to take the right actions that will affect safety performance. The key is identifying what leader be-

haviors have the greatest impact on the journey to establish a strong safety culture.

How Can Leaders Enhance Safety Culture?

Based on Komaki's (1998) leadership research, two activities that distinguish effective leaders from mediocre or lackluster leaders are the amount of time spent monitoring worker performance, particularly via work sampling, and providing all kinds of consequences (positive, neutral, negative); and listening to employees by providing a milieu that promotes constructive performance-related dialogue.

A few years ago, management by walking around became popular. Perhaps leaders can best accomplish these two activities with leadership by walking around (LBWA). Leaders cannot effectively perform these activities from their offices. Also, this is not leadership by wandering around; it is walking around with purpose. That purpose is to enhance the safety culture, to talk with employees about safety, to listen to their concerns and to follow up when corrective actions are needed.

Most companies that practice some form of behavioral safety recognize that they must address behavior at all levels to be effective. Often, employees provide peer safety coaching and feedback to improve safe work on the job.

The behaviors prescribed for leaders and management are more about supporting the company's safety efforts, since managers generally do not perform work on the floor or in the field. Therefore, it is often suggested that management develop self-managed checklists for these supportive behaviors, and that they be measured on achieving the behaviors as they would be measured for production, quality and cost control.

These checklists can be customized to play to the strengths of individual leaders, and can help ensure that they practice LBWA. Consider these examples of high-leverage activities for leadership:

- 1) Conduct safety walkarounds that involve a) discussing safety with employees; b) asking how they can help make people safer; and c) focusing on actively caring for employees (Geller, 2001).
- 2) Confirm that safety-related corrective actions are closed out, and develop a measurement system to track.
- 3) Promote and conduct safety coaching.

Figure 1 presents an example of a leadership self-managed checklist. Based on McSween (2003), this checklist illustrates different activities or behaviors that management can perform to influence safety culture. Keep in mind the checklist is simply a guide and should be customized as needed. Checklist measures should be simple and realistic.

The timeframe for LBWA is contingent on the industry and should be reasonable. For example, 1 to 2 hours per week, or about 5% of a leader's time could be devoted to such an activity. This decision depends on individual context and circumstances. It may take more time than this to be most effective. Leaders are encouraged to view this as an investment in safety culture rather than as a cost to the organization. Paperwork should be minimized

(e.g., it could be added to scorecards if the organization employs a balanced scorecard approach).

Consider three additional suggestions for using the self-managed checklist:

1) The checklist in Figure 1 is an example of behaviors that could be selected. It is recommended that pinpoints or behaviors be limited to 3 to 5 behaviors instead of 10 (or more).

2) An organization should implement a system to track and confirm that leaders are actually performing the safety-related activities they have agreed to perform.

3) Selected behaviors should be targeted for a specific timeframe (e.g., three walkarounds per week). The measurement could include a weekly or monthly ratio of the number of implemented behaviors to the number of expected or planned behaviors.

Leadership by Walking Around: Benefits for Site Leaders

Leaders can reap safety benefits as well as benefits beyond safety performance when they practice LBWA. For example:

1) They have a concrete opportunity to demonstrate that they care.

2) It will help to ensure that outstanding safety challenges are resolved.

3) Employees will see that leaders are genuinely committed to safety since they are demonstrating visible, ongoing support for safety.

4) The practice establishes a hands-on safety example for supervisors.

5) Employees will develop greater trust in their leaders.

6) Leaders have multiple opportunities to enforce and reinforce the safety process.

7) Leaders will learn what they do not know.

Regarding the last point, the best way for leaders to learn what is happening in the workplace is to walk around, monitor and listen. This is far superior to sitting at a computer and reviewing statistics. At a minimum, it reinforces and adds to collected knowledge. Most importantly, it develops the relationship between leaders and field employees.

As noted, the amount of time spent walking around and engaging in dialogue about safety need not be lengthy. Each organization and leader can establish guidelines for their specific situation. Remember, these activities should be viewed as investments in safety, not as costs.

To keep this in perspective, consider how much a serious injury or poor employee morale costs because leadership has not developed a culture of safety. Leaders must have realistic and effective measures of how they support safety, otherwise they are guilty of short-term thinking that ignores safety culture.

Figure 1

Self-Managed Safety Behavior Checklist

Leadership Self-Managed Checklist			
Name: _____		Date: _____	
Choose 3 to 5 Measures to Focus on	Yes	No	N/A
1) Perform safety walkabouts to discuss safety			
2) Ensure the closeout of safety-related corrective actions			
3) Conduct safety coaching			
4) Promote safety coaching			
5) Attend safety related training with team			
6) Recognize employees for working safely			
7) Provide at least one positive safety feedback			
8) Review observation data and its importance in safety meetings			
9) Actively participate in safety activities			
10) Completed checklist turned in at the end of every work week			

Leaders who are passionate about improving safety performance should read Roberto's (2010) *Know What You Don't Know: How Great Leaders Prevent Problems Before They Happen*. Safety is all about prevention, and Roberto shows with case studies and research that the best leaders do not simply respond to problems, they discern problems before they become big issues. Roberto demonstrates that the best way to discover the symptoms that produce bigger problems is to spend purposeful time on the floor and in the field, walking, monitoring, asking, listening and anticipating issues.

Evaluate Existing Safety Culture

Manuele (2008) clarifies a prime way to evaluate and improve a safety culture. Specifically, Manuele examines cultural implications that may impede effective incident investigations, the quality of which he identifies as an indicator of safety culture.

Since I believe that effective incident investigation and analysis are vital to obtaining superior safety results, I continue—with compassion—to encourage safety professionals to undertake improvements in the investigation process. Condoning inadequate incident investigation defines a safety culture problem, one that will not be easily overcome . . . in some organizations a “blame culture” has evolved whereby the focus of their investigations is on individual

human error and the corrective action stops at that level. This approach avoids collecting data on and improving the management systems that may have enabled the human error. (p. 344)

In making this case, Manuele (2008) borrows from Whittingham (2004) and illustrates how a culture of fear can arise from the system of expected behavior that management creates.

An electrocution occurred. As required in that organization, the corporate safety director visited the location to expand on the investigation. During discussion with the deceased employee's immediate supervisor, it became apparent that the supervisor knew of the design shortcomings in the lockout/tagout system, of which there were many at the location. When asked why the design shortcomings were not recorded as causal factors in the investigation report, the supervisor's response was, "Are you crazy? I would get fired if I did that. Correcting all these lockout/tagout problems will cost money and my boss doesn't want to hear about things like that." (p. 345)

For improvement, Manuele (2008) recommends starting with a self-evaluation of the culture, and he suggests commencing with the first step of the plan-do-check-act process by defining the problem. He suggests starting with a sample of completed investigation reports, and counsels to limit the scope to only those incidents that result in serious injury or illness. Manuele believes that such a study need not be time-consuming since the data already exist.

A safety professional who undertakes such a study should keep in mind that its outcome is to be an analysis of the:

- activities in which serious injuries occur, for which concentrated prevention efforts will be beneficial;
- quality of causal factor determination and corrective action taking;
- culture that has been established over time with respect to good or not so good causal factor determination and corrective action taking;
- organization levels that are to be influenced if improvements are to be made.

From that analysis, a plan of action would be drafted to influence the safety culture, to the extent that is necessary. Thus, the plan of action must be well crafted to convince management of the value of making the changes proposed. . . . It is much easier for me to write all this than it will be for safety professionals to get it done. Changes in culture are not easily accomplished. They require considerable time and patience, and may only be achieved in small steps. (pp. 346-347)

Gain & Sustain Management Support

Upper management usually says the right words about safety in company policies and daily rhetoric, but the disconnect for many employees is the belief that management does not walk the talk. In fact, in the author's experience, safety perception surveys often reveal a discrepancy between how much management thinks it is committed to safety (such

as 90% strongly agree) and how much employees perceive that management is committed to safety (such as 30% agree). Although managers may feel they are personally highly committed to safety, employee perceptions are their reality. If leaders follow the recommendations for walking around, monitoring, coaching, listening and resolving safety issues, then employees will believe that management walks the talk, genuinely cares about them and is committed to safety.

As noted, safety professionals can influence leaders about the things they should do to enhance safety culture. Sometimes, leaders simply do not know what they should be doing regularly to impact safety. Based on their own experience, some leaders may believe that a good safety program consists of slogans, posters and incentives.

A primary role of safety professionals is to give advice on how to anticipate, identify and control hazards and exposures. The safety professional is a consultant and the best s/he can do is convince upper management about the high-leverage activities that should be measured and regularly reviewed. It is effective to emphasize the expected benefits for the organization. SH&E professionals also should seek to spark leaders' passion for safety. Benchmarking performance against other companies or industries that have a strong safety culture is one place to start.

Crafting a Report to Describe Why & How Leadership Builds the Safety Culture

The primary way to gain management support for safety culture is to influence them through communication. Doing so effectively may be a challenge. However, if leaders claim that safety is a value, then they should be willing to listen and act on a safety professional's relevant recommendations.

This communication can consist of a written report, face-to-face meetings or both. The report must be clear, concise and succinct, focused on no more than three priorities. Rather than overwhelm participants with a long list of needs, be willing to start small. The SH&E professional might consider developing a presentation that summarizes or illustrates key points in the written report as well.

Strategically, the safety professional must gain management support and buy-in before such a meeting. This involves identifying the leaders who are the most passionate about safety. Meet with these individuals and describe needs. Having an advocate can go a long way toward ensuring that individuals are assigned safety supportive responsibilities and held accountable for follow-through.

The following strategies may be applied to make the communication effort more effective. Safety professionals can select those strategies that are appropriate in their situation (Blair & Spurlock, 2013).

1) Emphasize the organization's legal and ethical responsibilities regarding safety. Most organization leaders will respond to information that can negatively or positively affect company image. The concept of a strong safety culture is becoming more visible and more desirable.

2) Discuss a tragic event in the industry or a similar industry. As noted, incident investigations often reveal that basic causes relate to a poor safety culture. Be proactive. One does not want to end up discussing an event that occurred in his/her organization due to cultural deficiencies.

3) Develop a sense of urgency for safety. Organizations naturally become urgent about safety when a fatality or tragedy occurs, but this is reactive. Safety professionals add value to their organizations by helping them be proactive and more urgent about taking preventive measures.

4) Speak management's language. Focus on the costs of poor safety management, such as workers' compensation costs and indirect costs. Some cost reduction may be accomplished through case management, but a solid safety management system that exists in the culture and not just on paper will lead to fewer injuries and lower costs.

Conclusion

To successfully implement and sustain efforts to develop safety culture, each organization must customize techniques to accomplish their chosen strategies. A starting point for safety professionals is to gain upper management support for these strategies. Managers and employees are likely to support the strategies if the safety metrics and key performance indicators are designed to develop the culture and relationships, and to hold people accountable for supporting safety.

Three practical strategies to enhance safety culture have been discussed. While a company can take many other actions to develop safety culture, these are three powerful strategies to consider for enhancing a safety culture:

1) Work toward becoming a 100% reporting culture.

2) Develop safety awareness with meaningful safety rules.

3) Ensure that leaders understand how to develop safety culture and consistently act to do so.

Each strategy assumes follow-up to sustain and infuse it in the culture. Even if employees report most incidents, little benefit is derived if proactive measures are not taken to prevent future incidents. Leaders are less likely to practice leadership by walking around if the company does not systematically measure the activity.

The concluding question for many readers at this point could be, Would one or more of these strategies be more powerful for long-term performance than the current safety strategies being used by the organization? **PS**

Sustaining the Effort to Build a Safety Culture

1) Establish and maintain a safety scoreboard focused on leading safety metrics. These are activity measures of the safety process and the measures of support for safety that build safety culture. Effective scoreboards include trailing measures, are kept current, and are simple to read and understand.

2) Use a risk assessment matrix to determine priorities for safety actions and interventions.

3) Design ways to institutionalize or systematize these culture development strategies.

4) Consider a system to maintain focus on the important goals, establish accountability and provide regular ongoing dialogue for improvement (FranklinCovey, 2006).

References

- Blair, E.H.** (2003, June). Culture and leadership: Seven key points for improved safety performance. *Professional Safety*, 48(6), 18-22.
- Blair, E.H. & Spurlock, B.** (2013). Leading measures of safety performance: A measurement and metrics workshop. Las Vegas, NV.
- Cooper, M.D.** (2009). *Behavioral safety: A framework for success*. Franklin, IN: BSMS.
- FranklinCovey.** (2006). *The four disciplines of execution*. Salt Lake City, UT: Author.
- Geller, E.S.** (2001). *The psychology of safety handbook*. Boca Raton, FL: Lewis Publishers.
- Hopkins, A.** (2005). *Safety, culture and risk: The organizational causes of disasters*. Sydney, Australia: CCH Australia Ltd.
- Hopkins, A.** (2008). *Failure to learn: The BP Texas City refinery disaster*. Sydney, Australia: CCH Ltd.
- Komaki, J.L.** (1998). *Leadership from an operant perspective*. London, U.K.: Routledge.
- Kouzes, J.M. & Posner, B.Z.** (2010). *The truth about leadership: The no fads, heart-of-the-matter, facts you need to know*. San Francisco, CA: Jossey-Bass.
- Krisco, K.H.** (1997). *Leadership and the art of conversation: Conversation as a management tool*. Rocklin, CA: Prima Publishing.
- Manuele, F.A.** (2008). *Advanced safety management: Focusing on Z10 and serious injury prevention*. Hoboken, NJ: John Wiley & Sons.
- McSween, T.** (2003). *The values-based safety process: Improving your safety culture with behavior-based safety* (2nd ed.). Hoboken, NJ: John Wiley & Sons.
- Petersen, D.** (2001). *Authentic involvement*. Itasca, IL: National Safety Council.
- Reason, J.** (1997). *Managing the risks of organizational accidents*. Aldersgate, England: Ashgate Publishing.
- Roberto, M.** (2010). *Know what you don't know: How great leaders prevent problems before they happen*. Upper Saddle River, NJ: Wharton School of Publishing.
- Schein, E.H.** (1992). *Organizational culture and leadership* (2nd ed.). San Francisco, CA: Jossey-Bass.
- Seo, D.C., Torabi, M.R., Blair, E.H., et al.** (2004). A cross-validation of safety climate scale using confirmatory factor analytic approach. *Journal of Safety Research*, 35, 427-445.
- Stewart, J.M.** (2002). *Managing for world class safety*. Hoboken, NJ: John Wiley & Sons.
- Whittingham, R.B.** (2004). *The blame machine: Why human error causes accidents*. New York, NY: Elsevier Butterworth Heinemann.