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Project Site Leadership Role in Improving Construction Safety

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Project Site Leadership Role in Improving Construction Safety
Research Team**

**Research Summary 256-1
February 2011**

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The University of Texas at Austin

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Printed in the United States of America.

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Executive Summary

Between the 1950s and the 1990s, the focus of industrial safety on identifying, eliminating, and/or mitigating hazards shifted to a focus on organizational issues such as training and education, selection of workers and contractors, and the development of safety systems. (Previous CII safety research has focused on processes and techniques for improved safety performance.) Since the 1990s, the focus has shifted again to the role social-psychological issues play in safety; this shift occurred when it became clear that disasters like Chernobyl were in large part attributable to poor organizational safety culture. In fact, a current focus in the nuclear industry is on the human factors that affect safety, including influences on worker behavior (Muschara, 2007). In 2008, the National Occupational Research Agenda identified the investigation of safety culture as one of 15 strategic goals on the National Construction Agenda.

Because the members of CII Research Team (RT) 256 began this study with the understanding that leadership is a key element in developing an organization's safety culture, the team attempted to answer the following research question: What is the relationship between the leadership behaviors of site leadership personnel and project safety performance? With this question in mind, the team designed a research methodology to investigate the values, priorities, and behaviors of construction personnel in various leadership positions. The team was unable to answer the research question because the CII member company projects participating in the study all had superior safety performance. However, the large amount of data collected generated other findings of value.

Thirty-one projects with 456 individuals in leadership positions participated in the study, and a total of 3,243 evaluations of leader behavior were obtained. The measure of safety performance used was the Recordable Incidence Rate (RIR), a project-level measure. The average RIR for the 31 projects was 2.04, and six of the projects had an RIR of 0.0. As a result, it was not possible to identify a statistically significant relationship between leader behaviors and the RIR.

The team expanded the scope of the research to address the variables and the relationships shown in Figure 1. Key findings include the following:

- Craft workers and employees under the age of 30 believe less strongly than supervisors and workers over 30 that injuries are preventable, that an injury-free workplace is both important and attainable, and that safety is management's responsibility.
- Leaders, through their actions, need to communicate that safety is important. On a day-to-day basis, failure to correct unsafe acts and to talk about more than production issues sends the message that safety is not important.
- Leaders must develop a vision of a desired safety culture and increase behaviors that inspire this vision in the workforce. They must also pursue continuous improvement in safety by challenging the workers to improve the work process and by recognizing and rewarding people for improved safety.
- There are significant links between leader behaviors and project safety climate.
- Lagging indicators such as the RIR are of limited value in determining the impact of leader behavior. Because of these limitations, the research question could not be answered directly.
- Leaders must adopt a direct, active leadership style that focuses on creating the desired safety values, climate, and culture. Leader behavior must reinforce the values, beliefs, and assumptions that constitute the desired safety culture in the project workforce and that affect worker behaviors.

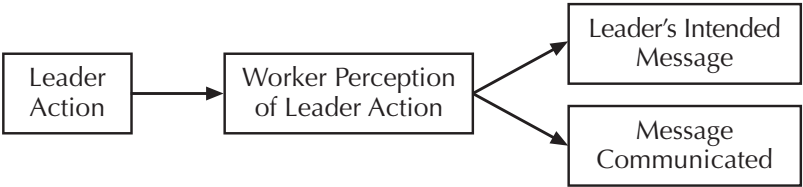


Figure 1. Leader action and message

Introduction

Historically, the focus in construction safety has been on the three “Es” – Engineer, Educate, and Enforce:

- **Engineer** – Eliminate hazards or design risk-control methods.
- **Educate** – Train workers in the appropriate methods and procedures to minimize risk exposure.
- **Enforce** – Monitor worker behavior to ensure compliance with prescribed methods.

In recent years, construction site safety performance for Construction Industry Institute (CII) companies, as measured by lagging indicators, has reached a plateau. As a result, company leaders are beginning to believe that the Three-E approach has reached the point of diminishing returns. In its *2008 Safety Report*, CII reported that the average Recordable incidence Rate (RIR) of CII companies was 0.57, while that of the construction industry as a whole was 4.70. Thus, non-CII companies may still be able to improve safety performance by implementing industry best practices identified in through previous CII research projects.

During the past 20 years, investigations into disasters such as Chernobyl have determined that poor safety culture contributes significantly to disasters. As a result, the international safety research community has greatly intensified its examination of social-psychological factors. These factors include safety culture, safety climate, behavior-based safety, and the presence and influence of safety decision-making and leadership on safety performance.

In 2008, the National Occupational Research Agenda (NORA) released its National Construction Agenda for construction occupational health and safety research (NORA, 2008). This strategic guidance for construction occupational safety hazard research has seven risk-

oriented strategic goals and eight indirect strategic goals. In Strategic Goal 8: Construction Safety Culture, leadership is identified as a probable leading factor in the creation of positive, strong safety cultures in construction. Additionally, leadership has been recognized internationally as an important driver for occupational safety and health in construction. The NORA report cites safety authorities in the United Kingdom as viewing leadership as perhaps the most important factor. Safety experts in Australia—a country in which the labor environment is approximately twice as safe as that of the U.S. in terms of fatalities per 100,000 workers—regard leadership as a leading contributor to safety performance (Lingard, Cooke, and Blismas, 2009). At the Fall 2009 International Council for Research and Innovation in Building and Construction (CIB) W099 Congress in Melbourne, Australia, government and industry leaders also thematically addressed leadership as an area in need of attention.

Safety Culture and Leadership

One of the primary duties of a leader is to create, develop, and maintain/manage the culture of his or her organization. If aspects of the culture become dysfunctional, leadership must determine what has to be changed and bring about that change. The culture of a group or an organization may be defined as follows:

... [the] pattern of shared basic assumptions learned by a group as it solved its problems of external adaptation and internal integration, [a pattern that] has worked well enough to be considered valid and, therefore, [is] to be taught to new members as the correct way to perceive, think, and feel in relation to those problems (Schein, 2010).

When a group is formed, each member has his or her own set of values; these values overlap with the group values to varying degrees.

As the group begins to function, the leader bases his or her actions on these personal values. If that action proves successful and continues to be successful, the group develops the shared belief that that action is the way things should be done. Eventually, this shared belief becomes a shared assumption and part of the group's culture.

Every organization has a culture. The culture may have simply evolved as the organization functioned over time or it may have resulted from direct action by leadership to create a desired culture. Cultural development through evolution requires the organization's leadership to follow a passive style and simply allow events to happen, with little effort to influence them.

The creation of a desired culture requires leadership to have a vision of the desired culture and to be active in communicating and selling that vision to the organization's members. Attaining the desired culture in the organization requires leadership to instill the culture in the organization or, in other words, to socialize the organization's members into that culture. The following are primary mechanisms by which leadership may instill the desired culture:

- what leaders pay attention to, measure, and control on a regular basis.
- how leaders react to critical incidents and organizational crises
- how leaders allocate resources
- deliberate role modeling, teaching, and coaching
- how leaders allocate rewards and status
- how leaders recruit, select, promote, and communicate.

Examples of leader behaviors directed at instilling a desired safety culture in an organization are provided in Table 1.

Table 1. Leader behavior/activities to embed a desired safety culture

Mechanism	Explanation	Examples
Attention	Leaders communicate their values and concerns through their comments, praise, or criticism	Letter from project manager Induction training – management involvement Daily safety briefing by supervisor Weekly toolbox talks – worker led; management involvement Weekly supervisor safety meeting Safety conversation – management & supervision Daily site safety walk - management Weekly safety audit – safety committee Incident investigation & feedback to workforce Manage By Walking Around – MBWA
Reaction to crises	Because crises increase the potential for organizational learning, leaders can reinforce values, and desired behaviors during such times.	Focus on learning what caused the incident rather than on assigning blame. When an incident occurs, demonstrate concern for the individual(s) involved.

Table 1. Leader behavior/activities to embed a desired safety culture (continued)

Mechanism	Explanation	Examples
Allocation of resources	Leaders communicate their values through their allocation money and time.	Provide adequate numbers of safety personnel. Provide sufficient quantities of PPE. Allocate time to discuss safety at the beginning of every meeting.
Role modeling	Leaders further communicate their values and expectations through their own actions and behaviors.	Institute a training program for supervisors and managers that identifies values and expected behaviors and teaches ways to model them. Have safety conversations. Take daily site safety walk.
Allocation of rewards	Leaders communicate the values through selection of individuals for formal recognition.	Institute an ad hoc safety recognition program – on-the-spot recognition of organization’s individuals for safe behavior. Institute a formal safety recognition program for milestone achievement.
Criteria for selection and dismissals	Leaders make explicit the behaviors expected of all employees by selecting candidates who possess those characteristics and dismissing those who do not.	Include safety as part of selection and dismissal criteria for foremen and supervisors. Make the completion of a training program for supervisors a prerequisite for selection.

In addition, leaders may use secondary mechanisms to articulate and reinforce the values, beliefs, and assumptions of the desired culture. These mechanisms include the following:

- the organization's design and structure
- the systems and procedures employed in the organization
- the rites and rituals of the organization
- the design of physical facilities
- stories told about important events and people
- formal statements of the organization's philosophy, creeds, and charters.

These mechanisms address the espoused values and beliefs of the organization and the artifacts or manmade manifestations of the organization's culture.

Leadership is a process of social influence, i.e., getting a person to do something that is based upon communication. Every action of a leader, whether it be verbal, written, or behavioral, communicates a message. The message that is communicated is dependent upon people's perception of the action.

An effective leader must have a vision of the desired culture—an understanding of how a proposed action will contribute to establishing that culture in the organization. He or she must know the intended message of the action and anticipate how that action may be perceived by subordinates. Because the message may be perceived differently than it was intended, a responsive leader may sometimes need to modify the intended action to ensure that the intended message is communicated.

If a leader walks through a construction site, observes unsafe acts, and does nothing to correct the unsafe acts, the leader is communicating the message that unsafe acts are acceptable on the project. Conversely, if the leader sees an unsafe act and engages the unsafe worker in a dialogue about working safely, the message communicated is that unsafe acts are not acceptable and that safety is important. It is incumbent upon

every leader to understand the action that they are about to take and the message that that action sends to people.

The focus of this research was on the actions and behaviors of individuals in formal leadership positions in the project hierarchy. In addition to examining the actions and behaviors of leaders by position in the hierarchy, our analysis also examined the consistency between the leaders in the various hierarchical positions to identify differences and the possibility of mixed messages being sent.

To guide the research, the following model was developed:

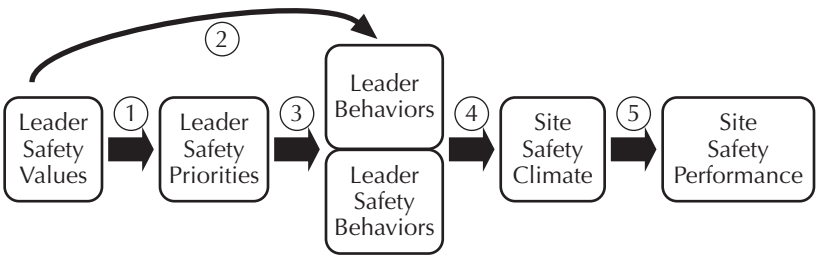


Figure 2. Research model

The links or relationships studied were the following:

1. **Leader Safety Values → Leader Safety Priorities:** Safety values are those elements of safety that are intrinsically valuable or desirable. For example, most people will value an injury-free workplace. In their own right, safety values are of some interest. Of greater interest is their influence on individual intention and behavior. People seek congruence in their lives. Toward that end, people’s behavior will reflect their values. If a person values an injury-free workplace, he or she will behave in ways that demonstrate the priority they attach to the injury-free workplace. Thus, it should be expected that leader safety values and leader safety priorities should be related.
2. **Leader Safety Values → Leader Behaviors & Leader Safety Behaviors:** Similarly, safety values should influence a person’s intention and behavior in general and, specifically, behaviors related to safety. Leader safety values should be related to the leader’s behaviors and safety behaviors.

3. **Leader Safety Priorities → Leader Behaviors & Leader Safety Behaviors:** To minimize dissonance, people will behave to ensure congruence. Therefore, leader safety priorities should be related to the leader's behaviors and safety behaviors.
4. **Leader Behaviors & Leader Safety Behaviors → Site Safety Climate:** Safety climate may be defined as the perceptions of the policies, procedures, practices, and rewards employed by an organization to achieve its safety objectives. It is not what is on paper that is important, but what management actually says and does. Leader behaviors related to implementing and enforcing the project's safety program and rewarding safe behavior should result in an improved site safety climate. This would be evidenced by positive relationships between leader behaviors and site safety climate.
5. **Site Safety Climate → Site Safety Performance:** A strong site safety climate reflects strong perceptions that policies, procedures, practices, and rewards are in place to provide a safe workplace. Improving site safety climate should be reflected in better site safety performance. If site safety performance is represented by the lagging Recordable Incidence Rate, there should be a negative relationship between site safety climate and the Recordable Incidence Rate.

Thirty-one projects participated in the study. A total of 3243 individuals participated, including 456 individuals in leadership positions. Using nine items from work by Zohar—a leading safety researcher—three safety value scales were identified:

1. injuries are preventable
2. an injury-free workplace is important
3. management is responsibility for a safe work place (Zohar 2002).

Also, five safety priority items were used to assess leader priorities (Zohar 2002).