

LIFE ON THE LINE: INSIGHT FOR IMPROVING SAFETY CULTURE IN  
ORGANIZATIONS

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**APPROVAL PAGE**

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### **Abstract**

This project seeks to understand safety cultures in organizations and how the safety culture can be improved as a result of an implementation of a Safety Culture Model and a seven step process for emergency response for many industrial organizations. Using an interpretive approach, the researcher created a model for including safety culture in training methods, and evaluated the perceptions of safety culture by doing a pre-interviews and post-interview with prominent individuals in various organizations. Literature on organizational culture and occupational health and safety is discussed to find contributions and determine the importance of a clearly understood safety culture at industrial facilities.

**Key Words:** Organizational Culture, Safety, Occupational Health and Safety, Emergency response

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Through this project, I have been able to develop relationships with several organizations in Utah. I want to thank all those organizations that participated in this study. It is my hope that

this project will be able to help them improve the safety culture in their organizations and most importantly help them understand the need for continued training.

Thanks,

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## Rationale

### Recent Statistics

In the year 2009, there were a total of 4,340 recorded fatal injuries in the workplace (US Bureau of Labor Statistics, 2009). The statistics show that twelve workers died on the job each day in the U.S. last year. Although, fatalities are on a decline from previous years, one could argue that there are 4,340 too many deaths in the work place. This project has developed methods to improve safety culture especially in emergency response situations for industrial organizations.

Recordable injuries are one method a company can use to determine how its safety performance is in relation to similar companies in the same industry. The Occupational Safety and Health Administration (OSHA) requires these to be listed on the OSHA 300 form that must be submitted to OSHA on Dec 31<sup>st</sup> each year and must be posted at the workplace during the entire month of February.

According to Dr. Williamsen (2007), Hienrich, a top performing 1,000-employee site industrial manufacturer with commendable recordable rates of under 0.7 injuries per hundred employees per year, learned the hard way after 3 fatalities within six months. He writes, "Your safety culture, whatever condition it is in, isn't something that takes care of itself" (Williamsen, 2007). Which begs the question, how do you create a positive safety culture in an organization? According to Zoller (2003), "Improvements in occupational health and safety cannot be made without adequate understanding of the hazards employees face in the work process" (p. 118). Organizations must focus on hazard identification as part of their safety culture assessments.

## **Cost**

When looking at the big picture, organizations must assess the costs associated with improving the safety culture and ultimately ask, “Is it worth it?” In 2005, the British Petroleum (BP) refinery in Texas City, Texas exploded resulting in 15 fatalities, 170 injuries, property damage and environmental damage. BP agreed to pay an Occupational Safety and Health Administration (OSHA) fine of \$50.6 million not to mention the billions of dollars in EPA violations, litigation defense, civil and criminal settlements, public relations costs etc. BP agreed to allocate a minimum of \$500.1 million for families and workers now working at the refinery (US Bureau of Labor Statistics, 2009). The financial question is, ‘If industrial organizations assess the cost invested in training and internal audits, will they find that these cost are substantially less than paying OSHA fines and increased workman’s compensation?’ Organizations must conduct a cost/benefit analysis to evaluate the benefits of training and internal audits versus the costs of OSHA fines, workman’s compensation, reputations, lost time, and fatalities.

Intermountain Technical Solutions (ITS) is an environmental health and safety training and consulting organization which specializes in working with industrial facilities and offers compliance training to organizations at competitive rates. Hazardous waste facilities or industrial facilities that handle or manage hazardous materials and have the potential for an emergency chemical spill, must train their employees in initial 24 hour Hazardous Waste Operations and Emergency Response Course (HAZWOPPER) and 8 hour annual refresher (OSHA Standard 1910.120) if they expect those employees to respond offensively to those spills. The training and services that ITS provides assists organizations in identifying potential OSHA violations and gives organizations recommendations in improving workplace safety. Also, it allows

organizations the time and knowledge to fix or change unsafe or illegal practices before being officially audited by OSHA. The math alone provides a strong argument to persuade organizations to invest in health and safety training. Organizations could pay a few thousand dollars in preventative training and consulting, or potentially pay several millions in OSHA fines for complacency and non-compliance.

ITS is a company that has been in business for over 19 years, and has taught regulatory training at industrial facilities in 46 states and has even taught in Mexico and Canada. ITS charges a consulting and training fee consistent with industry standards and for auditing and consulting services.

In the several years of business ITS has not completed any academic studies that would suggest the training and services they provide in fact does improve the safety culture for industrial organizations. This project serves as a tool for ITS by providing academic credibility and justification for the training and services offered. This project also gives IT'S A safety culture model to use in training.

## **Requirements**

OSHA has imposed a "general duty" to provide healthy and safe work environments (Zoller, 2003). The Department of Labor creates standards, then the Occupational Safety and Health Review Commission reviews these standards and the National Institute for Occupational Health and Safety provides OSHA with established scientific facts it needs to create regulations (Noble, 1997). According to OSHA regulation, 1910.120 called HAZWOPER, individuals who wish to be trained as an incident commander are required to receive approximately 40 hours of training. A large portion of the training offered by ITS, is centered on emergency response. Organizations may require individuals who serve on the emergency response team to attend the

40 hour class. However, this is just one area covered by OSHA regulations. For example, OSHA standards cover safety areas which include but are not limited to: Fall Protection, Confined Spaces, Respiratory Protection, and Lock Out/Tag Out (regulation for protecting workers from stored energy).

However, most of the OSHA standards are preventative, and are established to prevent injury and fatality. Once an industrial incident or natural disaster occurs there is a paradigm shift. The shift transfers from a day-to-day frame of mind into an emergency response frame of mind. Focusing on the emergency response aspects of safety merits further study because all emergencies are not the same. Emergency preparedness improves the organizational safety culture and gives employees in the organization the confidence required to respond and manage the emergency in an effective way.

### **Incident Command System**

The design for a command system built around a standardized system of organization, and the resource identification necessary for managing emergencies. The system is called the Incident Command System,(ICS). The primary objective of the ICS is the management of resources for effective and efficient control of any emergency situation. The system has been designed for day-to-day disaster situations for single or multiple agency response and for all hazards. In 2005, the Federal Emergency Management Agency (FEMA) expanded the Incident Command System and added a new guideline called the NIMS system or National Incident Management System. The NIMS system outlines how multiple federal, state and local agencies will interface to manage a significant or large scale emergency.

The remainder of this project details review of the literature organized topically. Following the literature review is a method section where I outlined the focus of this project and

how it is executed. After the method section, a results section is provided to focus on the objectives of this project. A discussion section explains the meaning of the results and elaborates on limitations and recommendations on future studies.

## **Literature Review**

A topical literature review is used for understanding contributions of specific areas and determines where this project fits in the puzzle of communication research.

### **Organizational Culture**

In order to create or achieve a positive safety culture and seek methods for improving safety cultures, researchers must come to an understanding of what organizations are and how culture influences organizations. To study organizations and communication, systems theory is a good starting point (Pacanowsky & O'Donnell-Trujillo, 1983). The study of organizational communication is not so much one phenomenon, but of two – Organizations and Communication. The systems theory approach sought to find corresponding expressions in system terminology (Pacanowsky & O'Donnell-Trujillo, 1983). Pacanowsky & O'Donnell-Trujillo have concluded, "Communication became the act of transferring, processing, and storing subsystems or environmental information, and organizations became information processing systems" (p.132).

In the organizations that exist today, this idea of system theory still resonates. Organizations still process information that is being communicated to the organization. In emergency scenarios, individuals who are in the incident command system must be able to process the information in the scenario and communicate the best options for management.

Organizational culture is a phrase that may seem relatively new when applied to organizational communication. According to Pettigrew (1979), "Each organization has its own way of doing what it does and its own way of talking about what it is doing, and to the outside researcher there is no phrase more capturing what is both so unique and more natural to the

insider as ‘culture’” (p. 128). More broadly, in studying organizational culture, an interpretive approach is called for. An interpretive approach allows researchers to view truth as subjective and to stress the participation of the researchers (West & Turner, 2010). For this approach, we look to Clifford Geertz (1973) and his early theories of culture. He writes, “Webs of significance that man himself has spun” (p. 5). Spun webs also imply the act of spinning which indicates methods the individuals in the culture use in order to co-create the culture. Geertz’s theory is entirely interpretive because the research assesses the culture from an objective standpoint. Suggesting all data is interpreted on a case-by-case basis. Therefore it is pivotal that we study structures of the cultural webs, and also the means by which the webs are spun (Pacanowsky & O’Donnell-Trujillo, 1983).

Pacanowsky and O’Donnell-Trujillo (1982) developed a method for assessing organizational culture using six communicative practices. These communicative practices are:

- 1) Facts – What does the culture think?
- 2) Practices – What does the culture do?
- 3) Vocabularies – What does the culture say?
- 4) Metaphors – How does the culture say it?
- 5) Stories – What does the culture narrate?
- 6) Rites and Rituals – What does the culture enact?

In assessing the culture using these six communicative practices the researchers can better understand the “Webs of significance” used by Geertz (1973). ITS has a tremendous opportunity to assess cultures because trainers work closely with the organizations and the predominate individuals (safety managers, supervisors & facility managers) in the organization who are responsible for improving the safety culture.

In the safety culture model that ITS uses in training for assessing and improving safety includes a slightly modified version of Pacanowsky & O'Donnell-Trujillo's (1983) communication practices. The modification is found in communication practice #3 from Vocabularies to Values.

### **Change in Culture**

Traditional researcher Smircich (1981) studied artifacts or observable features of the culture to understand strategies for change in culture. In the safety culture model, the observable artifacts are described in the interpretative approach as a fact. Researches can use the facts to understand the safety culture. Facts are often found in concrete statistics of the organization. To find safety facts, questions are asked: What was the organization's Recordable Injury Rate (RIR)? How many fatalities did the organization suffer last year? These facts are difficult for the organization to hide because of its concrete nature.

Eisenberg and Goodall (1993) defined culture primarily in terms of practices rather than values. Eisenberg and Goodall (1993) claim anthropologist have rejected the idea of culture as shared meaning, they say, "nothing in the culture analysis requires that values be shared" (p.152). For the purposes of this project I agree with Eisenberg & Goodall and argue that a positive safety culture is where individuals in organizations are continually making positive decisions in regards to the safe work practices. For example, a safe work practice would be complying with federal regulations. If a worker is required to work at elevated heights, a safe work practice is to have the worker apply fall protection into the work assignment.

Contrary to Eisenberg & Goodall, I feel values must be shared by all individuals in the organization. Anthropologist Haviland (1993) says, "Culture consists of the abstract values,

beliefs, and perceptions that lie behind people's behaviors... They are shared by members of a society, and when acted on, produce behavior considered to be acceptable within that society" (p.29). Many organizations consider safety to be a value that is consistent within the organization. They value the health and safety of their workers and many workers may believe the organization values health and safety. However, some workers may believe that the organization may value safety, as long as production is met. Concluding, if production is not met, the organization may value the product more than health and safety.

Assessing metaphors can help scholars understand the organizational culture. Daniels, Spiker & Papa (1997) suggests, "Metaphor analysis begins by recording the talk of organization members in interviews and discussions...Data also may be obtained from written records" (p.215). Therefore, as is be discussed in the method section, interviews were conducted in this project. Daniels, Spiker, & Papa (1997) provide the example of metaphor analysis with an interview question: "tell me how the organization operates" might prompt the interviewee to answer with "machine" metaphors.

We all enjoy listening to stories. Humans are definitely storytelling beings. Fisher (1984) contends that storytelling is central to the human experience...We make sense of the world around us by translating our experiences into stories that we share with others. We can learn about the safety culture of organizations by examining the stories of the individuals in the organization. Individuals may share stories that reflect their satisfaction of the safety culture that is established in the organization.

Workers in organizations can quickly assess the safety culture of the organization by how the organization acknowledges positive or negative safety. Daniels, Spiker, & Papa (1997) define

culture fundamentally when people come to share a common frame of reference for interpreting and acting toward one another and the world in which they live. They further explain that the common frame of reference includes customs and the customs are often reflected as rights and rituals. Managers and supervisors may do simple acts that recognize safe work behaviors or terminate employees who consistently engage in unsafe behaviors.

### **Organizational culture and leadership**

According to Schein (2004), organizational culture is the sum of all the shared assumptions that a group has learned throughout its history. Then Schein (2004) writes, “Assumptions are the way people make sense of reality; they are shared ways of thinking, feeling, and perceiving” (p. 47). Many management scholars such as Collins & Porras, (2002); Koestenbaum, (2002); Schein, (2004) agree that a group leader is responsible for defining reality and to accept the challenges of identifying dysfunctional assumptions and influencing the creation and adoption of new influences that will guide decisions leading to organizational success. Schein (2004) also states, “The ultimate challenge of leadership is the ability to perceive the limitations of one’s own culture and initiate the process to make it more successful.” I argue that the leaders in organizations are responsible for creating a positive safety culture. These leaders in industrial organizations are: corporate managers, facility managers, safety managers, supervisors, and Incident Commanders in emergency scenarios.

### **Occupational Health and Safety**

In previous literature, many scholars (see for example, Gay, (1997); Erickson, (2000); & Weinstein, (1996) argue, an “infrastructural approach” to risk communication that opts for cultural interpretation, seeking to know the ripple effect by which information and opinion make

their way through networks of individuals and institutions. Gay (1997) wrote, “When the occupational health literature does not address organizational culture, it tends to construe culture as a product of managerial values that influences employee compliance with safety procedures” (p. 342). Unfortunately, many organizations rely on the management system to enforce safety, whereas safety is looked upon by workers as mandatory instead of desired. Trainers for ITS have observed the change in attitude toward safety among workers when management is present.

Some scholars (Locke, 1969; Muchinsky, 1977) have studied culture from a functionalist approach, seeking to understand occupational satisfaction. Locke (1969) wrote, “Job satisfaction refers to the pleasurable emotional state resulting from the appraisal of one’s job as achieving or facilitating the achievement of one’s job value” (p. 321). In Locke’s (1969) study, he equates positive safety culture with job satisfaction and organizational commitment. The main approach that ITS uses in its training is to emphasize a key value that resonates with all employees. That value is “life.” By making claims regarding life, employees understand the importance of working safely in order to ensure a healthier life. Intermountain Technical Solutions, Inc. emphasizes that safety should not be a priority that can be changed from month to month as situations and conditions change, but rather a value that is inherent and engrained in everything we do and does not waiver or fluctuate with time.

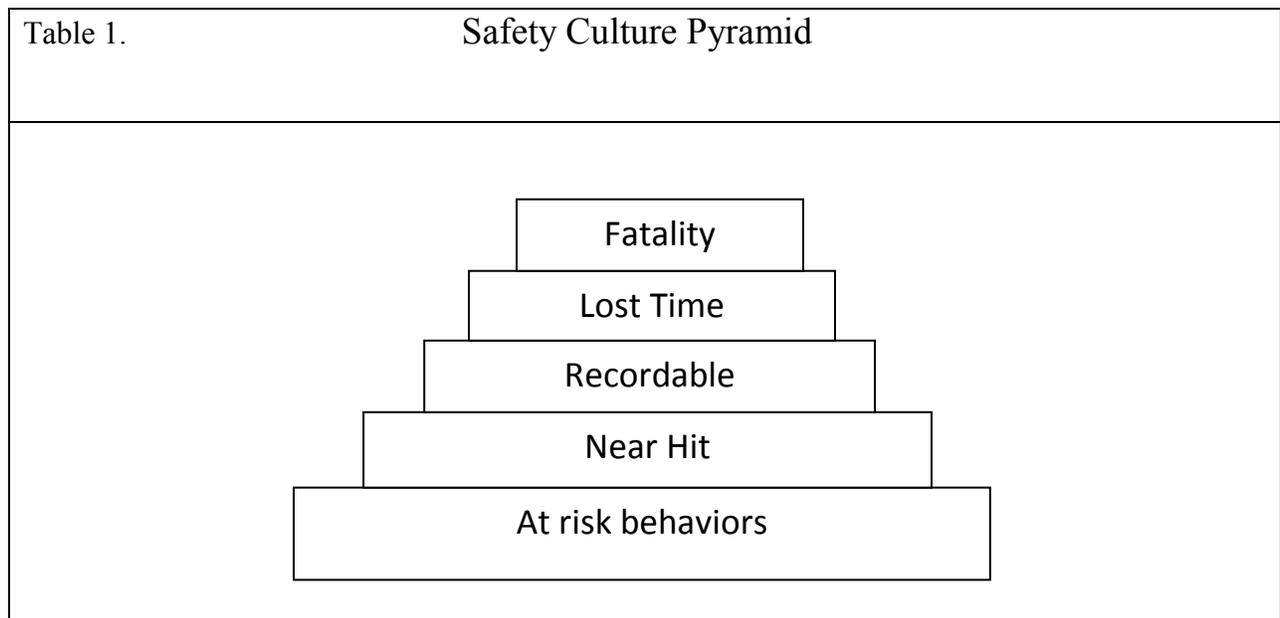
### **Improving safety culture**

Much of the literature addresses improving safety cultures. Ken Blanchard wrote, “The reality is, every culture has a ‘safety culture’ – whether good or bad. What all organizations need is a culture of safety, where everyone takes personal responsibility for their own safety as well as those around them (p. 2)” in (Anderson & Lorber, 2006). I would agree with Blanchard and

suggest that the surest way to improve a safety culture is with everybody at an individual level. However in a corporate culture, the safety culture change has to start with a 100% commitment from owners and managers.

According to Choudhry, Fang & Mohamed (2007), safety culture is thought to influence the employees’ attitudes and behaviors in relation to an organization’s ongoing Environmental Health and Safety performance. I believe the most difficult aspect of achieving a positive safety culture is ensuring the attitudes and beliefs of all employees are congruent.

Anderson & Lorber (2006), explain in their book titled, *Safety 24/7*, to understand a safety culture you must identify the Safety Culture Pyramid. The pyramid is described in table 1.



Anderson and Lorber (2006) suggest at the bottom of the pyramid is the “at risk behaviors”, “There are things people do, day in and day out, that put them or someone else at risk” (p.15). Like the pyramid suggests, at risk behaviors can quickly escalate to more severe consequences. Near hit is often refers to an incident that occurs where some say, “they got

lucky!” The terminology is used to lessen accountability of the poor at risk behavior that was a result of a near hit. According to OSHA, a recordable injury is an injury that includes but is not limited to: A cut requiring stitches, loss of consciousness, sprains or strains, and additional medical attention (US Bureau of Labor Statistics, 2009). The next step on the pyramid is “lost time.” Anderson & Lorber (2006) explain lost time is an injury severe enough that a worker cannot return for the next scheduled work day. Finally, a poor at risk behavior can quickly escalate to a fatality if the hazards are not properly assessed. A modified Safety Culture pyramid will be used as part of the Safety Culture Model created in this project.

Carillo (2004) states:

“Since safety culture plays a role as both cause and prevention of mishaps, understanding the role culture plays means looking beyond the individual behaviors, the equipment and technical failures to a mindset that says incidents happen because of normal behaviors” (p. 48).

Incidents happen in large because of cultural conditioning in combination with predictable but unexpected events. For example, one could argue that the 2010 BP oil release in the gulf happened because of a faulty valve. There is some evidence that workers were aware of the faulty valve and could predict a major release but did not know when.

One may argue safety culture starts from the top-down ripple effect. According to Carillo, (2004) Improving safety culture starts with leadership; “The leadership journey begins with the examination of one’s own assumptions... A leader begins a culture change with his/her own false assumptions first and creating opportunities for others to follow (p. 49).” Instead of a

managerial approach to change, safety culture can only change because of leadership. The leader must understand the values and beliefs of the workers. Carillo (2004), later emphasizes:

Managing, shaping, and creating culture is a leadership competency. Any attempt to work at the cultural level requires patience and willingness to make corrections and apologies along the way. The latter helps maintain the trust level a leader needs to be effective.

This project finds that an incident commander in emergency situations acts as the primary leader in the emergency and has the responsibility to manage, shape and create a positive safety culture.

Using the modified framework developed by Pacanaowsky & O'Donnell-Trujillo (1983) and other contributing research, leads us to pose these research questions:

RQ 1: How will the creation and implementation of a safety culture model improve the safety culture perceptions for industrial organizations?

RQ 2: Does the implementation of Pacanowsky & O'Donnell-Trujillo's (1983) framework improve the safety culture training provided by Intermountain Technical Solutions.

## **Method**

Over the years, ITS has developed training material to present while training which serves as a visual aid in the learning process. Some of the materials were developed especially

for emergencies that are found in the appendices. Appendix A is a handout of the basic responsibilities that the Incident Commander and his/her staff has in emergency situations. Appendix B is a chart that lists the hierarchy of command and the roles each individual must fulfill. Appendix C is the seven step process for incident management that assists emergency responders in managing the emergency in an organized chronological order as developed by ITS.

In addition to what has already been created by ITS, I created an interview guide (Appendix D) that is used to ask questions concerning safety culture. The same interview guide will be used for a pre and post interview. A safety culture model (Appendix E) is used in trainings that are provided by ITS in efforts to successfully educate employees on the importance of safety culture.

This project was designed and executed as follows:

- 1) Conduct pre-interviews (using Appendix D) with prominent individuals (corporate managers, facility managers, safety managers, supervisors, general laborers, and Incident Commanders in emergency scenarios) in the organizations.
- 2) Assess the safety culture using the modified Pacanowsky & O'Donnell-Trujillo's (1982) six communicative practices for assessing culture.
- 3) Take the mentioned materials (Appendix A, B, C, & E) and training techniques developed by ITS to several industrial organizations in Utah,
- 4) Train individuals using those materials and techniques,

- 5) Conduct post-interviews (using Appendix D) with prominent individuals in the organization.
- 6) Assess the safety culture using Pacanowsky & O'Donnell-Trujillo's (1982) six communicative practices for assessing culture.
- 7) Assess the pre and post interviews to determine whether or not there were any improvements to safety culture, by using a coding scale of positive, neutral, and negative.

During the early stages of this project, the researcher and fellow trainers working with ITS had several opportunities to visit industrial organizations such as: Kennecott Copper Mine (mining), Fairchild Semiconductor (technical), Nestle (food processing), ATI (chemical processor), and Clean Harbors (hazardous waste treatment and disposal). There is a vast range in industrial type. The mentioned organizations were randomly selected to represent other companies within their particular industry. The trainers conducted emergency response training using the materials that were and will be developed by ITS, as well as the safety culture model developed in this project.

### **Theoretical Framework**

A rhetorical analysis was conducted on the responses from individuals in the organizations using an answer sheet from interview questions that were derived from Pacanowsky & O'Donnell-Trujillo's theoretical framework of assessing culture. This framework is divided into six practices that help researchers assess organizational safety culture. These practices are:

- 1) Facts – What does the culture think?
- 2) Practices – What does the culture do?
- 3) Values – What does the culture value?

4) Metaphors – How does the culture say it?

5) Stories – What does the culture narrate?

6) Rites and Rituals – What does the culture enact?

Examples of comments that indicate facts may include comments from Safety

Manager Rick Harrison's comments, "It has been 341 days since our last recordable injury." It is a fact that 341 days have passed since their most recent recordable injury.

An example of practices is an organization's efforts to "Ensure workers have been properly trained before working at the hazardous waste sites." This response would indicate a positive comment because hazard training is a positive action. What we really want to know in regards to practices are the safe behaviors workers are engaged in on a continual basis.

An example of values would be perceptions workers have about the organization and the values expressed. For example, researchers may expect an individual to claim, "None of the accidents we experienced resulted in lost time." This comment would be a positive indicator of values because the perceived values in this comment are the ability to work, and safety.

Metaphors are described in statements such as: "Our safety culture is better than BP's safety culture, that's for sure." The comparison is made with British Petroleum (BP). Most organizations in the similar industry would say that BP has a poor safety culture and use BP's history and reputation as a comparable metaphor, and would indicate a positive comment.

An example of stories include a comment from individuals that illustrate the overall safety culture. Interviewees may tell a story about an incident or accident that reflects the safety of the organization. A response may be, "remember when John burned himself on the grinder." Even though John's experience was very unfortunate, the comment would be positive because

learning from stories to be safer would be the primary purpose of stories. The Chemical Safety Board which was created as a national investigative board, tells a video story of each accident they investigate that resulted in fatalities. They currently have over 20 such video stories available to review or download on their website ([www.csb.gov](http://www.csb.gov)).

Finally, an example of rites and rituals include special incentives the organization offers for positive safety culture. It may also include methods the organizations uses for consequences of poor safety culture. A ritual could be terminating an individual based on unsafe work behaviors or rewarding the employee with a jacket for achieving a safety goal. For the purpose of this project, positive indicators of rites and rituals would be comments from interviewees suggesting there are incentives or recognitions for safe work behaviors.

By using this framework for assessing culture we determined whether or not the materials and training methods developed by ITS are useful in improving safety cultures at industrial facilities.

## Results

To protect the identity of the interviewees and the reputation of organizations who participated in this project; interviewees are identified by their position with the organization i.e. Safety manager, supervisor, or a pseudo first name. The name of the organizations will not be released in this project. However, I will share the data with future researchers upon approval of interviewee and organization.

### Pre-Interview

A total of 84 responses were collected for this project. The pre-interview consisted of 21 responses that served as a foundation to this study. After coding the responses as positive, neutral or negative the trainers summed the totals for each interview. Simple agreement was conducted with 98 percent coder agreement. The coders for this project were professionals in the health and safety industry. In the pre-interviews we determined 13 responses were positive, 2 neutral responses, and 6 negative responses. There were 67 percent positive responses in the pre-interviews. The responses were grouped upon the question on the interview guide (appendix D).

The first question on the interview guide asked interviewees to describe their current safety culture, sixty-seven percent of the responses for this question were negative comments. With such a high number of negative responses it was important for researchers to note that there is a lot of room for improvement. Negative responses include facilities supervisor Paul's comments, "Our safety culture has improved, but it is still lacking." This response is negative because a lacking safety culture is still a poor safety culture. A positive response for describing safety culture is safety manager Trey's comments, "We've had a major focus on safety culture

and the safety items that need to be addressed in our organization.” This response is very positive because organizations need to address safety culture for their employees.

When asked the second question on the interview guide in regards to stories, all responses indicated positive comments. In this sense, all organizations have stories to share to promote safe work behaviors. Unless the organization is newly developed, then there has not been adequate time for stories to generate. Some stories shared by safety managers include: “Juan got burned pretty bad. I was the one who had to take him to the hospital...” and “Toby cut his fingers and on his way to the bathroom to clean it up he passed out, hitting his head while falling...he hasn’t come back to work.” The lessons learned in these cases will prevent future accidents in the workplace.

The Third question; “Has your company had any recordable injuries, lost time, or fatalities in the last year?” Researchers noted 33 percent of responses were negative. For this question, the fewer negative responses would indicate a positive safety culture. Some negative comments include an Environmental health and safety coordinator saying, “We have had 14 recordable injuries, one lost time injury and no fatalities...In 2008 we had a nearly perfect record but we have doubled since then.” For year to year, organizations try to minimize these facts to promote a more positive safety culture.

The next question was used as an indicator of rites and rituals specifically in regards to incentives and recognitions for safe work behaviors. Of the responses, 30 percent of interviewees indicated positive comments. Jerry said, “If we can go 100 days without any lost time injuries management provides lunches for all employees...we even get a 2% increase in salary if we reduce OSHA recordable injuries.” This is a positive comment because the organizations take

action to provide incentives for safe work behaviors. There were a few neutral comments as well, Sally says, “Not really, the organization figures if you are safe the incentive is going home to your family every night... that should be incentive enough.” This comment reflects a neutral response because going home to your families every night is an indirect incentive not provided by the organization but ensured by each worker and his/her safe behaviors.

When addressing the metaphors in a safety culture, nearly 65 percent of responses indicated positive comments. Interviewees who responded positive said, “There have been lapses in judgment over the years...the guy who has worked 30 years on the job is just as guilty as the guy who is in his first month on the job.” This comparison is used to place accountability on all workers not just the new guys. Also, safety supervisor Clarence said, “We use comparisons from the past and also use comparisons from other companies in our industry.” These help organizations assess their position when placed against other organizations in their unique industry.

Values are one of the aspects used to assess a positive safety culture. When coding, all responses that indicated safety or health or employees as the primary value were noted as being positive. There were not any negative responses in the pre-interview were noted by coders. A negative response would be a comment from a supervisor, “Every incident is avoidable...safety is a priority.” This is a negative comment since many researchers argue that priorities change and values do not change.

The question that indicates the practices in organizations that promote safety was noted by researchers as 100 percent positive. Every organization has implemented strategies for safe work behaviors. A safety manager said, “We instruct workers to wear proper personal protective

equipment (PPE) and to be trained.” A general laborer Sue said, “Wear fall protection when above 6 feet and to use sound common sense.” Several safe work behaviors are simple to implement because not only are they enforced by organizations, they are also enforced by OSHA.

Table 2.							
Pre-interview Results							
<b>%</b>	<b>Overall</b>	<b>Stories</b>	<b>Facts</b>	<b>Rites/Ritual</b>	<b>Metaphors</b>	<b>Values</b>	<b>Practices</b>
<b>Positive</b>	<b>67</b>	<b>100</b>	<b>64</b>	<b>30</b>	<b>65</b>	<b>90</b>	<b>100</b>
<b>Negative</b>	<b>24</b>	<b>0</b>	<b>33</b>	<b>64</b>	<b>25</b>	<b>0</b>	<b>0</b>
<b>Neutral</b>	<b>9</b>	<b>0</b>	<b>3</b>	<b>6</b>	<b>10</b>	<b>10</b>	<b>0</b>
Post-interview Results							

<b>%</b>	<b>Overall</b>	<b>Stories</b>	<b>Facts</b>	<b>Rites/Ritual</b>	<b>Metaphors</b>	<b>Values</b>	<b>Practices</b>
<b>Positive</b>	<b>57</b>	<b>77</b>	<b>77</b>	<b>55</b>	<b>66</b>	<b>80</b>	<b>89</b>
<b>Negative</b>	<b>17</b>	<b>0</b>	<b>20</b>	<b>35</b>	<b>34</b>	<b>15</b>	<b>3</b>
<b>Neutral</b>	<b>26</b>	<b>23</b>	<b>3</b>	<b>10</b>	<b>0</b>	<b>5</b>	<b>8</b>

### **Post-Interview**

While analyzing the results of the post-interview the researchers concluded that the total of positive responses decreased to 57 percent from 67 percent in the pre-interviews. Interestingly enough the number of neutral responses increased from 9 percent in the pre-interviews to 26 percent in the post-interviews. The decrease in positive responses may be contributed to the increase in neutral responses. Further discussion of the results will be outlined in the discussion section.

Ironically when asked question number one on the interview guide, researchers noted an increase in positive responses from 33 percent to 44 percent in the post-interview. This finding is ironic because although interviewees described a more positive safety culture in the post-interviews the overall positive responses decreased 10 percent. Positive responses for question one would include very similar responses as the pre-interviews such as safety manager Randy's comment, "Our safety culture is very proactive." And a health and safety coordinator Tina's response, "Our safety culture would receive a letter grade of an A- which is great!" The researcher agrees, when individuals perceive a positive safety culture, the actual safety culture will be congruent with the perceptions.

In question number two on the interview guide, 77 percent of responses indicated stories are indeed shared stories in relation to safety. Researchers did note that 23 percent of comments indicated neutral responses leaving zero negative responses. A positive response indicated comments providing a story. A neutral response would be equipment supervisor Kerry's comment, "Oh yeah...we have a lot of stories...but I cannot think of a particular story off hand." Without receiving a particular story, researchers cannot identify this response as being positive.

Many facts were shared in question number three on the interview guide. Researchers looked at industry averages for recordable injuries found on OSHA's website to determine whether or not the number of recordable injuries provided by interviewees were positive or negative. Danny is a manager whose comments suggested that his organization sustained 22 recordable injuries. We look at OSHA's industry average for this particular industry was 16 recordable injuries for the same number of workers suggesting Danny's organization had 6 more recordable injuries than industry averages which would indicate a negative response. Some positive responses would be safety manager Stan's response, a safety manager said, "We have gone 750 days without an incident." Which would indicate a very positive response because that is less than the industry average? There were 77 percent positive responses in this category.

Rites and rituals were indicated by the incentives and recognitions that are offered by organizations. Researchers found 55 percent of organizations did offer incentives and recognition for safety which reflected positive comments. Please note: This does not necessarily mean that organizations that do not offer incentives or recognitions have negative safety cultures. Researchers found most positive comments would reflect organizations providing lunches, gift cards, and even reflections for quarterly evaluations.

Metaphors are often used to provide examples or comparisons for safety cultures. In the post-interviews, researchers found 66 percent of organizations used metaphors indicating positive comments. Team leader Katrina commented, "If an incident occurs, we immediately put it on the table to discuss." Now, metaphorically when they put incidents on the table everyone in the organization, especially those involved in the incident, have the opportunity to provide input on the incidents in hopes that they can prevent similar incidents from occurring again.

Question number six had 80 percent of the organizations interviewed responding positively, which indicated a strong value of the health and safety for workers. This was disheartening to find out because it reflected a 10 percent decrease from the pre-interviews. A negative response is indicated by the safety manager Stan's comments, "There is a desire but no encouragement...self preservation...in other words you got to watch out for yourself." This is a negative response because employees would hope that the organization has their best interest and safety in mind when performing a task instead of placing all accountability and responsibility on the workers. In this case, if the organization really valued its workers they would keep the health and safety of all workers in the forefront.

Finally, question number seven had organizations that positively engaged in safe work behaviors responding with 89 percent of the comments. This indicates organization have developed strict work practices that are consistent with OSHA regulation or strict company policies that are enforced to keep workers as safe as possible. A positive comment is Jake's response, "The organization has a responsibility to ensure workers are not taking risks and observe safe work programs." The safe work practices are key in preventing accidents and injury. Many responses, primarily from safety managers indicated the fulfillment of training requirements is a work practice that is crucial to minimize incident and error.

## **Conclusion**

RQ 1: How will the creation and implementation of a safety culture model improve safety culture perceptions for industrial organizations? By implementing a safety culture model for industrial organizations, they can use the model to assess their current safety culture and make adjustments to their safety culture based upon the perceptions individuals had about the lacking areas that are revealed by using the safety culture model.

RQ 2: Does the implementation of Pacanowsky & O'Donnell-Trujillo's (1983) framework improve the safety culture training provided by Intermountain Technical Solutions? By using Pacanowsky & O'Donnell-Trujillo's (1983) framework that was applied to the safety culture model will improve the safety culture training provided by ITS because it helps trainers get an accurate assessment of the perceptions found in an organization's safety culture. Trainers can ask individuals in the organization questions found on the interview guide and apply the framework for assessing safety cultures to help individuals in organizations with the deficiencies found in the organization's safety culture.

## Discussion

This discussion section addresses several key components which include: Importance of findings, Limitations, Future Research, and Final Thoughts.

### **Why are the findings important?**

Interviewees responded 67 percent positively in the pre-interview when describing their current safety cultures and 57 percent positively in the post-interviews. This finding would indicate that safety culture perceptions are more positive when there is not an adequate assessment of their safety culture. When comparing their safety culture to nothing, interviewees may feel the safety culture of their organization is more positive. Once a proper assessment of the safety culture occurs (using the safety culture model) interviewees then perceived their safety culture to be more negative than originally thought. Common responses researchers noted, particularly in the construction industry, after the project included: “I really didn’t think our safety culture had some gaps before using this model.” The safety culture model helps organizations identify areas in the safety culture that need improvement.

Stories are very crucial to improving safety in industrial organizations. Researchers concluded that the more stories that shared in the organization, reflects a more positive safety culture. The stories shared are most commonly of incidents in the workplace where injury has taken place or nearly happened. Every story shared helps employees understand the risks and hazards associated with the particular task or assignment. The more risk and hazard assessment techniques that workers continually engage in, the more likelihood workers have to prevent accidents and injuries.

We found prior to this project, organizations assessed their safety culture almost exclusively on the facts in the organization. “How many recordable injuries, lost time injuries, or fatalities have you had?” - was the big question that is often asked. The fallacy in assessing safety using only facts are: some organizations may have several recordable injuries but very positive safety cultures. Other variables must be considered as well. For example, how many workers are there per recordable injuries? This is why addressing a recordable injury rate (RIR) is crucial. A company with 14 recordable injuries per 100 employees will have a much higher (RIR) than a company with 14 recordable injuries per 1,000 employees. An organization may have a very positive safety culture the all of a sudden experience a tremendous freak accident causing several fatalities. Does that mean the organization has a negative safety culture? Facts are used under the assumption that we live in a perfect world. However, as we all know, we do not live in a perfect world. Accidents will happen.

Philosophies over rites and rituals may be one of the most widely disputed in organizations. Common debates are centered around this question: “Do we offer incentives or not?” Organizations that have a philosophy of giving incentives for safe work behaviors often argue that it is important for workers to know that management and leadership support safe work behaviors. However, organizations that do not believe in providing incentives or recognitions argue, “If we provide incentives for safe work behavior we don’t want workers to hide accidents or injuries for fear of not satisfying requirements for receiving incentives.”

Many organizations have found a compromise and offer smaller incentives upon situational circumstances. For example, one organization who participated in this project said, “If a worker does something safe or helps prevent serious injury, we will get together for some

pizzas.” Either philosophy however, was noted by researchers will result in positive safety cultures if the philosophy is executed correctly.

Metaphors really help promote positive safety cultures because they are used to assess how the organization is doing compared to other organizations in the same industry. Metaphors help by understanding the “big picture.” Most importantly, metaphors are used effectively in the language used by workers. For example, “Our safety runs like a well oiled machine” and “if an incident occurs we are going to table it.” This language is used in a positive sense to improve safety cultures.

Workers will engage in positive safe work behaviors if they have a genuine sense that the organization values their health and safety above all other values. Personally, I would not enjoy working for an organization that doesn’t value my health and safety. Negative comments that I have heard in organizations include: “Don’t worry about safety now, just get the job done.” This organization obviously does not value the worker’s safety, which translates to a very poor safety culture.

The safe work practices are very crucial in assessing a positive safety culture. As a researcher, I asked, “Are workers actively engaging in compliance of federal safety regulations required by OSHA, and/or following company policies and procedures to ensure their safety?” Regulations made by OSHA are a result of injury or accident. Therefore, the purpose of these regulations is to prevent future incidents to occur.

### **Limitations**

One of the major limitations the researchers noted was using the Utah organizations as the basis of this project. During the bulk of this research project the primary researcher of the

project traveled to 14 states to do training classes for various organizations. This project is very limited to industries in Utah. There are other industries in other states that could have been included in this project.

One limitation of this project is the amount of time and travel spent to effectively execute this project. Interviews were conducted over the phone. However, the trainers had to travel to the various organizations to conduct the training and launch the safety culture model. Some organizations had two or three weeks to assess their safety cultures using the model before researchers conducted post-interviews. Whereas, some organizations had a couple months to implement the safety culture model. Researchers were not very consistent with the amount of time allotted to organizations to use the safety culture model for their assessments.

One other limitation that researchers noted was the manner in which the model was presented to the organizations. There were three primary trainers who presented the safety culture model to the organizations. It was not feasible under the constraints of this project for one trainer to present to all organizations. Close communication checks of all trainers were kept to make sure all three trainers were consistent in the safety culture presentation.

Due to the nature of this project, I must not conclude without mentioning a limitation in transcribing the responses from subjects. In many cases, the subjects were very busy with their daily work tasks, when they had time to call me back to be interviewed, I did not have adequate technology for recording their answers. I had to transcribe the responses quickly on the interview guide. In some cases, the responses were limited to the timeliness of my typing. Examples of a pre-interview transcript are found in Appendix F. And an example of a post-interview transcript is found in Appendix G.

## **Future Research**

Researchers interested in this topic would have several directions to take this project. One idea for future researchers to pursue is to assess only one particular industry and continuing with that industry for an extended period of time. There are several industries that OSHA would consider to be more hazardous than others, and statistically having higher recordable injury rates. Implementing the safety culture model to more hazardous industries may yield valuable information for those industries.

To replicate this project, future researchers may want to get more responses by interviewing more subjects and potentially turning this study into a quantitative research project to satisfy quantitative critics. The best method for this approach would be to create a survey with multiple choice answers instead of the open ended questions that were used in this project.

Researchers may wish to conduct this same project with more focus on fewer communication practices. Researchers found interviewees had less trouble answering questions about stories, facts, and values. These communication practices could be set apart from the others. A more comprehensive research project could be executed by examining fewer communication practices.

Others may wish to modify the safety culture pyramid to include near misses or near hits as a step. I have also received comments from individuals who noted the bottom two levels on the safety culture pyramid (Work behaviors & Work Conditions) are usually preventative steps. Whereas, the top four (Recordable injuries, ERT calls, lost time injuries, and Fatalities) are all proactive measures after the incidents occur. Perhaps a researcher could develop a model for either preventative steps, or reactive steps.

**Final Thoughts**

As the primary researcher, I am so grateful for the opportunity I had to conduct this project and learn from scholars in the field and highly experienced individuals in the workplace. I am very grateful for the other trainers working for Intermountain Tech Sol. And the opportunities I had to pick their brains and understand the health and industry field. They have shown me the value of providing information to individuals in order to keep them safe. After conducting this project, I have the confidence and knowledge required to be a successful health and safety instructor.

### References

- Anderson, G. M. & Lorber, R. L. (2006). Safety 24/7; Building an incident-free culture. *Back Porch Creative*. Plano, TX.
- Carillo, R. A. (2010). Positive safety culture: How to create, lead and maintain. *Professional Safety*. 55, 47-54
- Choudhey, R. M., Fang, D., & Mohammad, S. (2007). The nature of safety culture: A survey of the state of the art. *Safety Science*. 45, 992-1012.
- Collins, J. C., & Porras, J. J. (2002). Built to last. New York: *HaperCollins*.
- Daniels, T. D., Spiker, B. K., & Papa, M. J. (1997). *Perspectives on Organizational Communication* 4<sup>th</sup> ED. McGraw-Hill.
- Eisenberg, E. M., & Goodall, H. L., Jr. (1993). *Organizational communication: Balancing creativity and constraint*. New York: St. Martin's Press.
- Fisher, W. (1984). Narration as a human communication paradigm: The case of public moral argument. *Communication monographs*, 51, 1-22.
- Geertz, C. (1973). The interpretation of cultures. New York: Basic Books.
- Haviland, W. A. (1993). *Cultural anthropology* 7<sup>th</sup> ED. Fort Worth, TX: Harcourt Brace Jovanovich.
- Koestenbaum, P. (2002). Leadership: The inner side of greatness. San Francisco: *Jossey-Bass*.
- Locke, E. (1969). What is job satisfaction? *Organizational behavior and human performance*. 4, 309-336.
- Muchinsky, P.M. (1977). Organizational communication: Relationships to organizational climate and job satisfaction. *Academy of Management Journal*. 20, 592-607.
- Navestad, T. O. (2009). Mapping research on culture and safety in high-risk organizations: Arguments for a sociotechnical understanding of safety culture. *Journal of Contingencies and Crisis Management*. Blackwell Publishing. 7, 126-136.

- Noble, C. (1997). OSHA at 20: Regulatory strategy and institutional structure in the work environment. In C. Levenstein & J. Wooding (eds.). *Work, health and environment*. New York: Guilford Press. 61-79.
- Pacanowsky, M. E., & O'Donnell-Trujillo, N. (1982). ). Communication and Organizational cultures. *Western Journal of Speech and Communication*. 46, 115-130.
- Pacanowsky, M. E., & O'Donnell-Trujillo, N. (1983). Organizational communication as cultural performance. *Communication Monographs*. 50, 126-147.
- Pettigrew, A. (1979). On studying organizational cultures. *Administrative science Quarterly*. 24, 570-581.
- Sias, P. M. (2005). Workplace relationship quality and employee information experiences. *Communication Studies*. 56, 375-395.
- Schein, E. (2004). *Organizational culture and leadership*. San Francisco: Jossey-Bass.
- Smircich, L. (1981). *The concept of culture and organizational analysis*. Paper presented at the SCA/ICA Conference on Interpretative Approaches to Organizational Communication. Alta, UT.
- US Bureau of Labor Statistics. (n.d.). *Workplace injuries, illness, and fatal statistics*. Retrieved from: <http://www.osha.gov/oshstats/work.html>
- West, R. & Turner, L. H. (2010). *Introduction to communication theory: Analysis and application*. 4<sup>th</sup> Ed. Boston, MA: McGraw Hill.
- Williamson, M. M. (2007, January 12). Revisit heinrich triangle and apply TQM principles for world-class safety. *Environmental Health and Safety Today*. Retrieved from: [http://ehstoday.com/safety/ehs\\_imp\\_39526/](http://ehstoday.com/safety/ehs_imp_39526/)
- Zoller, H. M. (2003). Health on the line: Identity and disciplinary control in employee occupational health and safety discourse. *Journal of Applied Communication Research*. 31, 118-139.

## Appendices

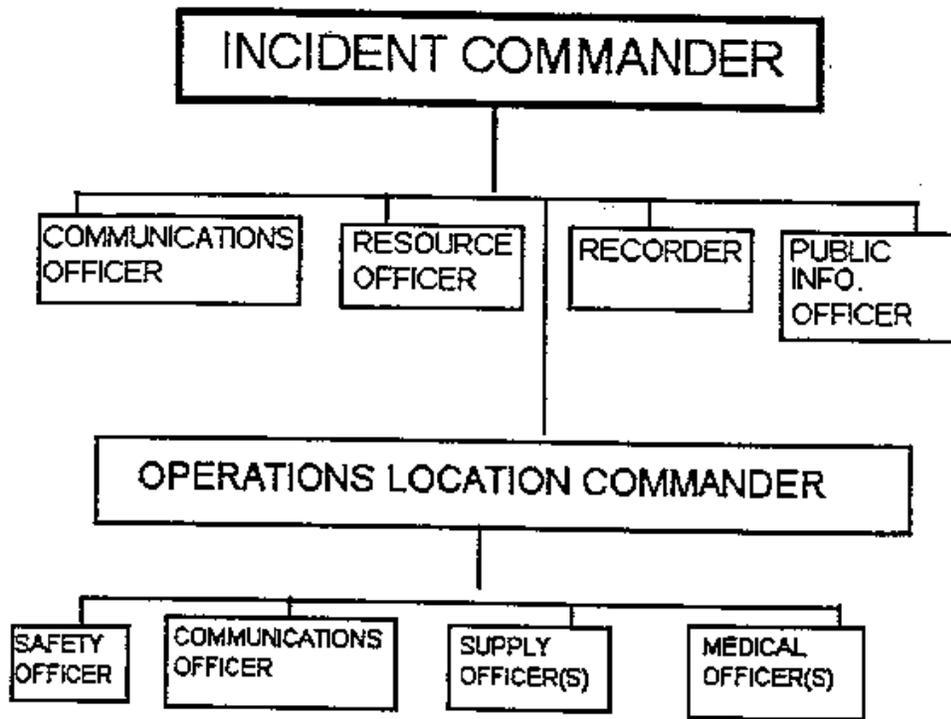
### Appendix A

#### **The basic responsibilities of the Incident Command and staff Include:**

- A. Access the incident and Prioritize
  - a. Life and Safety
  - b. Incident Stabilization
  - c. Property conservation
  - d. Environmental Damage
- B. Determine the strategic goals and tactical objectives.
- C. Develop or approve and implement the incident action plan.
- D. Develop a command structure appropriate for the incident.
- E. Assess resource needs and order, deploy and/or release needed resources.
- F. Coordinate overall emergency activity.
- G. Serve as the ultimate incident safety officer.
- H. Coordinate activities of outside agencies.
- I. Authorize information release to media.

In order to accomplish these task, the Incident commander may select a command staff and a general staff over various functional area. The command staff is generally comprised of three members mentioned earlier: Safety, Liaison and Public Information Officers.

Appendix B



**ENTRY TEAM(S) (TIME ON AIR)      DECONTAMINATION TEAM**

TEAM 1

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TEAM 2

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BACKUP TEAM

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## Appendix C

### The Seven Step Process for Incident Management

#### 1. Assess

Fire, Chemical, Medical  
If Chemical what is it? What hazards exists?  
What is the location? Are there Injuries? Etc etc.

#### 2. Establish/Isolate a Hot Zone (Immediately)

Do this using Knowledge and Experience  
Evacuate anyone out of the hot zone  
Prevent entry into the hot zone

#### 3. Make notifications

Internal (supervisor, security, safety )  
External (911, Off site Personnel)

#### 4. Monitor and Barricade

Readjust hot zone if necessary  
Human barricades, cones, tape etc

#### 5. Choose Options for Management

- a. Defensive 1-2 strategies
- b. Offensive 1-2 strategies

#### 6. Do the best Option

Do you have the right PPE, Personnel and Resources to  
Safely respond.

#### 7. Evaluate

Remember to continually maintain your Hot zone until the incident is over.

\*\* always take the time after the incident to discuss and critique your response.

**Appendix D****Interview Guide**

- 1) Describe your current safety culture?
- 2) Are there stories commonly shared in your organization by employees at any level in the organization that relate to safety? (stories)
- 3) Has your company had any recordable injuries, lost time, or Fatalities in the last year? (Facts)
- 4) Does your company offer any incentives or recognition for safe work behavior? (Rites and Rituals)
- 5) When discussing safety with employees, do you use examples or comparisons to improve safety efforts? (Metaphors)
- 6) What are some of the values that lead to improved safety in your organization? (Values)
- 7) What are some safe work behaviors you require the employees in your organization? (Practices)

**Appendix E**

**Safety Culture Model**

1) **Practices**

2) **Rites & Rituals**

3) **Metaphors**

4) **Facts**

5) **Stories**

6) **Values**

