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A Solution to Workplace Injuries and Accidents

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A Solution to Workplace Injuries and Accident

Honors Thesis
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By

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Abstract

A Solution to Workplace Injuries and Accidents

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Workplace injuries and accidents are occurring every day and causing problematic situations for both employees and the employer. To achieve a safety culture, and therefore reduce the number of injuries and accidents, employee competency must be achieved. During on-board training it is crucial to embed safety practices within procedural training, to have a seamless transition with completing a task, and doing it safely. During my study I compared the workplace practices I observed during my internship as NASA and contrasted those practices with safety norms within general industry. Many workplace injuries and accidents occur when employees are unaware, they're committing a safety violation. By training employees in competency, injury and accidents rates will be lower, and a safety culture will be strengthened. Throughout this paper you will learn how to achieve employee competency while also training employees on OSHA violations and meet required training variables mandated by federal OSHA.

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Introduction:

During my summer internship at NASA's Glenn Research Center (GRC) I identified a common theme of a strong safety culture. Where each employee completes their task with safety in mind, and each member strived to contribute to a strong safety culture. During my time there I was mesmerized by the safety concepts being taught, and the positive feedback each employee could give following a safety training. At the closure of my internship I was driving the seek what NASA was doing differently, and how they built the foundation for a strong safety culture. In most industries, safety is seen as an obstruction for employees, which makes their tasks harder and more time consuming. When making safety inspection, employees will dodge safety management and make an effort to hide when the safety team is doing "walk-arounds." However, at NASA there was open communication from all members from top management to janitorial staff. This connection was obvious when doing inspections; employees would be upfront about their safety concerns and help the safety team by finding solutions. Each member was safety conscious and wanted to make a difference in the workplace.

Occupational Safety and Health Administration (OSHA)

OSHA is an agency of the United States Department of Labor, established in 1970 under the OSH act, passed by President Nixon. OSHA's mission is to "assure safe and healthy working conditions for working men and women by setting and enforcing standards and by providing training, outreach, education and assistance" (U.S. Department of Labor, 2018). The OSH act gave OSHA the ability to write regulations, perform randomized workplace inspections, fine industries for incompliance, and set employer responsibilities (U.S. Department of Labor, 2018). OSHA's mission is

To assure safe and healthful working conditions for working men and women; by authorizing enforcement of the standards developed under the Act; by assisting and encouraging the States in their efforts to assure safe and healthful working conditions; by providing for research, information, education, and training in the field of occupational safety and health (OSH Act, 1970).

OSHA can inspect any industry, at any time under normal working hours while the facility is open. An OSHA inspection can occur at random, following an employee complaint, or after a workplace fatality has occurred. Following a fatality OSHA must be notified within 8 hours, and within 24 hours OSHA will perform an inspection.

During an OSHA inspection the inspector has the right to monitor all practices that occurring in the facility, as long as they're accompany with an employee of the facility during the "walk around" inspection. Inspections can take weeks to complete, especially with larger facilities. OSHA can inspect all paperwork, training records, and machines. Following an OSHA inspection, a review of violations will be performed with the management and safety team. Each violation will result in a fine, varying from $13,800 to $128,000. Fines vary based on severity, and if the same violation has been committed in a previous inspection. These fines were raised in 2016, to a 73% increase, prior to 2016 the fines had not been increased since the 1990's. When OSHA fines were at a lower cost, industries would opt to pay the fines instead of correcting the malpractices occurring in the facility. In 2015 OSHA fines varied from $1,200-$32,000, when at this low cost is was easier for companies to pay their fines and continue making

these safety violations. When OSHA identified this, the fines were significantly raised and now safety takes bigger precedence in the workplace.

OSHA fines can make a huge impact on industries and cause financial hardships when multiple violations are occurring. With the significant increase in fines, industries have been forced to put an emphasis on workplace safety, because they cannot afford for their employees to be injured on the job, because of financial repercussions. Also, with the increase in fines, it has linked management and safety. Management's role is to ensure the company is reaching quotas within production, and safety role's is to ensure each team member is adequately trained and performed their role in compliance with OSHA regulations. OSHA fines make a link within the facility, because OSHA fine's affect the business as a whole, and management usually cannot afford hefty fines. Safety's role is preventive maintenance, so management does not have to pay fines for violations.

Workplace injuries are one of the top causes of death in the United States. Workplace injuries take a toll on the industry, the employee, and the employee's family while suffering from lost wages, medical expenses, and severe injuries. Around 270 million people in the world fall victim to occupational injuries, fatal and non-fatal, every year. A recent International Labor Organization (ILO) report estimates that approximately 2 million occupational fatalities occur across the world annually (Alli, 2008). Occupational injuries and accidents are all caused by preventable factors which could be eliminated by implementing measures and methods that already exist (Alli, 2008).

When lowering occupational injury and illness rates it must come from an administrative lead. Meaning that employees must feel cooperation from their employer, that safety is being set as a priority. When employees understand the relationship that safety is a shared goal they're more likely to report problems as they arise, participate in trainings, and hold other employees accountable for safety. Employees must have the proper personal protective equipment (PPE) to perform the designated task, have regulated work schedules to ensure their getting the adequate time for breaks, and proper equipment to complete the designated task in the proper fashion. Achieving a safety culture takes participation at all levels of workforce by gaining employees to buy into safety ideas. Once fundamental requirements of occupational safety is achieves, safety culture can begin to be established.

Workplace Injuries and Accidents in Kentucky

Workplace injuries and accidents are occurring everywhere. In the state of Kentucky in 2017 there was 70 workplace fatalities (Kentucky Labor Cabinet, 2017). Transportation is the highest percentage in fatalities, claiming 47% of the fatalities. Although transportation accidents are prominent, they are the hardest fatality to prevent because of varying factors. No matter how much driving training employees receive, there are many factors that cannot be prevented. Slips, trips, and falls and contact with objects and equipment are the second and third most prevalent causes of fatalities. Manufacturing and construction industries claim the highest fatality rates. Workplace injuries and accidents impact the employees, and their families for the rest of their life. Although fatality rates are lowering over time, they are still too prevalent. It is crucial that workplace safety is a priority within facilities to ensure employees are returning

home in the same condition in which they showed up that morning (Kentucky Labor Cabinet, 2017).

Safety Training

"Under the Occupational Safety and Health Act of 1970, employers are responsible for providing a safe and healthful workplace. No person should ever have to be injured, become ill, or die for a paycheck" (OSHA, 2016). OSHA requires multiple mandatory training within the workplace. This training is composed of bloodborne pathogens, PPE (personal protective equipment), Hearing conservation, fire extinguisher, and fall protection (OSHA, 2019). Although this safety training is crucial it can come very redundant and irrelevant to participants that don't come into contact with those particular hazards. "Training in the safe way for workers to do their jobs well is an investment that will pay back over and over again in fewer injuries and illnesses, better morale, lower insurance premiums and more" (OSHA, 2017). It is a good idea to keep a record of all safety and health training. Documentation can also supply an answer to one of the first questions an incident investigator will ask: "Did the employee receive adequate training to do the job?"

> "Employers shall provide employees with effective information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new chemical hazard the employees have not previously been trained about is introduced into their work area. Information and training may be designed to cover categories of hazards (e.g., flammability, carcinogenicity) or specific chemicals. Chemical-specific information must always be available through labels and safety data sheets" (OSHA Standards: Protection of the Job, 2017).

Safety Culture

The term "Safety Culture" was developed following the Chernobyl nuclear disaster in 1986, which caused 31 immediate fatalities and an evacuation of 49,000 people surrounding the Soviet Union and Europe. Takeaways from the disaster include establishing a fault analysis, which identified the disaster, was caused by administrative decisions. The disconnects between management and safety professionals caused the largest nuclear disaster in history. Safety culture is a concept derived from organizational culture. Since further development of the term, many meaning have been attached to Safety Culture, three of which are reviewed by the Institute of Occupational Safety and Health (1994). The first meaning includes those aspects of culture that affect safety (Waring, 1992). The second refers to share attitudes, values, beliefs and practices concerning safety and the necessity for effective controls. The third relates to the product of individual and group values, attitudes, competencies and patterns of behavior that determine the commitment to, and the style and proficiency of, an organization's safety programs (Health and Safety Commission, 1993) (Glendon and Stanton, 2000).

Organizations with a positive safety culture are characterized by communications founded on mutual trust, by shared perceptions of the importance of safety, and by confidence in the efficacy of preventative measures (Cooper, 2000). Safety culture is a product by values, attitudes, competencies, patterns, and behaviors in employees and the employers. Locke and Latham (1990) define safety culture as "that observable degree of effort with which all organizational members direct their attention and actions towards improving safety on a daily basis" showing that safety culture is never completely achieved, however an ongoing goal that adjust overtime to meet the needs of the industry.

When employees learn value of working towards achieving a safety culture, the employer can start implementing procedures and checklist to further the development of culture. When making these changes of positive reinforcement the following actions should be noted: the degree to which members consistently confront others about their unsafe acts, the degree to which members report unsafe conditions, the speed with which members implement remedial actions, the degree to which members give priority to safety over production are all *observable* examples of members directing their efforts to improve safety (Locke and Lantham, 1990).

When establishing a safety culture in industry, the workplace safety standards and climate must first be identified; the Occupational Safety and Health Administration (OSHA) mandates workplace safety in both general industry and construction.

Measuring Safety Culture

The checklist portion of establishing safety culture should begin when employees are motivated to perform safe actions. The checklist can include the remedial action completion rate and the number of completed near-miss reports. The checklist will show documentation and strides made to increase safety awareness and establishing the fundamentals of safety culture. Checklist should be completed periodically to show improvements and changes made overtime as the culture develops.

Finally, when measuring safety culture there are many factors that must be identified to get a well-rounded reading. You must identify factors from the employees and employer, injury rates, and employee participation. To ensure all variables are measured you can complete surveys, audit the safety program, and monitor the way employees are completing their task.

Sharp, Strutt, and Terry (2002) created a model for measuring safety culture that walks through the level of a program and assist a company in identifying their strengths and removing their weaknesses throughout the duration of the program. In stages 1 and 2, top management believes accidents to be caused by stupidity, inattention and, even willfulness on the part of their employees. At the "Involving" stage (Level 3), the foundations are laid for acquiring beliefs that safety is worthwhile in its own right. By constructing deliberate procedures, an organization can force itself into taking safety seriously. At this stage the values are not yet fully internalized, the methods are still new and individual beliefs generally lag behind corporate intentions. Level 4 means the organization really gets to grips with safety issues with commensurate resources, and at Level 5 the organization is largely controlling and managing safety effectively but without complacency, and is continually improving its efforts (Sharp, Strutt, and Terry 2002).

Throughout the stages of developing a safety culture, proper training and education are essential. Education allows employees to become more aware of hazards, human error, and methods for achieving cultural change. Measuring safety culture can be a timely measure to include all variables is accounted for. It is crucial that the finding represent more than injury and illness rates, and capsulate all factors in the industry.

Employee Competence

Employee competence refers to the action formed during employee training, to make them a "specialist" at their job task. Competency is needed to prevent injuries and illness, to make employees aware of why safety is needed, and that OSHA regulations are established to benefit the employees. Many injuries and accidents occur when the

employee is unaware, they are committing a violation. When the initial hiring training is presented, the training should go through great lengths to portray the ideas to the employees. For employees to be competence they must be a specialist at their role. This high level of competency will lower the injury and accident rates in the industry, by making employees more aware of their surroundings. When employees are competent in their role, they can hold other employees accountable, to ensure each employee is striving to strengthen the safety culture in the workplace.

Employee competency starts during the initial training of the employee. By highlighting the importance of workplace safety immediately to employees the won't fall into bad habits overtime and have to be re-trained. When employees are taught how to complete their job tasks, during their safety training they see a disconnect between completing their tasks, and how to complete it safely. To create a seamless, disconnect between job tasks, and completing that task in a safety manner the employee should be taught how to complete their tasks with regard to safety regulations. During training employees should be taught that OSHA regulations are established with the intent of benefitting the employee. OSHA regulations ensure that employees are set up for success and can assure they will be safe while completing their tasks. When OSHA has a negative connotation in the workplace it puts a bad outlook off on the employee and is then viewed as something to make their work harder. When management and safety are on the same team within the industry, this negative connotation can be dissolved. Management and safety must be on the same side, to strengthen the safety culture, and assure employees that safety is established to make their work easier and will greatly benefit the employee in the long run.

OSHA states "A competent person is an employee who is able to recognize hazards associated with a particular task and has the ability to mitigate those hazards. Many OSHA construction standards require someone onsite – such as a foreman, supervisor or other employee – to be designated as a competent person." [29 CFR 1926.32(f)] OSHA requires a competent person at every jobsite, to assure if an injury or accident occurs there would be an employee there to address the situation. The key different in a competent person and a regular employee is the skill to address a hazard, and how to correct it. Although only one competent person is required by OSHA, it is crucial to have each employee as a competent person to strengthen the safety culture. If only one is employee is registered as a competent person, they cannot always reach the injured employee in time to help them. Generally, with construction sites employees are isolated by themselves, they're working independently in a section of the project. If not, employees are not a competent person, they do not have the ability to identify a hazard, and therefore can put themselves in harm's way without even knowing. It is crucial that each employee is a competent person, to develop the skill of hazard recognition and make themselves for aware of their surroundings.

Safety Training

Safety training is vital for each employee within a facility. Training should be composed of hands on to teach the skill they will be performing, and as a hazard recognition to assure they're aware of safety standards and know what to look for if a problem arises. Although safety training has great importance, it is crucial that employees do not experience over training or irrelevant training. When employees are receiving

irrelevant training, they become uninterested and don't see the purpose in training. Once an employee has developed this mindset, a problem has occurred.

"Training is commonly proposed as the solution to a problem when other solutions would be more appropriate. Some organizations treat safety training as a panacea, believing that "training is the hammer and safety problems are the nails." Various interventions other than training may apply in specific situations, yet training may still be the intervention selected. For example, suppose a site experiences an increasing number of injuries. Rather than simply institute additional employee training, site management may need to address environmental hazards, focus on enforcing salient safety rules, or implement proper rules and work procedures" (Blair & Seo, 2007.)

This quote shows that training is not always the answer. The employee must be personally motivated to strive to meet safety standards and take the extra step to report a hazard when one is recognized. If training is not correlating to lower injury and accident rates other approaches may need to be taken. Individual coaching, employee participation and improving working condition to facility safe behaviors likely would be more successful. When employees receive one-on-one attention, they're more likely to understand the content, because it can be personalized to their learning style (Blair & Seo, 2007.) Also, when they see the training is taking time to assist them in learning on an individual basis, they will become more motivated to succeed. It is crucial that participants are aware that the training in taking an interest in them, by making the

participants feel more involved during training they're more likely to grasp the concepts (Blair & Seo, 2007.)

> "In *Training Ain't Performance*, Stolovitch and Keeps (2004) explain that training itself is not performance. They define training as "structured activities focused on getting people to consistently reproduce behaviors without variation and with greater efficiency under various conditions" (p. 5). They define performance as "a function of both the behavior and accomplishment of a person or group of people" (p. 8)." (Blair & Seo, 2007.)

Safety training should be a proactive step in building a safety culture when an employee is hired. That initial training and expose to workplace safety will be the foundation of their views on safety throughout their career. By giving employees a positive first impression of safety will allow them to be safety conscious throughout their career. When safety training is retroactive, and only occurs after an incident takes place it does not have the same affect. When people perceive training and performance as synonymous, they are unlikely to take all the steps necessary to gain the full benefits of training. This problematic viewpoint occurs when the activity or behavior of conducting training is, itself, considered to be performance. This limiting view of training only meets half of the definition for performance—no consideration is given to actual accomplishment or result other than the activity of training itself. To be more effective, safety trainers should view training (even one-time training) as an ongoing process rather than as a single event. The training itself is an activity. The performance is a combination

of the training activity and the ongoing achievement of the desired behavior. (Blair &

Seo, 2007.)

Yearly training is required by OSHA, and records must be kept of all participating

employees. Refresher training although it is mandated, can ensure employees do not

become complacent while completing their tasks, and are aware of any new standard

changes. When training is required, such as annual safety refresher and compliance

training, one might consider enhancing the training by including specific organizational

performance criteria. Taking a creative approach and integrating specific performance

elements certainly seems logical. The way an organization structures its compliance

training can greatly influence its impact. For example, compliance training may be

integrated into an organization's safety measurement system. To increase the percentage

of employees who enthusiastically participate in mandatory annual refresher training,

some organizations add compliance training to their safety scorecards and key

performance indicators. (Blair & Seo, 2007.)

Implementing Safety Training

In Blair and Seo's article *Safety Training; Making the Connection to High*

Performance they list the four ways in which safety training should be implemented.

There is no "cookie cutter" safety training, meaning there isn't a one size fits all approach

to training safety techniques. Each employee is different, and training varies greatly

based on the industry, and the type of work being performed by each employee. The

authors state the first step in training is "align training objectives with the mission and

business goals of the organization" (Blair & Seo, 2007. pp 43) When brainstorming ideas,

the training, is it crucial to ask the question is this training necessary. Irrelevant and over-

training will lead to employee burnout and they're become complainant while learning new training messages, because they don't see a purpose. By having a strong objective statement, the trainers can assure the training is needed, and have a baseline of the ideas they want to teach participants. When curating an objective statement, the ideas and values of the company should take precedence.

The second step in Blair and Seo's article is "Determine the most effective training methods for the particular situation." By keeping the participants and their background knowledge in mind the trainer can assure they're giving the best training that will be most effective. "For example, if forklift training is needed, it should include a combination of classroom methods, hands-on training and evaluation of competence. The OSHA requirement for forklift training is a performance standard and the agency provide specific guidelines for methods to conduct training" (Blair & Seo, 2007. pp 44.) By knowing the audience of the training, a more intensive training can be given, and participants can develop a deeper understanding.

The third step in development a training plan is "Make plans for learning transfer and integration into the work processes and culture." By observing the participants prior to training, you can correct any bad habits that have been formed. One-on-one training is most effective, although it can become very time consuming and costly. Training is best understood in grounds of 5-10 participants. The employees can share ideas and provide a practical approach that can be shared with the safety team.

Lastly, Blaire and Seo state "Establish structured management systems to sustain learning" For the training to improve performance over the long term and to become fully ingrained in the work culture, the new behaviors must be supported by ongoing

management systems. Following the training each participant should take a evaluation to provide feedback for the content and the trainer. Training is always evolving based on the audience and with everchanging OSHA regulations. Each training should change slightly and build off the feedback that has been received.

Training is a crucial step in establishing a safety culture. By making strides to assure employees are getting quality safety training it will increase competency and lowing injury and accident rates. It is crucial to give training that is applicable to the tasks the employees will be performing, so participants seek value during the training. Participants also can get a better perspective of the fundaments in training if there is a mix of e-learning and hands-on skills to reach all types of learners that are going through training. Research conducted by Burke, Sarpy, Smith-Crowe et al. (2006) involving more than 30 years of safety training in 15 countries and 95 studies suggests that safety and health training is most effective when there is a high level of engagement. Essentially, training that is highly engaging is conducted as a conversation or dialogue (Blair & Seo, 2007. pp 46.) It is important to involve line management and employees in determining training content. Given that line management is responsible for safety, it also helps if line managers and employees are highly involved in the delivery of safety training. Potential benefits of such employee engagement include addressing their relevant ideas, gaining their buy-in and strongly influencing their peers via their participation. This engagement is another key to connecting training to performance (Blair & Seo, 2007. pp 46.)
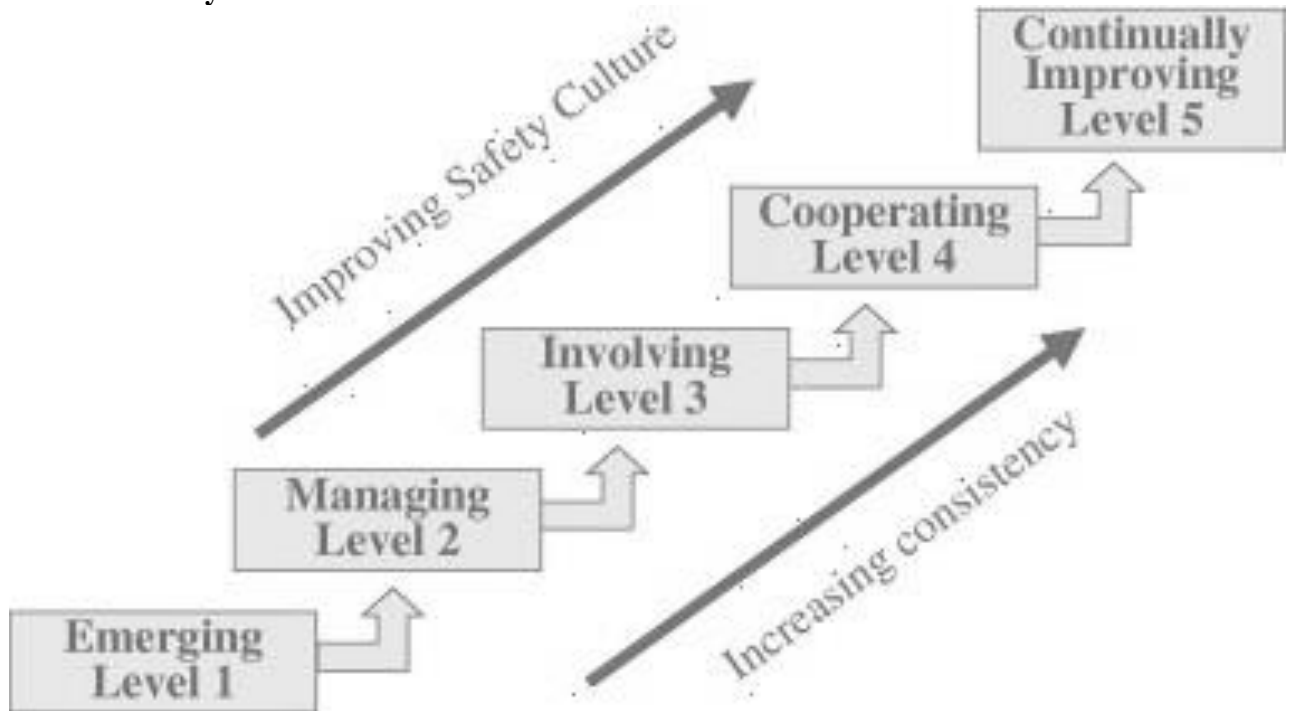
Measure Safety Culture

Figure 1 (Flin, Mearns, O'Conner, & Bryden, 2000).

While training and employee competency are crucial for developing a safety culture, is it also vital to track changes to monitor improvement and identify weaknesses. Safety program should be monitored on a yearly basis to ensure re-occurring injuries are not happening, and to track and trend similar instances. *Figure 1* shows the processes and evolution of a safety culture development process (Flin, Mearns, O'Conner, & Bryden, 2000). The first step is emerging, this is very baseline safety. Including OSHA regulations, minimum training, and PPE requirements. Everything within step 1 is mandatory regulations from OSHA. By doing the bare minimum with safety it does not motivate employees to contribute to safety culture and can result in injuries and accidents when employees are not adequately trained on how to identify a hazardous situation.

Management level addresses managers throughout the facility to compile job tasks for employees (Flin, Mearns, O'Conner, & Bryden, 2000). It is crucial to imbed

safety standards within the job tasks, so employees don't recognize a disconnect between completing their job and doing it under OSHA compliance. Management can develop safety check-list, training material, and audits to strengthen the safety culture. It is crucial to have all levels of management on the same page, so when employees are presented with the information, all managers will give the same answers. When management and safety have a common goal, it will be much more successful for the program.

Level three, involving, is when employees will be presented with the ideas developed from management. Management should update employees in small groups. Employees can ask management questions, to ensure they're understanding each part of the program. It can be more effective is management only expose team members to select portions of the new training programs, instead of all at once so they're not overexposed. When presented with small bits of information management can ensure each step is being performed successfully before adding a new component.

Cooperating level is when all employees are exposed to each component of safety culture development. This stage can take time to achieve, and it is best if the process is timelier to ensure each level is being fulfilled. The cooperation level will ensure each employee is competent in their tasks, and open-door communication is apparent through all levels of management. When there is a reporting culture within the industry employees feel comfortable to report any safety concerns within management, knowing there won't be any repercussions. Employees should be rewarded when they report a problem, to motivate employees to come forward with new ideas.

The last level is continual improvement, this stage will never be completing as it is an ongoing process. Changes should be made to the safety culture to ensure the process

is evolving when OSHA standards are changing, and processes are changing within the facility. Employees should give participants an evaluation form following training to give feedback to the trainer. Evaluation forms should be submitted anonymously so participants can give adequate feedback.

Results

Competency absolutely is required as part of a sustainable safety culture. Developing a strong safety culture where competency is a foundation requires commitment – commitment to build understanding, promote application and instill motivation. The commitment must come from leadership for focus and resources; both time and money. Building a competent safety workforce also requires employee commitment. Leaders can provide time and money for employee training and development to build knowledge and skills that will keep people safe – formal and on-the-job. However, learning and application can't be forced. Employees must be engaged in learning and application. By increasing employee competency, injury and accident rates will be significantly lowered. Employees will become more aware of their surroundings and get a better understanding of workplace practices, and why tasks are performed the way they are. When it comes to safety competency, organizations must be specific; however, all employees at every level (from the CEO through the college intern) need to be trained to recognize hazards of all types According to OSHA's General Duty Clause – the most cited regulation – the employer must mitigate all recognized hazards. The first step to mitigation of hazards is recognition. Secondly, employees must be able to evaluate the risk level and then apply controls.

Verifying that an employee has received training does not prove that the employee recognizes how to do their job effectively, or that they can identify ways to protect themselves, their co-workers, the environment and company property against the hazards their job can pose. It is important to make sure that employees don't just take training, but that they achieve and maintain the competencies required to work safely. Competency-based safety training courses are designed to ensure that learners engage with the material and demonstrate their achievement of these competencies.

Making a competent workforce goes above all safety regulations. When employees are competent, they're a better employee, and the workplace then has developed a safety culture. Regulators can determine compliance with training requirements based on information such as employee interviews, incident logs, and on-site observations, in addition to training records. If a regulator determines that an employee does not have the necessary knowledge and skills, then the employer may be found in violation of the law, even if they can show that training was delivered. That is why verifying employee competency – and documenting how competency was measured – are so important

References:

Alli, B. O. (2008). Fundamental Principles of Occupational Health and Safety Second edition. *Geneva, International Labour Organization*, *15*.

Barnes, J. (2005). OSHA Reaches Out. *Occupational Health & Safety*, *74*(7), 100-104.

Benjamin, O. (2001). Fundamental Principles of Occupational Health and Safety. *ILO*, *13*(2).

Blair, Earl and Seo, Dong-Chul. (2007). Safety Training. *Making the Connection to High Performance.*

Burke, M.J., Sarpy, S.A., Smith-Crowe, K., et al. (2006). Relative Effectiveness of Worker Safety and Health Training Methods. American Journal of Public Health, 96(2), 315-324

Cooper Ph. D, M. D. (2000). Towards a Model of Safety Culture. *Safety science*, *36*(2), 111-136.

Crolius, R. W. (2006). A Culture of Safety. *American Ceramic Society Bulletin*, *85*(8), 24.

DeJoy, D., Gershon, R., & Schaffer, B. (2004). Safety Climate. *Professional Safety*, *49*(7), 50-57.

E. A. Locke, G. P. Latham. A Theory of Goal Setting and Task Performance. (1990). Prentice-Hall, Englemwood Cliffs, NJ.

Engaging people to ensure safety. (2005). *Occupational Health*, *57*(12), 6.

Flin, R., Mearns, K., O'Connor, P., & Bryden, R. (2000). Measuring Safety Climate: Identifying the Common Features. *Safety Science*, *34*(1-3), 177-192.

Geller, E. S. (1994). Ten Principles for Achieving a Total Safety Culture. *Professional Safety*, *39*(9), 18.

Glendon, A. I., & Stanton, N. A. (2000). Perspectives on Safety Culture. *Safety Science*, *34*(1), 193-214.

Guldenmund, F. W. (2000). The Nature of Safety Culture: A Review of Theory and Research. *Safety science*, *34*(1-3), 215-257.

Health and Safety Commission, 1993. Organizing for Safety. Third Report, Human Factors Study Group, Advisory Committee on the Safety of Nuclear Installations. HMSO, London

Institution of Occupational Safety and Health, 1994. Policy Statement on Safety Culture. IOSH, Leicester.

Kentucky Labor Cabinet. 2016. *Kentucky Occupation injury, Illness, and Fatality Report*

Kim, Y., Park, J., & Park, M. (2016). Creating a Culture of Prevention in Occupational Safety and Health Practice. *Safety and Health at Work*, *7*(2), 89-96.

Kramer, T. (2012, July). *Top Five Ways to Reduce Fall Hazard Risk.*

Loeppke, R., Hohn, R., Basse, T., Bunn, C., Burton, W.B., Eisenberg, B., Siuba, J. (2015). Integrating Health and Safety in the Workplace. *Journal of Occupational & Environmental Medicine*, *57*(5), 585-597. doi:10.1097/JOM.0000000000000467

Masso, M. (2015). The Determinants of Employee Participation in Occupational Health and Safety Management. *International Journal of Occupational Safety & Ergonomics*, *21*(1), 62-70. doi:10.1080/10803548.2015.1017959

Mauro, J. C., Diehl, B., Jr.Marcellin, R. F., & Vaughn, D. J. (2018). Workplace Accidents and Self-Organized Criticality. *Physica A*, *506*284-289. doi:10.1016/j.physa.2018.04.064

Mearns, K., & Yule, S. (2009). The Role of National Culture in Determining Safety

    Performance: Challenges for the Global Oil and Gas Industry. *Safety*

    science, *47*(6), 777-785.

Moraru, R. (2011). Developing a Framework for Behavioral Change Towards

    Occupational Safety Enforcement in Romanian Collieries. *Annals of the*

    University of Petrosani Mining Engineering, 12153-160.

Myers, D. J., Schoenfisch, A. L., & Lipscomb, H. J. (2012). Cultural Influences on

    Workplace Safety: An Example of Hospital Workers' Adoption of Patient Lifting

    Devices. *Safety Science*, *50*(3), 494-501. doi:10.1016/j.ssci.2011.10.015

Nathai-Balkissoon, M. (2018). The Impact of an Occupational Safety and Health Module

    on University Students' Safety Attitudes. *West Indian Journal of*

    Engineering, *41*(1), 94-101.

O'Toole, M. (2002). The Relationship Between Employees' Perceptions of Safety and

    Organizational Culture. *Journal of Safety Research*, *33*(2), 231-243.

Sharp, J.V., Strutt, J.E., Busby, J. Terry, E. (2002) Measurement of Organizational

    Maturity in Designing Safe Offshore Installations. In: Proceedings of 21st

    International Conference on Offshore Mechanics and Arctic Engineering, June

    23–28, Oslo, Norway.

Stuart, A. (2014). A Blended Learning Approach to Safety Training: Student Experiences

    of Safe Work Practices and Safety Culture. *Safety Science*, *62*409-417.

    doi:10.1016/j.ssci.2013.10.005

Waring, A.E., 1992. Organizational Culture, Management, and Safety. Paper presented at

the British Academy of Management 6th Annual Conference, Bradford

University, 14–16 September.

Wilson-Donnelly, K. A., Priest, H. A., Salas, E., & Burke, C. S. (2005). The Impact of

Organizational Practices on Safety in Manufacturing: A Review and

Reappraisal. *Human Factors & Ergonomics in Manufacturing*, *15*(2), 133-176.

doi:10.1002/hfm.20000 *Factors & Ergonomics in Manufacturing*, *15*(2), 133-176.

doi:10.1002/hfm.20000

United States Department of Labor. (2018). About OSHA.

Yilmaz, N. (2015). The Importance of Occupational Health in Organizational Culture.

Proceedings of the Multidisciplinary Academic Conference, 236-247.