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ZERO INJURY TECHNIQUES



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Zero Injury Techniques

**Prepared by
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Zero Accidents Task Force**

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Executive Summary

The Zero Accidents Task Force research has identified five “High-Impact Zero Injury Safety Techniques” that are being used by owners and contractors who achieve “Zero Injury.” The task force defines “safety excellence” as reaching a 1.00 or below Bureau of Labor Statistics/OSHA Lost Workday Case Incident Rate (LWCIR).

Both small and large owners and contractors can benefit by including the five techniques in a strong, basic safety program. The five high-impact zero injury techniques identified by the task force are:

- Pre-Project/Pre-Task Planning for Safety
- Safety Orientation and Training
- Written Safety Incentive Program
- Alcohol and Substance Abuse Program
- Accident/Incident Investigations

The research also confirms zero lost workday incidents are achievable even on larger projects. Of the 25 projects studied (see Appendix A), eight had zero lost workday cases, nine had LWCIR of 1.0 or better (below 1.0), six had LWCIR between 1.0 and 2.0, and two had LWCIR of 3.40 and 4.37, respectively. The projects ranged in size from approximately 200,000 to 6,300,000 work-hours completed at the time the research was conducted.

The task force further defines the projects with LWCIR greater than 1.0 up to the 4.4 LWCIR project as “good in safety.” The task force was unable to find projects with a LWCIR nearer the BLS/OSHA (Reference 1) 1990 national average of 6.7.

Since “poor safety” projects were not available, the task force could only compare the “good” to the “excellent” projects. Doing so, however, resulted in very identifiable differences in the safety management techniques used. The research clearly shows that quality application of the five high-impact techniques should allow companies with “good” construction safety programs to advance to safety excellence, and thus achieve zero or near zero LWCIR performance.

Although the research points out differences (the five select techniques) in the way safety processes of the 25 projects are managed, a recurring group of safety techniques was used by all the projects to achieve “good” safety performance.

All the zero injury techniques are applicable to small as well as large capital and maintenance projects in the industrial and commercial sectors of the industry, and are usable by all size contractors, regardless of labor affiliation.

Introduction

The Zero Accidents Task Force

The Zero Accidents Task Force was formed to continue research into the important area of worker safety. This CII commitment recognizes that the elimination of injuries is vital to the efficient execution of construction projects. That productivity and safety are so intertwined in the workplace, to spend time and energy on safety not only improves safety performance, it also improves schedule and reduces costs.

The purpose of the task force is:

- To show owners and contractors how to achieve zero accidents on construction projects.
- To convince management of the value of an effective safety program, through research, by identifying techniques most successful in achieving zero accidents.

Background

The construction industry in the United States accounts for about 10 percent of the gross domestic product, having an annual dollar volume of about \$450 billion. The industry employs five percent of the nation's work force—yet that five percent experiences a disproportionate 20 percent of all traumatic occupational fatalities and 12 percent of the total number of disabling injuries.

Studies indicate that between 1980 and 1987, workers' compensation insurance costs in the U.S. doubled. The upward trend is continuing in many states, with additional annual increases from 5 to 30 percent, depending on the state, being common. In many states construction contractors are paying 10 to 30 percent of their direct labor costs for workers' compensation premiums, an amount exceeding their profit margins. These same studies also indicate that it is not uncommon for contractors with poor safety performance to pay twice the premium costs as compared to those with excellent safety records.

Research shows that development and implementation of effective safety programs reduce accidents. Unfortunately, when it comes to spending time and money on safety, many do not feel

safety is vital to the success of their projects. This attitude stems from a failure to recognize that effectively implementing project safety techniques will, while reducing job injuries, also reduce the workers' compensation premium by 50 to 90 percent and the indirect costs of injury by a like amount (Reference 2) .

Safety Philosophy and the Task Force Approach

In pursuing the research project, the task force adopted the use of the term *zero injury* to identify a unique attitude which existed on projects achieving the category of "safety excellence." This attitude appears as a zealous commitment by top management to the concept that zero injury is the only acceptable goal. Any other goal implies that injuries are expected and acceptable.

The construction industry needs to recognize that eliminating all worker injuries on projects for significant periods of time is possible. The first essential criterion required is the acceptance of the zero injury concept by those in charge and the effective communication of this to the workers. Further, it is essential that owners and contractors devote resources for the development and implementation of the safety techniques that provide the highest impact on achieving zero injury projects.

Zero injuries must be the goal of the U.S. construction industry if it is to maintain leadership in the global marketplace.

The Findings

Overview

The Zero Accident Task Force research has identified five “High-Impact Zero Injury Safety Techniques” that have the potential to produce the greatest influence in achieving zero injury safety performance (see Figure 1). These are techniques that can make the difference between “good” and an “excellent” safety performance.

The research effort used the Bureau of Labor Statistics/OSHA Lost Workday Case Incident Rate (LWCIR) to measure safety performance. The task force defines “good in safety” as those projects with LWCIR greater than 1.0 up to 4.4 LWCIR. “Excellent in safety” is defined as those projects with an LWCIR of 1.0 or below.

The effective application of the five techniques to a project that has achieved “good safety” performance can enable the attainment of “safety excellence.”

The Three Databases

Three databases were created from the project research results.

- *Database 1* - The 170 Safety Techniques. See Appendix D. These techniques were the final result of the literature search combined with the results of the visit to the first base project.
- *Database 2* - The Time Spent on Safety. The researchers questioned each interviewee on time spent on 16 safety program elements.
- *Database 3* - The Three Most Important Safety Techniques. Over 1000 answers to the question, “What are the three most effective safety techniques used on this project?” were tabulated and grouped to form this database.

The data from each of the three were grouped by safety performance using the project BLS/OSHA LWCIR. The “excellence in safety” project group was compared to the “good in safety” group. The research findings were achieved by analyzing and comparing the three databases.

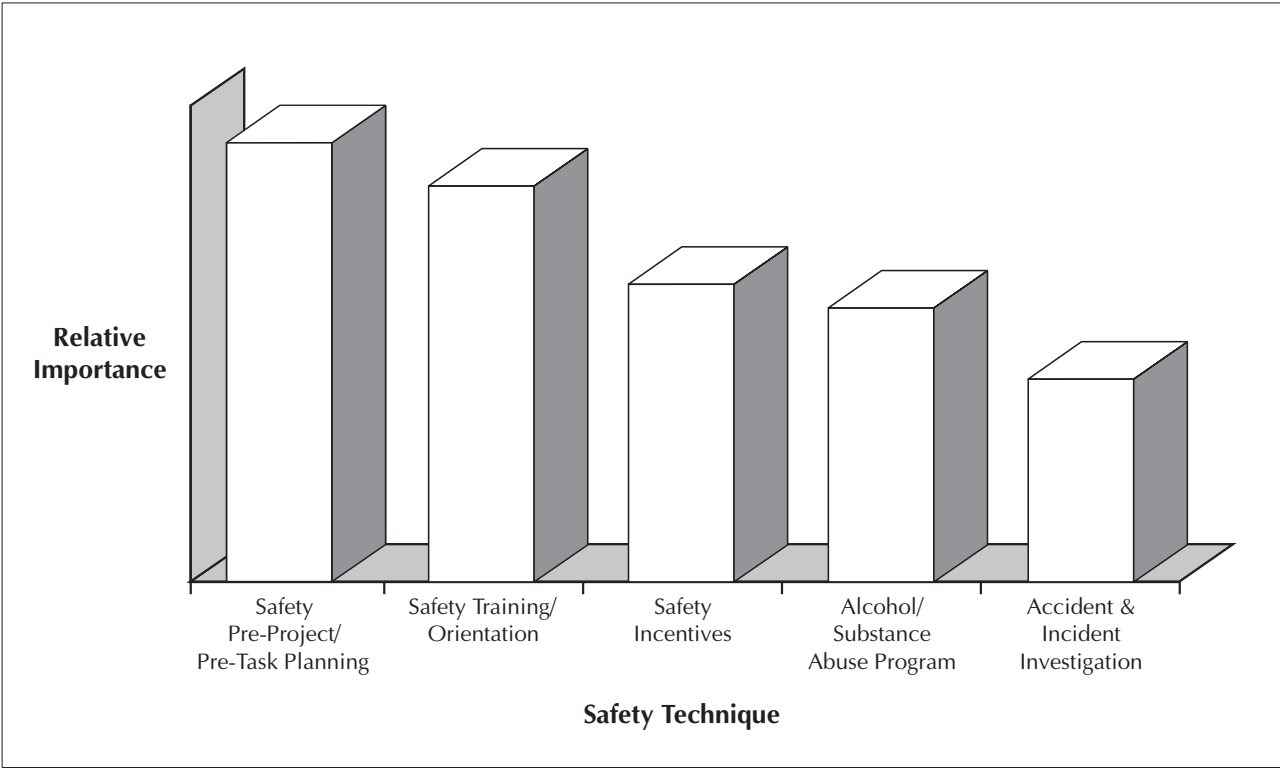


Figure 1. Five High-Impact Zero Injury Safety Techniques

Table 1. Five High-Impact Zero Injury Safety Techniques and the Most Significant Sub-elements

1. Safety Pre-Project/Pre-Task Planning

Pre-Project

- Safety goals
- Safety person/personnel
- Preplacement employee evaluation

Pre-Task

- Task hazard analysis
- Task training

2. Safety Orientation and Training

- Site orientation
- Owner involved in orientation
- Safety policies and procedures
- Project specific orientation
- Formal safety training

3. Written Safety Incentive Program

- Cents per hour for workers
- Spot cash incentives used with workers
- Milestone cash incentives given to workers
- End of project incentives given to workers

4. Alcohol and Substance Abuse Program (ASAP)

- Screening done for alcohol and drugs
- Screening conducted at random
- Inspections for contraband conducted
- Post accident screening done for all employees
- All project contractors have ASAPs

5. Accidents/Incidents investigations

- Incidents investigated
- Incidents reported to home office
- Accidents without injury investigated
- Project accident review team established for all accidents or incidents
- Project work exposure hours and safety statistics reported to home office

(Notes: The sub-elements are not listed in priority order.
“Incident” replaces the historical term “Near Miss.”)

The results were then combined, resulting in the development of the five “High-Impact Zero Injury Techniques.” When implemented in a quality manner within a total safety program, these techniques can result in project safety performance of zero lost workday cases.

The Five High-Impact Zero Injury Techniques

Table 1 lists the five High-Impact Zero Injury Techniques identified along with the sub-elements the research found to be the most significant.

See Appendix B for information on the five high-impact techniques along with examples of implementation strategies.

Important Common Techniques

Research revealed that the above five techniques were dominate in the projects achieving safety excellence. However, all surveyed projects had implemented a common base of safety techniques. In fact, on the 25 projects involved in the research, further examination of the data revealed that of the 170 important safety techniques:

- No project used all 170 of the techniques.
- All projects used in some combination at least 114 of the 170 techniques.

For emphasis, the research does not suggest that implementing the five High-Impact Zero Injury Techniques alone will result in safety performance approaching excellence.

Techniques—Time Quantity versus Quality

The research data show that quantity of time spent on selected techniques is not as important as the quality of time spent. An even more significant point is this: *in an evolving safety program, the selection of the specific safety technique on which to spend time becomes more crucial than the overall time spent.*

As an example, time spent in pre-project/pre-task planning can result in earlier hazard identification and more hazard control and elimination, therefore, the project will likely require less hazard discussion and protection. This would result in less time spent on other techniques, such as safety meetings and accident investigation.

Conclusions

The task force research provides the following conclusions regarding achieving zero injuries.

- Zero injury is being achieved on all types of construction and maintenance projects.
- Zero injury is being achieved by contractors, small and large, and on many projects, even large projects with several million work-hours.
- Zero injury is being achieved in all project labor situations; i.e., union, merit or non-union.
- Joint owner and contractor senior management devotion to “ZERO” is key in achieving this level of performance. Setting this expectation for project workers at all levels is a vital first step.
- An effective safety program producing “good” safety performance must contain a broad base of essential safety techniques similar to those contained in the 170 techniques list.
- Attaining zero injuries is significantly more likely on those projects that apply the five High-Impact Zero Injury Techniques identified.
- Success in eliminating accidents is not guaranteed by use of the five High-Impact Zero Injury Techniques alone.
- Quality of effort is strongly suggested by the “Time Spent” data as a vital ingredient in reaching zero injury.