Bulletin No. SF 3
File: Safety

Bulletin

Safety and Productivity: Does Improving One Increase the Other?

Introduction

For many years, a popular mantra in business, particularly construction oriented businesses, has been *safety, safety, safety.* And, for good reason. Companies that establish comprehensive safety programs will reduce worker accidents and injuries, and in so doing, the direct and indirect costs associated with such incidents.[1]

Those costs can be significant. Direct costs are all costs covered by Workers' Compensation insurance, which include transporting injured workers, their hospitalization, prescription drugs, and wage replacement.

Indirect costs in construction are conservatively estimated to be 20 times the direct costs of accidents.[2] These include costs other than direct costs that cover the injured worker, the crew of the injured worker, crews in the vicinity, replacing the injured worker, damaged property, and administrative costs.

Reduced costs are not the only benefit that a company realizes when it establishes a comprehensive safety program. A review of the literature indicates that a company's productivity also improves along with its business. A construction safety expert put it very succinctly:

"Those who work safely have higher productivity, less worker turnover, and less waste. Thus, the contractor who produces the best safety results should have the best bid, since it has numerous competitive cost advantages. The safer contractor will have lower overhead costs, insurance costs, labor costs, and also superior management methods and work practices."

"Additionally, contractors with bad safety records are going to be recognized as dangerous by the workers, resulting in higher labor turnover. Turnover adds to the costs of the unsafe contractor, through increased costs for training, increased production costs due to lower skill levels of his labor force, or increased accidents. Research has shown that newer workers have a higher rate of accidents on the job. Where there is no process to gauge the full value of the strength of a contractor's process at project inception, the final tally will prove that it would have been cheaper to hire the safer contractor. "[3]

A Construction Users Roundtable study, "Improving Construction Safety Performance," reinforced the above statement. It said, "The high cost of accidents gives owners as construction users good reason to concern themselves with the safety efforts of the contractors they hire. Past research has shown that accidents are, to some extent, controllable by all levels of construction management. Reasonable reductions in the frequency and severity of accidents would lower the $8.9 billion cost of accidents by as much as $2.75 billion, or 8% of direct construction labor payroll a year. "

The study went on to say, "One way that an owner can carry out this responsibility is to hire contractors who have a record of good safety performance. A prospective contractor with a history of good safety performance is more likely to perform safely in the future than a contractor with a poor, or less-than-average, safety record." Furthermore, "Contractors who hold their management accountable for accidents, as well as productivity, costs, schedules, and quality generally have the best safety records."[4]

Apple Computer tracks time lost resulting from an employee injury and includes indirect as well as direct costs. For example, an employee with an eye injury goes to the hospital, goes through rehabilitation, and returns to work all at a cost to the company of $10,000. Those are direct costs which detract from the company's profits. Apple's Miller says, "But we also incurred roughly four to five times those costs indirectly—through loss of productivity, hiring and training a temporary employee, and so forth."[5]

The following provides several examples of companies that instituted either safety programs that produced improved productivity, or established quality management programs that achieved improved safety levels. Although none of the companies studied for this relationship were in the construction business, the benefits likely apply and the results are worth exploring.

The Link Between Safety and Productivity

The link between safety and productivity typically happens during the safety improvement process. To find hazards, every aspect of a production process must be examined, and in the process, inefficiencies, obstacles, sources of waste, and product defects are uncovered that reduce productivity. Thus, improved productivity and quality are by-products of the safety improvement process, and vice versa.[6]

For example, safety team members at a Georgia Gulf plant in Delaware City, DE, reported a common downward trend in both incidents and quality problems when they began the "Use Your Head to Erase All Dangers" program.[5] Another example is the Phelps Dodge copper mine in Morenci, AZ, which, after changing its management approach, tripled its employee copper production while reducing its injuries sevenfold.[7]

Kerry, Inc., a multinational producer of specialty food ingredients, established a "Safety Improvement Program" (SIP) in its Covington, KY, plant and achieved significant gains in productivity. Existing information was reviewed, priorities were set, target completion dates were scheduled, and progress was evaluated at six-week intervals. A joint labor-management safety committee was established and management issued a statement of safety commitment. Injury investigations were expanded to include near-misses and Job Safety Analysis (JSA) was implemented. Employees

selected the “Top 5 Concerns,” and an incentive program was introduced.[8]

The results were startling. The injury/illness incidence rate decreased from 51.2 cases per 100 employees before the program to 9.6 after, an 81 percent decease. The lost workdays incidence rate decreased from 417 per 100 employees before the program to 29 after, a 93 percent decrease. Workers compensation costs decreased from $0.67 per employee-hour to $.01, a 99 percent decrease.[9]

Pounds of product produced also increased more than 20 percent while the operating budget increased less than one percent per year. Product runs increased from an average of 7.8 days to 16.1 days. The equipment on-line percentage increased from 80.1 percent to 88.7 percent.[10]

Another example is U.S. Enrichment Corporation in Paducah, KY, a gaseous diffusion low level uranium enrichment plant employing 1,600 people. It is the only U.S. producer of fuel for commercial nuclear power plants.

“USEC developed a program called ‘Survive and Thrive,’ a modified Japanese 5S program based on the principle that a quality environment brings improved safety and productivity. ‘Survive and Thrive’ emphasizes planning, good housekeeping, standardization of work practices, communication, and discipline. Every employee is expected to report problems, which are reviewed and evaluated daily and appropriate action is taken. All employees have authority to stop work if they identify a hazard or detect a procedural error. USES has also established a joint labor-management safety committee to evaluate progress. A substantial capital investment was made to upgrade facilities to meet regulatory requirements.[11”]

The program produced significant improvements in productivity and safety. Over six years, injury frequency rates decreased 67 percent from 8.31 cases per 100 employees to 3.07. The lost workday cases incidence rate also decreased 73 percent from 4.1 per 100 employees to 1.1. Productivity per employee increased 24 percent. Total output almost tripled. There is now 100 percent on-time delivery of product. Costs have decreased 20 percent over five years.[12]

International Paint in Taipei, Taiwan, is a manufacturing company with about 100 employees. In April 1995, it instituted a health and safety program which included management commitment, training, engineering, enforcement, and incentives. A health and safety committee was established to conduct hazard identification audits. Two-way communication between workers and managers improved, and line manager responsibility was enhanced. By the end of 1997, occupational injury and illness incidence rates decreased from 33.5 to 10.2 while productivity increased from 100.8 kg per employee-hour to 115.1.[13]

Common Factors of Success

The fundamental prerequisite for success common to all these cases was commitment from top management. Other essentials include establishing a clear plan of action and involving all employees in the program.

Most of the companies began by establishing baseline data. Three areas were usually covered: a review of compliance with mandatory standards or regulatory requirements; a review of injury/illness data for prioritization of problems—frequency, severity, and

cost; and a review of injury investigations for causal factor information.

Then, hazards were identified by one or more of several means either by employees who were familiar with the processes and procedures, or by audits, or by Job Safety Analysis (JSA), or Job Hazard Analysis.

Enlisting participation and cooperation of all employees in the program followed. That occurred either through the establishment of a safety committee (involving workers and management) or through the establishment of an incentive campaign (i.e., reinforcement of behaviors).

Successful implementation of safety and health programs rested on several common factors including detailed plans and objectives, assigned responsibility, and effective two-way communication. In these cases, implementation of the safety and health programs also included engineering modifications to equipment and facilities; written procedures based on JSA; written standards and guidelines; regulatory compliance programs; and employee training (on standards, procedures, and guidelines).[14]

The key to making it all work is continuous review, evaluation, and improvement through observation of safe practices and procedures, audits, inspections, and monitoring of participation at all levels.

References

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[9]A. Hoskin, pp. 1-2.

[10]Ibid.

[11]Ibid.

[12] A. Hoskin, pp. 3-4.

[13]Ibid.

[14] A. Hoskin, p. 4.

