

Maintaining Employee Health and Regulatory Compliance in Lean Times

by Christopher K. Ahoy and David Ballard

In the past few years, universities in the Midwest and elsewhere, have been under difficult budgetary financial situations due to revenue shortfall in their respective states. Nevertheless, the work of organizational excellence and operational excellence continues in the safety and well-being of its constituents.

The impact of budgetary shortfall and lean times provides an opportunity for the Iowa State University staff to consider how the uses of quality tools can be applied to achieve success. Using some of the total quality management principles, *behavior-based safety and information management can be integrated* with proven strategies, such as the Occupational Safety Hazard Administration's components of an effective safety program, and the hazard control hierarchy to increase safety performance and lower costs.

Existing Paradigms of Safety Management OSHA Paradigms

OSHA was created over 30 years ago, long before the quality revolution, the inception of behavior-based safety, or current information management technologies. This was a time when laws mandating workplace safety were non-existent and accidents resulted in over 14,000 deaths. Since its conception in 1970, the Occupational Safety and Health Administration has emphasized a hazard control hierarchy (Figure 1) and maintained that an effective safety program must be based on:

- Management leadership and employee participation,
- Hazard identification and assessment,

Figure 1. Hazard Control Hierarchy



- Hazard prevention and control, and
- Information and training.

In effect, OSHA's strategy is to **make the workplace safer** by eliminating hazards. This strategy underlies all OSHA regulations and it has been effective in reducing workplace-related fatal injuries to 5,524 in 2002. However, this is not the total solution, as it does not address **unsafe behavior**, which is a contributing factor in over 90 percent of all workplace injuries.

Behavior-Based Safety Paradigm

The mid-1990's research by behavioral psychologist E. Scott Geller, in his book *Psychology of Safety: How to Improve Behaviors and Attitudes on the Job* (1996), resulted in the concept of behavior-based safety. This over-simplification is based on the premise of identifying and modifying risk-taking behaviors **to make employees work safer**. The concept of behavior-based safety is less than ten years old, but in its various forms (e.g., DuPont Stop Program and Safety Performance Solutions, Inc.) it is showing positive results.

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Figure 2. Systems Approach to Safety



TQM Paradigm

Total quality management (TQM) has been around for many years. However, applying systems thinking and continuous process improvement to occupational safety and health is a relatively new concept that has not been widely accepted and applied until recent years.

The major benefit to applying TQM to safety is that **workplace safety is viewed as a system**, with inputs and outputs that are analyzed and continuously improved, rather than a descriptive program. Hazards are considered as system deficiencies that can be corrected using systematic problem solving. This strategy focuses on the identification and correction of root causes, rather than controlling separate hazards. When workplace safety is viewed as a systems approach, effectiveness is measured and expressed as safety performance (Figure 2).

Knowledge Management Technology Paradigm

Effective knowledge management is essential for ensuring a safe and healthy workplace compliant with applicable regulations. Simply put, knowledge management is the collection and dissemination of pertinent data, information, and knowledge in a timely fashion for the well-being of the entire organization.

Knowledge management is finding the right information, at the right time, for the right process, problems, or issues.

Consider that material safety data sheets (MSDS), accident investigations, employee training, personal exposure monitoring, and lockout/tagout procedures all involve knowledge management. Knowledge management is the glue that binds safety and health-related processes into a fully integrated system. In addition, information technology is the transmitter or the vehicle that deploys such information to members of our organization.

We use knowledge management as one of the six criteria of a Balanced Scorecard Plus to the four Balanced Scorecard criteria: financial, internal process, customer-focus, and learning

and innovation, that were developed by Drs. Kaplan and Norton in 1992. The fifth criterion that we use is information technology. Knowledge must be thought of as a refined form of information. Computers cannot create the knowledge for us; human analysts are required. However, computers play a pivotal role by serving as the repository for data information and by providing tools to facilitate rapid analysis.

Until relatively recently, knowledge management was the most time-consuming and least efficient process in managing workplace safety. The advent of knowledge management technology, such as e-documents, on-line training, and computer-based recordkeeping has made the collection and dissemination of safety and health-related information more effective and cost efficient.

The Iowa State University FP&M Approach to Safety Management

The facilities planning and management (FP&M) approach to managing workplace safety is not a new paradigm. It is the integration of existing strategies with the additional goal of reducing OSHA recordable injuries and costs as related to labor rates.

The need for a more effective and cost-efficient approach to managing workplace safety became apparent in 2002. In that year, FP&M suffered significant budget reversions and reductions. It became apparent that the organization's approach to workplace safety that emphasized written programs, training, and walk-through inspections conducted by employee safety committees, was ineffective in reducing OSHA recordable injuries. In the same year, university risk management projected that the university user contribution to Iowa worker's compensation self-insurance could increase as much as \$1 million dollars if existing trends continued.

Systematic Approach

Once the problem was identified, FP&M partnered with the university risk management and environmental health

Figure 3. Safety Management Advisory Group



and safety departments (Figure 3). We applied systematic problem solving to identify, analyze, and correct underlying causes of workplace injuries. The analysis included:

- An audit of all reported injuries to identify who was being injured, and how, why, and when injuries were occurring.
- An examination of worker's compensation claims to identify cost-reducing opportunities.
- A review of programs, procedures, and records to identify opportunities for applying knowledge management technologies in an effort to increase the efficiency of the collection and dissemination of safety-related information.

Based on the analysis, FP&M designed a five-point action plan (listed below) to improve safety performance at a lower cost.

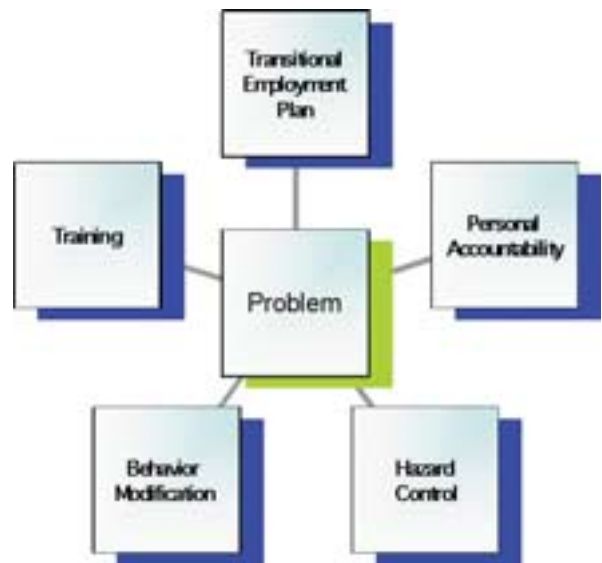
1. Use a systematic situational strategy to mitigate unsafe conditions and behaviors.
2. Hold personnel accountable for compliance with established safety-related policies, procedures, and practices.
3. Develop on-line safety-related training in conjunction with the FP&M Academy, which was in the early stages of design at that time.
4. Place safety-related information on FP&M Web page.
5. Establish a transitional employment plan.

Systematic Proactive Situational Strategy

In order to focus the resources required to resolve identified problems, FP&M adopted a situational strategy. This was based on the principles of systematic problem solving to identify and correct the underlying causes of hazards and injuries—human, design, environmental, and procedural factors. This strategy has proven successful in reducing the number of sprain and strain injuries incurred by custodians and addressing employees with a long history of injury reporting.

FP&M teamed with environmental health and safety and custodians were observed by an ergonomics specialist while performing routine tasks. The goal was to identify ways the

Figure 4. Situational-Specific Resource Toolbox



work could be performed with less potential for sprain and straining injuries. The resulting information was communicated to custodians.

Approximately 47 percent of injuries reported at FP&M are from employees with a history of injury reporting. Some are recurrent injuries, but most are different types of injuries. To address this problem:

- FP&M is providing counseling, in a caring and compassionate manner, to employees reporting multiple injuries.
- University risk management has placed increased scrutiny on claims filed by employees with a long history of injury reporting.
- University environmental health and safety is performing ergonomic assessments of employees reporting muscular-skeletal injuries.

FP&M continues to use the hazard control hierarchy to mitigate physical, electrical, and chemical hazards with emphasis placed on identifying simple and cost-effective solutions (Figure 4).

The same problem-solving approach is applied to accident investigations. Beginning in 2003, all injuries are investigated by service unit managers. These then are reviewed by the safety coordinator to ensure that human, design, environmental,

How Effective Can Enforcement Be?

Consider seatbelts. Before State laws requiring seatbelt usage were enacted, seatbelts were used approximately 17 percent of the time on a voluntary basis. This was low considering the publicity devoted to the need to wear seatbelts. Following the adoption of laws requiring seatbelt usage, compliance rose to more than 60 percent, simply because people wanted to obey the law.

—United States National Fire Administration

Figure 5.



or procedural contributing factors have been identified and addressed.

Personal Accountability

In the past, FP&M relied on voluntary compliance with applicable safety-related policies, procedures, and practices because it was doing “things right.” This practice was shown to be ineffective by an analysis of injury occurrences, which showed that employee work practices were a contributing factor in over 90 percent of all injuries. As a result, FP&M has begun to enforce safety-related policies, procedures, and practices through progressive discipline, even when the incident involves an injury. In other words, we moved away from doing “things right” to doing the “right things right.”

FP&M Academy

In 2001, FP&M leadership identified a need to modernize training processes into a comprehensive system to develop self-equity and organizational equity. In response to this vision, a nearly paperless computerized network of data and learning resources was developed by FP&M personnel and made accessible to employees in a user-friendly training system (Figure 5).

Key features of the system are:

- Personal training page
- On-line training
- Descriptions of all merit and professional positions
- On-line requests for training and approval of requests by authorized personnel
- Resource library
- Tuition and development grant

- General personnel policies
- Resources for trainers
- External training links
- Automatic documentation of training
- Individual, service unit, and organizational-wide training reports

From the onset, effective safety-related training was identified as a requirement for self-equity, organizational equity, and was incorporated into the FP&M Academy. Furthermore, as it was known that mandated training courses were increasing and as a result impacting employee downtime and labor rates, it was decided to develop objective based on-line safety-related training using the four-step instructional technique: motivation, presentation, application, and evaluation.

The advantages to on-line training are that it:

- eliminates scheduling conflicts.
- can be based on needs assessment for each position so employees are only required to complete courses dealing with the hazards for which they are exposed.
- can be designed to include organization-specific information.
- requires less time and resources than lecture presentations.
- is available on-demand and can be accomplished during periods of downtime.

Figure 6. FP&M Web Page



Figure 7. Safety Courses Completed Per Year

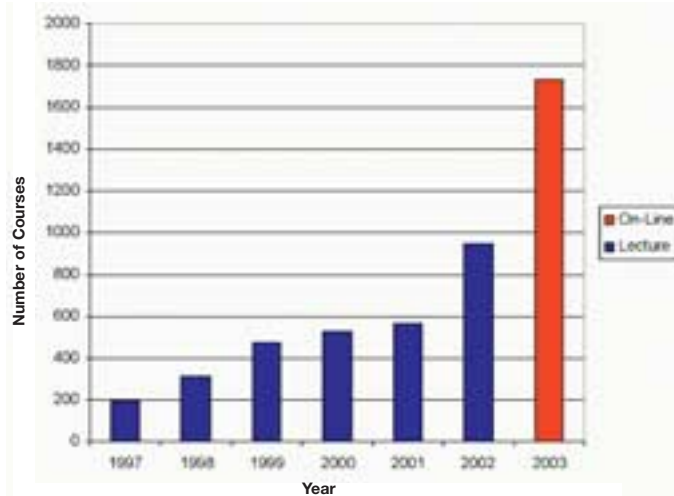
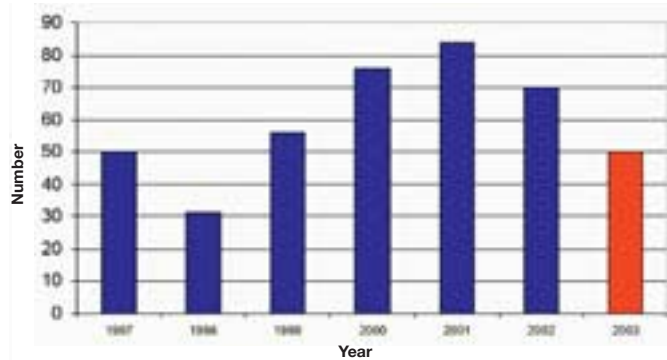


Figure 8. Cost of Safety-Related Training Downtime per Year



- accommodates computerized documentation of testing and scoring.

To date, FP&M has developed 37 safety-related on-line courses from existing PowerPoint presentation and public domain programs available from the Federal Emergency Management Agency (FEMA), National Fire Administration (NFA), Occupational Safety and Health Administration (OSHA), and National Oceanic and Atmospheric Administration (NOAA).

On-line training has been well received by FP&M employees and their supervisors, and the instant availability of employee training records has facilitated more effective accident investigations.

Figure 9. OSHA Recordable Injuries per Year

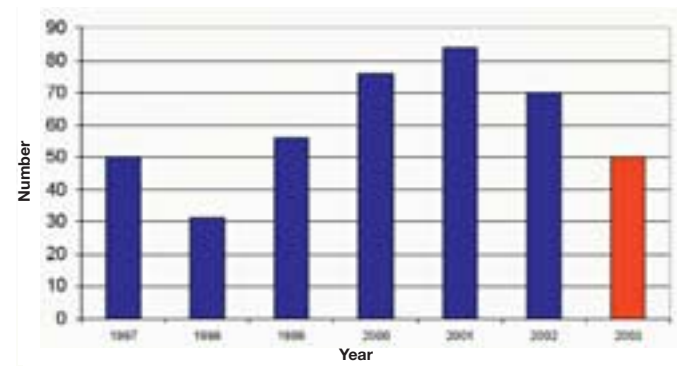
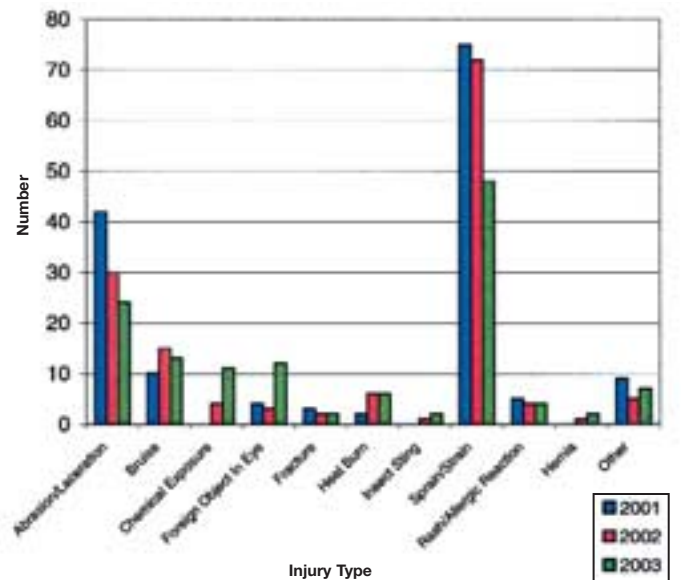


Figure 10. All Reported Injuries



Health and Safety for Web Page for FP&M Employees

Through a self-assessment, the FP&M safety coordinator determined that too much time was being spent preparing, distributing, and revising safety-related information. This included written programs, hazard assessments, MSDS, lock-out/tagout procedures, and confined space entry permits. Working with FP&M computer support services, the safety coordinator designed a user-friendly employee safety and health page to communicate required safety and health-related information. As a result, FP&M has a paperless system that is accessible to all personnel. This system allows safety-related documents to be revised and instantly made available. Gone are the days of printing revised pages and lists and inserting them into notebooks located in each service unit. As a result, the safety coordinator has more time to focus on actions hav-

ing a direct impact on employee safety and concerns. This also relieves the safety coordinator from the time-consuming effort of maintaining up-to-date safety-related documents for our staff (Figure 6).

Transitional Employment Plan

In mid-2003, FP&M teamed with university risk management to pilot a transitional employment plan. The stated purpose of the plan was to help injured employees get back to work and off worker's compensation as soon as feasible

by accommodating work restrictions established by the employee's physician. Transitional employment plans are coordinated by the FP&M human resources professional. Nine employees have participated in the plan since July 2003.

Although exact savings are not currently available, the transitional employment plan has the potential to result in significant savings by reducing wages charged to worker's compensation. This would directly impact the university's user contribution to the Iowa worker's compensation self-insurance.

Results

Preliminary results of the initiative show a reduction in injuries and an increase in the number of safety courses completed with less down time. In the first year:

- Total injuries decreased by 29 percent and OSHA-reportable injuries decreased by 28 percent. Custodian sprains and strains decreased by a remarkable 52 percent.
- FP&M employees completed 1,735 on-line safety courses at downtime cost of \$4,332, a significant savings over attendance at lecture-delivered courses. In 2002, attendance to 947 lecture delivery courses resulted in a downtime cost of \$44,000 (Figures 7-10).

Conclusion

In our current organizational environment of learning and teaching, we focus on specific as well as generic training along with development methodologies to increase capabilities of our staffs. Using appropriate learning and teaching tools, leveraging technology in lean times has enhanced the edification of all staff members through painless on-line training. There are now inherent built-in skill sets through development of self-equity that promulgates organization equity. Process improvements with quality initiatives theory and practices have reduced downtime, increased productivity, capabilities, and innate understanding of employee health and regulatory compliance in lean times. This bodes well for an organization aspiring to become the best, namely a world-class operation. 🏰

MORE THAN ENGINEERING

The gears of change move us forward.

Working together.

Listening to you.

Understanding your needs.

Providing solutions.

Building relationships.

Creating the motion to
turn your plans for today
into a better tomorrow.

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