

“What Have You Done For Me Lately?”

**Astra C. Townley, MS, ARM, CSP
Liberty Mutual Insurance Company
Orange, CA**

Introduction

In many companies, safety departments (and their personnel) are regarded as valuable assets and have a positive impact on decreasing the frequency of losses within the organization. But, in lean times, when sales fall off or a company undergoes a financial strain, management frequently looks at departments that are not revenue producing, like safety, as targets for cutbacks or elimination. Association for Environmental Management reports that the median ratio is one Environmental, Health and Safety departments' staff members for every 300 employees (ISHN, 2006) or .3 safety staffers per 100. A change in management may also signal trouble for safety departments. Safety and health professionals can see their resources go from “highly effective” to “woefully inadequate” in 12 months when a new management team takes over. While years of experience provide us with skills to negotiate when changes occur, if we do not have any concrete proof of our value, we become vulnerable to management down-sizing.

As a result, it is necessary for safety professionals to focus not only on minimizing losses within an organization by decreasing the frequency of losses and implementing compliance programs, but also on demonstrating to management the positive impact these efforts have on productivity, turnover, morale and bottom line profit.

Impact of Losses to an Organization

Senior financial executives, risk managers and safety directors strive to decrease the number of serious workplace injuries every year. Liberty Mutual's Safety Index for 2005 revealed that these types of accidents continue to affect organization's bottom line. While the frequency of workplace injuries is declining, the costs continue to escalate. The 2005 survey further revealed:

- Employers spent \$50.8 billion in 2003 on wage payments and medical care for injured workers;
- The cost of managing workplace injuries has grown almost \$1 billion per year between 1998 and 2003;
- \$1 of direct costs generates between \$3 to \$5 of indirect costs;

While most statistics shared with the public focus on the dollar costs, safety professionals focus on incident rates to benchmark and demonstrate our value. In 1944, R.B. Blake, a senior safety engineer for the Division of Labor Statistics, U.S. Department of Labor stated that the cost of

accidents was the driving force behind the industrial safety movement. Significantly, he also found that prevention results in savings.

Most of the data reported on the cost of injuries focuses on the “direct costs,” but, in addition to direct costs, there are “indirect costs” that must be considered. Direct (insured) costs are payments under workers’ compensation laws and medical expenses. Indirect costs (uninsured) are not specific monetary expenditures, but are reflected in the increased costs of doing business. These indirect costs include: a) the cost of wages paid for working time lost by workers who were affected by the injury to another worker, but were not injured themselves (e.g., employees near scene of accident who stop to look); b) the net cost to repair, replace, or make compliant material or equipment that was damaged in an accident (e.g., property); c) overtime costs by other employees necessitated by the injured worker’s absence and/or the downtime due to a resulting slow down in production; d) the cost of the learning period for new workers; and so forth.

Table 1

DIRECT COSTS (INSURED)	INDIRECT COSTS (UNINSURED)
<ul style="list-style-type: none"> • Medical expenses • Workers compensation premiums • Wage compensation payments 	<ul style="list-style-type: none"> • Time lost by injured employee • Lost time by fellow employees • Loss efficiency due to crew break-up • Lost time by supervisor • Training costs for new/replacement employees • Damage to tools/equipment • Loss of production for day • Damage from accident: fire, chemical, etc. • Failure to fill orders/meet deadlines • Morale • Reputation • Overhead costs

Interestingly enough, while most safety statistics emphasize the monetary impact on an organization or on society, safety professionals focus on incident rates to determine if health and safety programs are successful. Unfortunately, this might not be the best way to demonstrate the value of our services to upper management. Results in most companies are measured in terms of increased sales receipts, decreased costs, dollars saved, increased productivity. Safety professionals need to communicate their successes in terms that management understands.

Incident Rates: The Gold Standard

Incident rates are the benchmark used by most safety professionals. A company’s incident rates are tabulated by the Bureau of Labor Statistics (BLS) and compared with those of other business in

the same industrial classification. This allows a company to gauge its performance in reference to similar businesses.

Incident rates reflect, first, how many incidents have occurred, and then, how severe they were. These rates are the standard measures by which most companies have appraised their work safety efforts since their promulgation by OSHA. There are five major types of rates:

- Incident Rate
- Lost Time Case Rate
- Lost Time Workday Rate
- Severity Rate
- DART: Days Away/Restricted or Transfer Rate

OSHA established a specific mathematical calculation that allows a company to determine its incident rates so that it can be compared across any industry or group. The standard calculation is based on a rate of 200,000 labor hours. This number corresponds to 100 employees working 40 hours per week, 50 weeks per year.

Exhibit 1. Incident Rate Calculation.

$$\text{IR} = \frac{\text{Number of OSHA Recordable Cases} \times 200,000}{\text{Number of Employee labor hours worked}}$$

For example, a company has 17 full-time employees and 3 part-time employees that each work 20 hours per week. This equates to 28,400 labor hours each year. If the company experienced 2 recordable injuries, then the formula works like this:

$$\text{IR} = \frac{2 \times 200,000}{28,400} \qquad \text{IR} = \frac{400,000}{28,400} \qquad \text{IR} = 14.08$$

What is now known is that for every 100 employees, 14.08 employees have been involved in a recordable injury or illness.

The largest problem with incident rates is that they only measure past performance or lagging indicators. The incident rate is the most commonly used method of measuring an organization's safety performance as it is easily calculable and can be compared between companies within an industry. However, it is just one of the methods that can be used for measuring safety performance. And, unfortunately, the incident rate is not the language that most senior managers speak.

Baseline & Evaluation Tools

One of the most crucial considerations in the selection or development of performance measures is the determination of what is wanted. Most consultants usually calculate frequency and severity rates and set their goals and outcome for the year accordingly. The problem with this method is that it does not parallel the language used by most corporate executives. In most companies, success is measured in terms of growth, number of sales, profit margins, increased productivity and increased customers---all which can be translated into dollars and cents. Therefore it is essential that safety consultants determine how “success” is defined within their organization and find ways to use metrics to express the results.

There are several tools that can be effectively applied to demonstrate the benefits of implementing risk control measures:

- OSHA Safety Pays
- Performance Indicators
- Return on Investment (ROI)
- Internal Benchmarking

OSHA Safety Pays

OSHA Safety Pays is a tool developed by OSHA to assist employers in assessing the impact of injuries and illnesses on their profitability and sales. Safety Pays combines a company’s profit margin, the average costs of an injury or illness, and an indirect cost multiplier to project the amount of sales a company would need to generate to cover those costs. Because averages are used, actual costs may be higher or lower. OSHA Safety Pays can be used to benchmark the initial impact of losses on an organization as well as the increased profitability the organization gains by implementing risk control measures.

There are two parts to OSHA Safety Pays – 1) estimating the annual accident cost and 2) projecting the impact on profits and sales. The annual accident cost yields a total estimated annual cost of occupational fatalities, injuries and illnesses. It is based upon the National Safety Council’s average cost and includes both direct and indirect costs, excluding property damage. Once the accident cost is determined, it is combined with the company’s sales volume and profit margin to produce an estimation of the amount of sales needed to replace profits and to calculate the accident cost as a percentage of profits.

Exhibit 2. Before Risk Control Measures.

I. ESTIMATED ANNUAL ACCIDENT COSTS

	Enter		Results
Annual number of occupational deaths	0	× \$910,000* = \$	0
Annual number of lost workday cases	23	× \$28,000* = \$	644,000
Annual number of reportable cases without lost work days	56	× \$7,000* = \$	392,000
Total estimated annual cost of occupational deaths, injuries and illnesses		= \$	1,036,000

Calculate

II. IMPACT OF ACCIDENTS ON PROFITS AND SALES

(Compare accident costs to company profits)

Sales Volume: \$ 5,600.321 | (Enter)

Profit Margin: 3 % (Enter)

Sales Volume × % Profit = **Annual Profits: \$ 168** (Result)

Accident Costs (Estimated or Actual): \$ 1,036,000 (Result or Enter)

Accident Costs as a Percent of Profits: 616,666.7 % (Result)

****Amount of Sales Needed to Replace Lost Profits:** \$ 34,533,333 (Result)

(If profit margin is 5%, then it takes \$20 of sales to replace every dollar of loss)

Calculate

Exhibit 3. After Risk Control Measures

I. ESTIMATED ANNUAL ACCIDENT COSTS			
	Enter		Results
Annual number of occupational deaths	0	× \$910,000* = \$	0
Annual number of lost workday cases	12	× \$28,000* = \$	336,000
Annual number of reportable cases without lost work days	<u>25</u>	× \$7,000* = \$	<u>175,000</u>
Total estimated annual cost of occupational deaths, injuries and illnesses		= \$	511,000

Calculate

*Using National Safety Council average costs for 1998, includes both direct and indirect costs, excludes property damage.

II. IMPACT OF ACCIDENTS ON PROFITS AND SALES			
(Compare accident costs to company profits)			
Sales Volume: \$	5600021	(Enter)	
Profit Margin: %		(Enter)	
Sales Volume × % Profit = Annual Profits: \$	168,010	(Result)	
Accident Costs (Estimated or Actual): \$	<input type="text" value="511,000"/>	(Result or Enter)	
Accident Costs as a Percent of Profits:	<input type="text" value="304.1"/>	% (Result)	
*Amount of Sales Needed to Replace Lost Profits: \$	17,033,333	(Result)	
(If profit margin is 5%, then it takes \$20 of sales to replace every dollar of loss)			

Calculate

Performance Indicators

The phrase “Health and safety is good business” has been used by many safety professionals to mean that, by reducing the number of unplanned incidents, a company will cut losses. But those in the business world realize that there is more to good business than the reduction of losses—there is also the generation of income.

A parallel can be drawn between total quality management and safety management (Krause, 1994). Safety management often can be improved by using total quality management processes such as

cost performance, scheduling and productivity. Some of the data indicators used in determining the impact of safety on productivity are:

- Schedule Ratio - (planned schedule span in months) / (actual final schedule in months)
- Safety – (actual or estimated exposure man-hours/100 employees) / (No lost time injuries)
- Productivity Ratio (budget field man-hours)/ (actual field man-hours).

The schedule ratio is used as an indicator of schedule performance. This ratio tends to decrease when there are lost-time cases (absences) that can change a schedule and thus affect productivity. The values can range from 1.0 (performance better than planned) to less than 1.0 (performance worse than planned). The safety indicator measures the average number of man-hours worked over a set period and the duration rate is expressed as the ratio of the number of lost-time injuries to 100 full time employees. As the value increases, performance improves. The productivity ratio compares budgeted man-hours with actual man-hours worked. As with the other indicators, a value of 1.0 or greater means that the productivity was better than estimated and less than 1.0, that productivity was worse than estimated.

A study conducted by Stewart and Townsend in 1996 showed that halving the injury frequency was associated with a 10% increase in productivity. Another study done on a petrochemical site showed a positive association between improving safety and improving productivity. This study resulted in a 50% reduction of the frequency rate while at the same time increasing productivity by 15%.

Using productivity gains and schedule ratios is a positive way to communicate the results of safety initiatives to demonstrate the value and impact of safety.

Return on Investment (ROI)

Another tool available to the safety & health professional to demonstrate the positive impact of safety initiatives on an organization's bottom line is an analysis of the return on investment. Return on investment can take the form of cost savings, incremental profit or appreciation in value. The return on investment compares the net return to the cost of the investment. Investments include safety program expenses such as:

- Salaries and benefit costs of safety staff;
- Safety materials and equipment costs;
- Travel expenses and seminars;
- Safety training costs wages & downtime
- Contractor costs
- Miscellaneous costs

The total of all of these expenses, taken together, result in the safety program investment. Overall, if the ROI is high, the company had a favorable return whereas, if the ROI is low, the company had a negative return and lost money.

Other factors used to calculate an organization's ROI are:

- Total employee hours worked;
- Workers Compensation premium costs
- WC costs per employee hour worked

- USDOL industry average

These factors arranged in the “Safety ROI” equation, will result in a company’s return on investment for their safety program. As an analytical tool, ROI has several benefits:

1. Easy to convey information to upper management;
2. Remind everyone of financial impact of safety;
3. Help organization to adopt a long-term perspective to safety.

Internal Benchmarking

Benchmarking is defined as a reference point used in surveying. Benchmarking is a management tool that enables companies to remain competitive and become more efficient. Internal benchmarking can allow an organization to determine if its safety and health program is improving each year. Benchmarking has advantages and disadvantages.

Exhibit 4. Benchmarking Advantages and Disadvantages

ADVANTAGES	DISADVANTAGES
<ul style="list-style-type: none"> • Easy to get information • Cost-effective • Improves consistency within a firm; • Improve communication and information sharing • Easier to get management commitment 	<ul style="list-style-type: none"> • Not identify overall best practice

One of the most common internal benchmarks used to demonstrate the value of a safety and health program is by comparing frequency, severity and other choice parameters to payroll. By comparing these raw numbers to payroll, a ratio is established that allows for yearly comparison, which in turn can track the success of a health and safety program.

EXHIBIT 5. Internal Benchmark by Payroll

Incidence Rate Comparison - per \$100,000 of payroll				
	2002 Policy Year	2003 Policy Year	2004 Policy Year	2005 Policy Year
TOTAL # OF WC CLAIMS (Frequency rate)	0.24	0.69	0.67	0.65
# INDEMNITY CLAIMS (Loss time rate)	0.12	0.19	0.14	0.18
# LARGE LOSS CLAIMS (High loss rate)	0.05	0.13	0.10	0.15
# LITIGATED CLAIMS (Litigated case rate)	0.06	0.10	0.04	0.02

Conclusion

As we move toward a global perspective, the implementation, maintenance, and improvement of safety, health and environmental programs are of significant importance to most companies in the United States. SH&E programs positively impact employees and employers not only in the private sector but also the public. To that end, workplace injuries and illnesses are costly in financial and human terms. More than \$40 billion is paid each year by employers and their insurers in workers' compensation benefits. There are many studies showing the direct positive correlation between investment in safety, health and environmental initiatives to return on investment. It is, therefore, imperative that safety and health professionals use tools such as internal benchmarking, return on investment, performance indicators and OSHA Safety Pays to demonstrate their value to an organization.

Bibliography

- Davies, J.C. (1986). *"Understanding and Communicating of Risk."* The Chemist.
- Health and Safety Executive: *The Costs of Accidents at Work (HS(G)96.* London: HMSO, 1993.
- Jervis S. and Collins, T.R. (2001). *"Measuring Safety's Return on Investment."* Professional Safety Journal.
- Johnson, D (2006). *"In Search of Benchmarks."* Industrial Safety & Hygiene News 40 (6), 28 - 31.

Krause, T.R. & Finley, R.M. (1993). "*Safety and Continuous Improvement – Two Sides of the Same Coin.*" *Safety and Health Practitioner*, 11 (9), 19.

Liberty Mutual Workplace Safety Index, 2005, Liberty Mutual.

OSHA, "\$afety Pays."(1996) OSHA Web site, http://www.osha-slc.gov/SLTC/safetyhealth_eat

Rinefort, F.C. (1978). "*Estimated Relationships Between Organization Profitability and Employee Work Injuries.*" Eastern Illinois University School of Business, Charleston, Illinois.

Stewart, D.A. and Townsend, A.S (1996). "There is more to 'Health and Safety is Good Business' than Avoiding Unplanned Costs?". HS (G) 96. London: HSMO 1996.