

Using NIOSH Week to Improve Safety: Some Practical Strategies

Although it's not a Hallmark Hall of Famer, NIOSH Week IS an opportunity to make hay with your safety program. Here's how.

What is a Safety Culture and Why Do You Need One?

The words "safety culture" gets bandied about a lot. What exactly is safety culture? And what impact does it have on a company's liability risks?

Model Fatigue Management Policy

Having a written policy stating the organization's commitment to managing fatigue risks is key. Here's a Model Fatigue Management Policy you can adapt for your own organization

Fatigue: The Safety Risks and How to Manage Them

Using fatigue management systems to limit workplace injury risk

Hard Hat Hazard

What's Wrong with This Picture?



Sunlight and extreme heat can damage a hard hat and compromise its protectiveness.

To make matters worse, damage from heat and sunlight is often invisible to the naked eye and only becomes apparent when the hard hat is tested under “battle conditions.” Of course, that’s the worst time to learn about a defect in protective equipment.

The moral: Make sure you warn your employees to store their hard hats in a cool, dark place.

Hard Hat Mistake

Can you spot the hazard in this photo?

What's Wrong with This Picture?



The good news is that the worker is wearing a hard hat. The bad news is that he's wearing it backward.

Although it may look cool, putting the brim in back compromises the protection the hard hat provides.

The moral: Unless the manufacturer specifically says it's okay, don't let your workers wear their hard hats backward.

Hard Hat Violations

It's often necessary for workers to use different forms of body protection in combination. The cardinal rule in such situations:

Use of one protective device must never be allowed to compromise the effectiveness of another.

What's Wrong with This Picture?



It's often necessary for workers to use different forms of body protection in combination. The cardinal rule in such situations: Use of one protective device must never be allowed to compromise the effectiveness of another.

Unfortunately, whoever's responsible for the worker in this picture obviously didn't get the cardinal rule memo. The hat the worker's using to shield his eyes and face from the sun has compromised the fit of the hard hat. And without a snug fit, a hard hat won't provide adequate protection against impact and electrical hazards.

The moral: Instead of wearing the hard hat over his sun hat, the worker should be using sunglasses and/or a hard hat with a detachable brim to shield his face and eyes that's fitted to the hard hat.

Major Requirements of OSHA's Respiratory Protection Standard

Retrieved from: Occupational Safety & Health Administration

This standard applies to General Industry (Part 1910), Shipyards (Part 1915), Marine Terminals (Part 1917), Longshoring (Part 1918), and Construction (Part 1926).

https://www.osha.gov/dte/library/respirators/major_requirements.pdf

How to Use Total Cost Assessment to Demonstrate Business Value of Your Safety Initiatives

Convincing senior management to invest in safety initiatives can be an uphill battle, especially when the initiative isn't specifically required by law. Of course, demonstrating that the initiative will cut costs and/or boost revenues is a great way to sell it to the business people who control the purse strings. But doing so is easier said than done.

So how *can* you demonstrate that a safety initiative will have a positive effect on your company's bottom line? One possibility is to use Total Cost Assessment (TCA), an accounting method that's designed to measure the true profitability of EHS investments. Although TCA is designed to evaluate environmental initiatives, the same principles apply to demonstrate the profitability—or lack thereof—of safety initiatives. Here's a look at how TCA works and

some case studies showing how companies applied it to their environmental initiatives.

TCA BASICS

TCA is particularly useful for evaluating safety and environmental initiatives that, because of their nature, often produce financial savings that are overlooked in conventional financial analyses. Relative to conventional cost accounting and project evaluation approaches, TCA:

- Takes into account a wider range of direct and indirect costs and savings;
- Considers longer timelines that reflect the full economic or commercial life of a project;
- Uses financial indicators that incorporate the time value of money;
- Reveals “hidden” costs by relating them to the activities that cause them; and
- Considers uncertain or less quantifiable costs.

4 Steps for Conducting a TCA

Conducting a TCA involves complex calculations. The good news is that several groups prepared [guidelines](#) for using TCA to make the business case for pollution prevention projects for the province of British Columbia's Ministry of Environment, Lands and Parks. These guidelines break the process into 4 basic steps:

Step 1: Defining the Decision

Depending on the project and the company, defining the decision may include:

- Determining the scope of the TCA, such as what will be included in the analysis;
- Clarifying how the project addresses core business objectives; and
- Identifying what internal approvals are required for the project.

Step 2: Identifying and Understanding Costs

There are four types of costs commonly associated with environmental initiatives (and many safety initiatives as well):

- *Direct or “conventional” costs*: costs that are usually identified in a conventional financial analysis, such as up-front capital costs, raw material inputs, labour, etc.;
- *Indirect costs*: costs that either aren’t allocated to individual products, processes or facilities at all because they’re part of general overhead or are lumped with several unrelated costs and allocated on the basis of some relatively arbitrary factor, such as square footage. This category may include up-front costs (e.g., siting, design, etc.); operating costs (e.g., regulatory, monitoring or compliance costs); and back-end costs (e.g., decommissioning, site clean-up, etc.);
- *Contingent costs*: costs that may–or may not–be incurred at some point in the future and can be quantified in terms of their expected magnitude, frequency and timing. Examples include compensation for future accidental chemical releases or spills, fines for future environmental and OSHA violations and remediation costs; and
- *Less-quantifiable costs*: costs that require some subjective interpretation to assess and quantify. They include a wide range of strategic considerations and are realized as changes in revenues or underlying costs. The most common are costs arising from changes in corporate image, customer relations, worker morale and government or regulator relations.

Step 3: Analyzing Financial Performance

True measures of profitability account for the time value of money. So TCA uses a discounted cash flow to recognize that costs, savings and revenues fluctuate over time. It also extends the timeline of the evaluation to account for costs and benefits that occur more than 3 to 5 years in the future. Particularly in the case of environmental and safety initiatives, these future costs and benefits—and their timing—can significantly affect financial performance.

Step 4: Making the Decision

Decision-making is about integrating all of the factors that are relevant to the profitability of an investment. Some factors may be monetized (e.g., in a net present value calculation); some may be quantified but not monetized (e.g., percentage increase in market share); and others may simply be identified and characterized qualitatively (e.g., “anticipated changes in future regulatory requirements are expected to increase compliance costs substantially”). The actual method of decision-making depends on the nature of the project and the magnitude of the potential costs and savings.

Using TCA to Sell Management on Safety: 3 Case Studies

Here are 3 examples of companies that successfully used TCA to win approval for EHS initiatives—and to identify and thus avoid initiatives that *weren't* financially sound. Although the case studies involve environmental initiatives, the financial issues they raise are also common to the evaluation of safety initiatives.

1. Circuit Company Gets Approval for Rack Switch

A circuit board manufacturer evaluated a project that would eliminate the use of nitric acid as a stripping agent by replacing stainless steel racks with plastic coated racks. Under a conventional cost analysis, only the purchase price of the new racks and the savings associated with eliminating the purchase and subsequent disposal of nitric acid were included; no labor, paperwork, permitting or analytical costs were included. This approach suggested that the project would just begin to yield a positive return in its fifth year. In contrast, a TCA of this project showed a five-year net present value of \$33,000. When product quality improvements and worker health and safety benefits were also factored in, the project was easily approved.

2. Printing Company Uses TCA to Improve Profitability & Reduce Waste

A commercial printing company wanted to upgrade the wastewater

treatment system at one of its facilities but the project didn't appear to be sufficiently profitable under a conventional financial evaluation. A TCA was conducted to ensure that *all* relevant direct and indirect costs were included in the analysis. The project's rate of return actually turned out to be 17.8% using TCA, as compared to 14.7% under a conventional analysis. And its 10-year net present value rose from \$51,887 to \$81,152, while payback dropped from 6.9 years to 5.6 years when TCA was applied. *Bottom line:* The TCA demonstrated that in addition to better immediate financial performance, the upgraded facility would generate less hazardous waste and produce a potentially marketable by-product.

3. TCA Reveals that an Environmental Initiative *Isn't* a Sound Investment

The environmental management division of a large paper coating mill conducted a TCA on a coating conversion project that involved switching from a solvent/heavy metal base coat to an aqueous/heavy metal-free formulation. Expected environmental benefits included reductions in flammability and explosiveness, worker exposure to solvents, VOC emissions, hazardous waste and solvent/heavy metal usage. But when the TCA was conducted, it showed that previously omitted utility costs *outweighed* the waste management savings. The project's 15-year net present value, already negative at -\$203,000, dropped to -\$395,000 under TCA. Its rate of return dropped from 11% to 6% and the payback period rose from 7.6 to 11.7 years.

Conclusion

Standard accounting cost analysis doesn't always show the true value of a safety initiative. So by using a conventional analysis on a proposed safety initiative, you may actually be underselling the initiative's financial benefits—and effectively shooting yourself in the foot in your effort to get the backing of senior management. But by using a TCA, you can more accurately demonstrate how a safety initiative will ultimately benefit the company's bottom line and thus improve your chances of getting approval for the project. In addition, a TCA may weed out

initiatives that *aren't* cost-effective, helping you avoid wasting time on projects that will never get off the ground.

Source: "Total Cost Assessment Guidelines: Preparing the Business Case for Pollution Prevention Projects," Compass Resource Management Ltd., Planit Management Inc. and The Sustainability Ventures Group Inc., April 1997.

Showing How Worker Fatigue Harms the Bottom Line

As safety coordinator, you need to be aware of the dangers of workplace fatigue and warn company management to consider the economic impact of driving workers too hard. But you'll need solid evidence to support your argument. There are 2 studies published in the *Journal of Occupational and Environmental Medicine* (JOEM) you can use: One is on the relationship between fatigue and health-related lost productive time and the other links weekly work schedules of 60 or more hours to health and safety problems.

Fatigue in the Workforce

Workers suffering from fatigue—physical and mental—are not only less productive and more prone to illness but also more distracted and thus more likely to be involved in a safety incident. For example, studies show that fatigued workers are more than twice as likely to experience health-related lost productive time. One study found that 37.9% of U.S. workers experience fatigue, costing companies approximately \$136 billion in lost productivity.

Fatigue can be broadly defined as a feeling of weariness, tiredness or lack of energy. Fatigue is a common complaint but, medically speaking, it's recognized more as a symptom or cause of

other conditions than as a condition itself. The best way to understand fatigue is along a continuum. On one end of the spectrum is the fatigue that most of us occasionally experience in the course of our lives when we get physically or mentally overburdened. This kind of fatigue isn't serious and can usually be resolved simply and quickly, such as by getting extra rest. On the other end is a less common but more serious form of fatigue that's symptomatic of a more chronic and disabling condition, such as major depressive disorder or chronic fatigue syndrome. This form of fatigue is an acute and/or ongoing state of tiredness that leads to mental or physical exhaustion and prevents people from functioning as usual.

Fatigue clearly impairs work ability. Studies have shown that workers with fatigue are significantly more likely to miss work and experience long-term work absences than workers without fatigue. But there were no studies on the prevalence of fatigue within the workforce (at least in the U.S.) and how fatigue affected productive work time.

THE FATIGUE STUDY

The JOEM fatigue study was the first to examine the relationship between fatigue and health-related lost productive work time (LPT) in U.S. workers. The researchers used data from the Caremark American Productivity Audit (the Audit), a random telephone survey of U.S. residents that measures the relation between health and productivity. The Audit used the Caremark Work and Health Interview (WHI) to gather information from workers about their:

- Self-reported employment status;
- Occupational characteristics;
- Health conditions and symptoms;
- Lifestyle factors;
- Health-related quality of life; and
- Demographic characteristics, such as annual salary.

The WHI measures LPT as the sum of self-reported hours per week absent from work for a health-related reason (absenteeism) and the hour-equivalent per week of self-reported health-related reduce

performance while at work (presenteeism). The presenteeism analysis focused on 5 work behaviors:

- Loss of concentration;
- Repeating a job;
- Working more slowly than usual;
- Feeling fatigued at work; and
- Doing nothing at work.

The researchers interviewed a sample of 28,902 adults ages 18 to 65 who'd participated in the Audit and were employed in the week before the interview. To identify which individuals were suffering from fatigue, researchers posed the following question to participants: "Did you have low levels of energy, poor sleep or a feeling of fatigue in the past 2 weeks?"

The Study Results

Based on the information gathered on the participants through the WHI and from the researchers own interviews, they concluded the following:

- The estimated prevalence of fatigue in the U.S. workforce for a two-week period was 37.9%.
- Fatigue was more prevalent in women, workers under age 50, white workers and workers earning more than \$30,000 per year in "high control" positions—that is, jobs with a lot of latitude in making decisions.
- Overall, 9.2% of U.S. workers with fatigue reported LPT specifically due to fatigue in the previous two weeks. Such workers lost an average of *4.1 productive work hours* per week, most of which was reflected in reduced performance at work rather than absence from work, i.e., presenteeism rather than absenteeism. For these workers, fatigue affected their work performance primarily by impairing their concentration and increasing the time it took them to complete tasks. And distracted workers are naturally more likely to have safety incidents.

Bottom line: The researchers estimated that workers with fatigue cost U.S. employers \$136.4 billion per year in health-related

LPT—\$101 billion more than workers without fatigue.

THE LONG WORK HOURS STUDY

A separate set of JOEM researchers set about to analyze the impact of long work hours on workers' health and safety. The researchers relied on a database put together by a truck and engine manufacturer to gauge the impact of long work hours on its workforce. Working overtime at the manufacturer's worksites was voluntary. But it was common practice for the company to ask workers to work more than 40 hours per week. In fact, company operations were, in large part, based on the presumption that many—if not most—workers *would* work overtime if asked. That assumption proved to be correct as workers averaged 43.79 hours per week.

The database included information on 2,746 workers who completed 2 surveys that covered a wide range of topics, including:

- Health status;
- Chronic disease;
- Presenteeism and absenteeism;
- Workplace incidents;
- Behaviors that pose a health risk; and
- Use of health services.

The database also included information on workplace incidents that adversely impacted worker health or safety, which was gathered from the manufacturer's databases on:

- Workers' comp and short-term disability claims;
- Group health claims and paid prescriptions; and
- Eligibility and absenteeism.

The Study Results

Researchers found that for workers who worked less than 60 hours per week, the injury rate was negligible. But at the 60-hour mark, the injury rate increased steadily, peaking at the 80 hours per week mark. (Note that the only workers who reported averaging workweeks above 80 hours were salaried workers who performed

sedentary jobs. So it's not surprising that the injury rate for this group was low.) In addition, working 60+ hours per week led to the onset of one or more diseases and to the greater likelihood of at least one acute or other work injury. In contrast, working moderate overtime (defined as 48.01-59.99 hours per week) didn't have any significant impact on workers' health or safety.

Conclusion

The JOEM fatigue study shows that fatigued workers cost their employers billions of dollars a year in lost productivity. Of course, fatigue can be caused by many factors—including ones that are unrelated to the workplace, such as family demands, health problems and financial pressures. But as the long hours study shows, fatigue can certainly be caused by working excessive hours. When workers work 60 hours or more per week, they're more likely not only to get sick or injured and miss work but also to work less productively when they do show up for work. And both forms of productivity loss—absenteeism and presenteeism—directly hit the company's bottom line.

So while pushing workers to work harder and longer may seem to make financial sense on its face, in reality, an overworked and overtired workforce will ultimately cost the company money. Instead, you should encourage senior management to take steps to address fatigue in the workplace. How? In August 2008, WorkSafe Victoria and WorkCover New South Wales published a guide called *"Fatigue – Prevention in the Workplace,"* which provides information on how to:

- Identify potential work-related fatigue hazards;
- Determine work-related fatigue risks;
- Control work-related fatigue hazards and risks; and
- Monitor and review work-related fatigue control measures.

The guide, which is available at WorkSafe New South Wales notes that preventing and reducing fatigue may lead to:

- Better health and safety outcomes;
- Fewer workplace incidents and injuries;

- Reductions in absenteeism and staff turnover; and
- Better performance and productivity.

Sources:

“Do Long Work Hours Impact Health , Safety, and Productivity at a Heavy Manufacturer?” Allen, Slavin and Bunn, *Journal of Occupational and Environmental Medicine*, Vol. 49, No. 2, Feb. 2007.

“Fatigue in the U.S. Workforce: Prevalence and Implications for Lost Productive Work Time,” Ricci, Chee, Lorandean and Berger, *Journal of Occupational and Environmental Medicine*, Vol. 49, No. 1, Jan. 2007.

Showing How Work-Related Stress Harms the Bottom Line

Work-related stress has been around for as long as workplaces themselves. But recognition of stress as an occupational hazard is a product of modern times. Unfortunately, not all CEOs have gotten the message. As a safety director, you must persuade your CEO that stress really is a problem to take seriously. The best way to do that is to relate the problem to dollars.

Here’s how to educate your CEOs to the dangers of workplace stress and gain their support for programs to combat it. Here’s a [Model Worksheet](#) you can use to calculate the financial impact of stress on *your* company.

The Business Case for Preventing Workplace Stress

The case is a simple one: Workplace stress hurts profits because it increases absences and cuts productivity. ‘Want some good hard

data that you can use to make this point? According to a press release from the World Congress on Health and Safety at Work, of the 40.2 million working days annually lost by businesses worldwide, 13.4 million are from stress, anxiety and depression, the representatives found.

To put these numbers into perspective for your CEO, relate stress to more “familiar” hazards. According to one of the delegates, “in the U.S. alone, stress is creating a workplace hazard every bit as damaging as chemical and biological hazards.”

Demonstrating the Hidden Costs of Stress

These statistics should help you capture the CEO’s attention. But you’ll probably need to drill deeper to make your case. To persuade your CEO to invest company resources, you must clearly explain exactly *how* workplace stress hurts the business. This is tricky because stress isn’t a line item cost listed on the typical profit and loss statement. It’s a bundle of hidden costs. There are five elements in this bundle that you should point to:

1. Higher Injury & Illness Rates

The more stress workers experience at work, the more likely they are to engage in unsafe behavior. The result is more incidents involving personal injury and/or damage to equipment and machinery. The link between stress and incidents isn’t just a matter of common sense; it’s well documented. If you want a good study to cite, see F. Gordon & D. Risley (1999) “The costs to Britain of workplace accidents and work-related ill health in 1995/96, Second Edition,” HSE Books, London; and P. Dorman (2000), *The Economics of Safety, Health and Well-being at Work: An Overview*, International Labour Organization, Geneva.

2. Increased Absenteeism

Studies confirm that workers under stress are more apt to call in absent—either because they’re genuinely ill or they’re feigning illness to avoid having to go to work.

3. Higher Turnover

Stress at work also causes people to leave the company. In addition to losing good people, companies incur high administrative costs in seeking replacements. And, replacement costs tend to rise to the extent that the company gains a reputation for being a stressful place to work.

4. Premature Retirement

Stress causes older and more senior workers to retire before they're ready. **Result:** High replacement costs and in many cases lump sum and pension payments.

5. Reduced Productivity

Workplace stress harms workers' productivity and performance. The effect of stress on productivity is hard to measure; but it is real.

Conclusion

There's nothing mystical about workplace stress. It can be managed. For example, Employee Assistance Programs have proven very effective at reducing stress on the job. But these solutions cost money. And time. The only way to secure the necessary resources is to persuade your CEO that workplace stress poses a serious threat to your workers and your company's bottom line.

How to Demonstrate the Value of an OHS Management System

OSHA is talking about adopting a rule requiring employers to implement a written illness and injury program. Such programs are already required by Cal-OSHA. Of course, many companies implement a program that goes beyond minimal requirements and encompasses

more elaborate systems to prevent illness and injury. These efforts are generally referred to as occupational health and safety management systems (OHSMSs). Here's how to demonstrate to management the effectiveness of OHSMSs using a recent review from the Canadian Institute for Work & Health (IWH).

What Is an OHSMS?

The basic injury and illness prevention program required by Cal-OSHA and proposed by fed OSHA contains policies and procedures to identify and control hazards in the workplace, including hazard assessment, training, inspection, incident investigation and recordkeeping.

An OHSMS is more proactive, comprehensive and integrated than this and incorporates more robust evaluation and continuous improvement elements. The IWH report is a systematic review of existing research evidence on the effectiveness of OHSMSs around the world. The report first defines an OHSMS in terms of 27 elements, the primary 5 of which are:

- A communication system;
- An evaluation system;
- Continual improvement;
- Integration; and
- Management review.

According to the report, OHSMS have the following 4 secondary elements:

- Document and record management;
- Auditing and self-inspection;
- Incident investigation and root cause analysis; and
- A health/medical program and surveillance.

The review groups OHSMSs into 2 broad types:

Mandatory OHSMSs. In some countries, mandatory OHSMSs are imposed on companies by OHS law and contain the elements required by statutes and regulations. In general, mandatory OHSMSs are simpler in terms of what they require of companies because they're

intended for adoption by all or most workplaces, including small ones.

Voluntary OHSMSs. Voluntary OHSMSs aren't required by a country's OHS laws. Instead, the basic architecture and design of a voluntary OHSMS may be set by professional organizations or standards associations, such as the Canadian Standards Association or the British Standards Institute. Although these kinds of systems aren't mandatory, government-related agencies, such as workers' comp boards or insurance carriers sometimes offer incentives to companies to adopt a particular voluntary OHSMS.

The review notes that OHSMSs have developed considerably over the last 20 years. But little is known about the effectiveness of these systems and their financial impact on the companies that implement them. So the IWH researchers decided to assess the existing research.

The OHSMS Review

The original goal of the researchers was to answer 3 questions:

- 1) What's the relative effectiveness of mandatory and voluntary OHSMSs as to worker health and safety and associated economic outcomes, such as its workers' comp rates?
- 2) What facilitators and barriers are there to the adoption and effectiveness of OHSMSs?
- 3) What evidence exists relating to the cost-effectiveness of OHSMSs?

The researchers searched seven electronic databases covering a wide range of journals, which contained mainly peer-reviewed articles from a variety of disciplines, looking for relevant studies on OHSMSs. Their initial search located 4,807 studies.

The researchers then screened these studies for relevance. For inclusion, a study had to address at least two of the 27 elements in a comprehensive OHS framework; one of these two had to be a management element. After this screening, potentially relevant

publications were tested again against the inclusion criteria. At this point, 18 studies were considered eligible.

The researchers rated the methodological quality of each eligible study independently using a set of explicit criteria. For a study to be included in the review, it had to be of at least “moderate” quality. Nine studies met this requirement. Of these, four examined voluntary OHSMSs (three from Australia and one from Manitoba) and five evaluated mandatory systems (three from Norway, one from Ontario and one from Québec). Unfortunately, none of them provided enough quality evidence on facilitators and barriers to OHSMSs or estimated the cost of OHSMS implementation. So researchers were only able to answer the first of their three original questions.

The Results of the OHSMS Review

The researchers came to the following key conclusions:

Voluntary OHSMSs. All studies involving voluntary OHSMSs reported positive findings. Although the outcomes measured varied among studies, the benefits found included:

- Increased implementation over time;
- Better safety climates;
- Increased hazard reporting by workers;
- More organizational action taken on OHS issues; and
- Decreased workers’ compensation premiums, including declines in premium rates of 23% and 52%.

Although data on injury rates wasn’t included in these studies, the findings on workers’ comp premiums and additional data provided by the studies imply that injury rates declined, too.

Mandatory OHSMSs. All of the 5 studies examining mandatory OHSMSs also reported positive findings. Some of the benefits noted included:

- Increased OHSMS implementation over time;
- Improved worker perceptions of the physical and psychosocial

working environment;

- Increased worker participation in health and safety activities;
- Reduced lost time injury rates; and
- Increases in productivity.

However, the researchers did note that all the studies were of only “moderate” quality, largely because their study designs were so simple. For example, three of the four studies on voluntary OHSMSs involved single workplaces, making the applicability of the findings to other workplace settings uncertain. In fact, the researchers recommend that more research be done on the effectiveness of OHSMSs, particularly their cost-effectiveness.

Bottom line: Although there are limitations to the conclusions that can be drawn from the review, the studies on both voluntary and mandatory OHSMSs that were included in the review all provide more than just anecdotal evidence that these systems positively impact workplace safety.

Conclusion

Before senior management is willing to invest in an OHSMS, they’re going to demand some proof of their effectiveness. Using the results of the IWH’s review, you can demonstrate that investing in an OHSMS is worth pursuing and will improve health and safety and cut workers’ comp and related costs.

Source: “[The Effectiveness of Occupational Health and Safety Management Systems: a Systematic Review](#),” the Institute for Work & Health, Robson, L. S.; Clarke, J. A.; Cullen, K.; Bielecky, A.; Severin, C.; Bigelow, P. L. et al (2007).

What to Look for in Results Tracking Software

Like other functions of safety management systems, tracking the consequences of preventive actions has moved from the realm of paper to software. Although technology offers significant advantages, it also poses equally daunting challenge. First and foremost, you need to ensure that your tracking software has the right technological capabilities and functions.

Safety Software and the Tracking Function

Safety management systems generate potentially significant value to an organization by using timely, accurate and meaningful information data to generate more effective safety solutions. Most safety system management models are based on the Plan-Do-Check-Act cycle of continual improvement is the centerpiece of most safety management models. Tracking results of your actions is the Check of Plan-Do-Check-Act. And it requires significant due diligence.

The beauty of software solutions is that they enable you to cull the gems of information you need to track performance without having to comb through stacks of paper.

The Essential Functions of Result Tracking Software

When considering an action tracking technology software, there are certain key things to look for:

- The ability to track any action, stemming from any source;
- The ability to customize the system with “user defined fields.” For example, if you plan to track actions stemming from investigations, environmental spills or customer complaints, you need some way of segregating the status of these respective actions such that required resources can be directed towards where they are needed most;
- The ability to assign various level of security for creating, modifying, completing and approving actions—which may but don’t necessarily have to be done by the same

individual every time;

- The ability to enable standard and custom reporting for all actions, including those that are coming due and overdue. You should also be able to sort actions by individual, department or work group, contractor, etc. In other words, the application should be able to mirror any organizational chart of corporate structure no matter how complex; and
- Accessibility. Web-based access is the standard these days. Carefully consider any option that does not offer web-based access and functionality.

Conclusion

This Checklist should make it easier for you to craft a workable tracking solution—whether you develop the technology internally or obtain it from a third party vendor.

An Integrated Safety Management System Primer

What is an integrated management system and why does a company need one?

What Is an Integrated Management System?

An integrated management system is the framework of policies, systems, processes and procedures that organizations use to fulfill all of the tasks required to achieve their pre-defined business objectives.

Why do organizations need such a formalized or structured management system to achieve their goals? Systems might be unnecessary when business competition is weak, risk is minimal and business activities are uncomplicated or mature. But if changes

take place, the need for a more formalized system will emerge.

For example, the company's processes and business knowledge may reside not in a formal system but solely in the heads of the individuals who manage and work for the company. That works fine as long as those people remain around. However, if those individuals move on, the company's strengths can become its weaknesses.

Thus, larger organizations or those with complicated activities are more likely to have clearly defined processes, documented procedures, well-developed personnel hierarchies and sophisticated record keeping. The need for structure to manage risk and ensure consistency, efficiency and continuing capability is easy to understand.

Integrated Management Systems Options

More and more organizations are implementing formal and strategic management systems to ensure effective control and meet the requirements of customers, stakeholders, regulators and the community at large. Some of the more recognized management system models include:

- ISO 9001 (Quality Management Systems);
- ISO 14001 (Environmental Management Systems);
- OHSAS 18001 (Occupational Health & Safety Management Systems);
- CSA Z1000 (OHS Management System/Canada);
- ANSI/AIHA Z10-2005 (OHS Management System/US); and
- ILO-OSH 2001 (OHS Management System/International).

Implementation of Integrated Management Systems

Sometimes, it makes sense for organizations to implement more than one system, depending upon the type and complexity of organizational activities. For example, it's fairly common for organizations to create separate management systems to control quality, occupational health and safety or environmental areas, and sometimes discreet functions within those areas.

At its most evolved state, an integrated management system would involve managers taking care of a range of functions within their area of responsibility. A common example is the QHSE Department, wherein QA/QC, Health and Safety, Environmental Management and even Security have processes in common and are managed together within the umbrella of the QHSE management system to serve organizational goals and objectives.

But the success of even the best systems can be undermined if those systems don't consider and complement each other. It's been suggested that without a holistic approach to their management and interaction, even good systems can result in bureaucracy, duplication and sub-optimization.

Compatibility Is Key

The experience of companies—large and small—to implement quality, health and safety, and environmental (QHSE) management systems has given rise to an understanding of the importance of system integration. The overriding lesson is summed up in a single word: “compatibility.” Companies that achieve compatibility in their management systems are the ones that reap the rewards of “working smarter and not harder.”

ISO Guide 72, the guideline for writing management system requirement standards, defines “compatibility” as the suitability of similar standards for use together under specific conditions to fulfill relevant requirements without causing unacceptable interactions. In other words, if common characteristics can be rationalized and implemented in a shared fashion, without duplication or conflict, the management systems are deemed to be compatible.

The common characteristics of some of the well-known management system models include:

- Policies and associated targets;
- Planning that reflects the strategic and management system objectives and utilizes factual information flowing from the management system;

- Organizational structure defining roles, responsibilities and authorities for work that impacts the management system objectives;
- Processes, procedures and resources to carry out organizational and management system activities;
- Methods for measuring and evaluating performance;
- Correction of identified problems and implementation of opportunities for continuous improvement; and
- Management review of system performance providing feedback to the planning process.

The Case for Integration

The potential benefits that come from implementing management systems and consolidating common system requirements include:

- Alignment of business and QHSE goals and maximization of key performance indicators;
- Recognition of how all people and processes interact and affect each other for more effective management of interfaces;
- Creation of an integrated team approach focusing on mutual goals and benefits;
- Establishment of common objectives, processes and procedures;
- Creation of synergies, thereby reducing redundancy and increasing effectiveness and efficiency;
- Reduction of risk through management based on factual data and overall analysis of performance metrics;
- Systematic prioritization of effort for greatest organizational benefit;
- Enhancement of performance across all functional areas;
- Comprehensive identification and analysis of problems and opportunities to improve;
- Prevention of sub-optimization, i.e., advancement of one area at the expense of another;
- Increased understanding of all customers' and stakeholders' needs, wants and perceptions;
- Savings of time, money and effort;

- Establishment of accountability and clear boundaries; and
- Improvement of internal processes and communications.

And the list goes on and on.

Conclusion

By establishing objectives and targets, and then measuring progress against them, top management can ensure that the decisions and directions taken by the organization serve customer expectations and the strategic business goals of the organization. Clearly communicating the objectives and targets and establishing key performance indicators (KPI) that reflect them promotes understanding by the organization's personnel of the goals and how their activity and effort contributes towards achieving them. In other words, "I know how what I do around here contributes to the success of the company, which in turn garners me and my staff a continued pay check." And isn't that really the bottom line for any business?

Safety Rewards and Incentives that Result in Safety Improvements

Used correctly, safety rewards and incentives can be very effective. Rewards foster accountability. Rewarding people for positive things gets them to do those things. It's basic human behavior. People *want* to get caught doing the right thing. These principles should be used to improve safety performance.

Selecting the Right Rewards

Different levels of an organization should be rewarded for

different things. The reward should be tailored to the result the individual can control. Thus, rewards for people at lower levels should be based primarily on activities rather than organizational results. It's pointless to base a front-line shiftworker's reward on the accident statistics of an entire organization because individual shiftworkers don't control organization-wide injury statistics.

It's equally pointless to reward front-line workers based on outcomes within their own small groups. For instance, a group of 6 workers that experienced no lost-time injuries didn't necessarily work more safely than a similar-sized group that had one injury. Accident rates among small groups are statistically unreliable and should not be the basis for rewards.

By contrast, rewards for upper level managers should be based on organizational results. Still, even upper managers should have some part of their reward tied to activities. For example, some companies base 80% of an executive's reward on results and 20% on activities. This acknowledges the symbolic value of upper management activity—upper management must be seen *doing* things to promote health and safety if the rest of the organization is to believe that health and safety is really a priority.

The secret to giving safety rewards that really motivate is simple: ask people what they want. Find out what it's going to take to get them to do what you want. Try to tailor awards as much as possible so that you get maximum motivational effect for each individual.

Safety Rewards Are Not One-Size-Fits-All

What's motivational to one individual might hold no allure for somebody else. So the hard part about individualizing awards is that it requires you to take the time to get to know each person.

But that's really not such a bad thing. As the baby boomers age, it will become harder to attract and retain good people. In our lifetime the day will come that workers will start interviewing *us*. This is going to place a premium on getting to know each one

of your workers.

Consistency and treating everybody the same are often cited as worthy management qualities. And to a large extent they are. But not always. It's okay to treat people differently when you ask them what they want. Workers understand that you're making the effort to find out what's important to *them*. In fact, you can and should have fun with the process.

Of course, the reward system must also be perceived as (and actually be) fair and equitable. Keep in mind that money isn't necessarily the best incentive. Study after study demonstrates that the reward people tend to value most is private and personal recognition from their supervisors and peers.

Ineffective v. Effective Rewards

Ineffective rewards are generally characterized by the following qualities:

- Delays between earning and receiving;
- Weak link between incentive and behavior; and
- Lack value to the recipient.

By contrast, effective rewards are usually:

- Reinforced frequently;
- Provided immediately after they're earned;
- Earned by safe behavior on a daily basis;
- Of value to the recipient; and
- Accompanied by some form of celebration.

Safety rewards can come in different shapes and sizes and don't need to have a huge monetary value. There's a famous story about a Hewlett Packard employee who burst into his manager's office with the solution to a stubborn problem. The manager, desperate to acknowledge the achievement, awarded the employee with the only item at hand—a banana from the manager's lunch. Ever since, the Golden Banana has become a highly coveted award for HP employees.

Ego Safety Rewards—Recognition and Praise

Be sure to praise people for a job well done. Just about everybody responds positively to praise. However, you need to vary how you deliver praise and recognition to get the most positive response from each individual. For one worker, a quiet word of acknowledgement works best; others want public recognition, like having their picture hung on the bulletin board.

When your company's safety culture is shaped right, the culture itself becomes the reward system and the reward people strive for is peer acceptance.

Reward with Opportunities

For highly motivated people, the reward that works best isn't money or a gift; it's opportunity. One example of an effective reward for people in this group is allowing them to choose the projects they work on.

Tangible Rewards

Tangible rewards can include:

- Bonuses;
- Parties/celebrations;
- Points redeemable for a prize;
- Time off.

If you have only limited resources for rewards, you might be best served allowing individuals to select their own prize. The most successful tangible reward initiative I ever ran involved giving the winner \$20 to spend on whatever prize he wanted. The program was a huge hit!

Group Rewards

When rewards are by group performance, make the reward *available* to each member in the group. But availability isn't the same thing as receiving. To earn the reward, each person in the group must show what he or she did to help the group meet the objective.

This is called the participation criterion and it's a great way to eliminate stragglers and free riders and secure universal

participation in the desired activity and outcome.

Conclusion

Whatever system you use, choose your rewards wisely. If you give away a car or truck this year, what will your reward be next year? That's one advantage of using celebrations or parties as rewards. In addition to being recyclable, the celebration reinforces the positive safety message.

Showing How Safety Can Actually Make Money

Companies have historically regarded safety expenditures as a necessary evil rather than a profitable investment. In modern times, companies have begun to wise up and understand that spending money on safety is "good for business." But even among the enlightened, the perception persists that safety doesn't actually make money; it just helps prevent losing it. In fact, most safety directors concede the truth of this argument and focus all of their attention on the loss side when advocating safety.

The safety-is-good-for-business-because-it-prevents-losses formula is fine as far as it goes. But, while preventing losses is powerful stuff, making money is even more potent. After all, it's the very reason companies are in business. So if you could somehow show management that safety *generates income*, you'd be sitting pretty. Well, guess what? You can make that case and do it validly. Here's how.

Linking Safety & Productivity

Productivity is the key to showing how safety makes money. Stated simply, there's a direct link between safety and productivity.

When safety improves, productivity increases; when safety decreases, productivity declines.

Any businessman worth his salt understands the value of productivity and its impact on financial performance. So linking safety to productivity is almost guaranteed to capture management's attention. But how do you demonstrate the link between them? *Answer:* Use the following approaches:

1. Go for the Gut

The link between safety and productivity is something most people feel in their gut. It just seems right to believe that workers work better when they're protected against injuries and illnesses. Some explanations:

- Workers who don't get into accidents or contract illnesses can keep working;
- Safety improves morale and makes workers more apt to show up for work on time and work harder once they arrive;
- Companies with good safety records can attract and retain the best workers; and
- The discipline of assessing risks, identifying what can go wrong and taking measures to prevent occurrence not only improves safety but makes the production process more efficient.

2. The Foster Wheeler Study

The link between safety and productivity isn't just a gut feeling. There are studies that demonstrate the link scientifically. A leading example is a 1999 study by the UK firm, Foster Wheeler (FW), entitled *A Study into the Link Between Safety Performance and Business Performance*. FW analyzed safety- and performance-related data from 19 construction projects over a 17-year period, focusing on four indicators:

- **Cost Ratio:** (Total project control budget cost/Actual project cost);
- **Schedule Ratio:** (Planned construction span in months/Actual construction span in months);

- **Safety:** (Actual or estimated exposure man-hours in millions/No. of lost time injuries); and
- **Productivity Ratio:** (Budget field man-hours/Actual field man-hours).

By grouping these 4 indicators into 6 pairs, FW was able to use a technique called regression analysis to measure the association between them (R-Square).

PAIRING	ASSOCIATION	R-SQUARE
Productivity/Schedule	Positive	0.83
Productivity/Safety	Positive	0.63
Productivity/Cost	Positive	0.49
Schedule/Safety	Positive	0.43
Schedule/Cost	Positive	0.40
Cost/Safety	Positive	0.20

The key result is the second row of the chart. It shows a 63 percent degree of overlap between safety and productivity. Best of all, the FW study shows that cutting the frequency of injury in half results in a 10 percent increase in productivity. In a separate study of a single petrochemical plant, FW found an even stronger association between productivity and safety. In this case, halving injury frequency rates led to a 15 percent improvement in productivity!

3. Other Studies

There are a number of other studies scientifically demonstrating a link between safety and productivity, including “*Survey on Relationship Between Productivity and Occupational Safety and Health*,” Japan Industrial Safety and Health Association (1998) (finding a “positive correlation” between safety and productivity at large Japanese auto plants); and “*Lost-Time Injuries, New South Wales Coal Mines*” (1992-1993) (linking increases in productivity to declining injury rates in Australia coal mines).

The National Safety Council has also published a volume of 12 case studies from around the world examining the link between safety

and productivity. *Case Studies in Safety & Productivity, Vol. 1*, National Safety Council.

3 Ways Safety Improves Productivity

Safety boosts productivity because it has a beneficial impact on 3 crucial business factors:

Worker Output: The most obvious way that safety boosts productivity is by its impact on workers. Stated simply, safe workers are more efficient. Since they don't get hurt, they stay on the job. Safety also improves morale and makes workers less likely to miss work, show up late or slack off. A good safety record also makes it easier to recruit and retain the most productive workers.

The Production Process: The relationship between safety and productivity involves more than worker efficiency. Safer companies tend to be more efficient than unsafe companies. Explanation: A company's safety program is a reflection of its entire production process. In the words of an International Labor Organization study, "firms with dismal safety records often have loose, inefficient work processes as well, and for similar reasons. Workers—their skills and potential contributions as well as their bodies—are treated as disposable. High levels of waste, including the waste of human beings is tolerated. Insufficient control is exercised over the production process itself."

The process of improving safety imposes the discipline companies need to clean up their act. It forces the company to take a good hard look at its work processes, identify risks and make improvements. Not surprisingly, the benefits of this often spill over from safety to business efficiency. As discussed below, studies have shown that many companies have made huge gains in productivity after new health and safety regulations took effect. Why? Because complying with the regulation forced companies to reconsider their production process which in turn created opportunities for reorganization and innovation.

Technology: The effort to protect workers often leads to technological improvements that improve productivity. Sometimes, this can lift not just a company but an entire industry.

For example, in 1978, OSHA published new cotton dust exposure limits for textile workers. The industry complained that the costs of complying would drive them out of business. Actual compliance costs to the industry turned out to be only one-third of predicted levels (\$83 million rather than \$280 million in 1982). But that was only part of the surprise. In their efforts to comply with the new standards, companies discovered that it was cheaper to replace existing equipment than to retrofit it with new filtration devices. The new technology not only cut cotton dust but significantly sped up production and boosted productivity.

Other Case Studies

There have been a number of studies demonstrating how companies made major improvements in productivity as a result of efforts to comply with regulatory changes (required by OSHA, the Environmental Protection Agency (EPA) and state laws). Here are some documented cases:

REGULATION	RESULT
EPA Benzene Standard	Companies discovered a new and cheaper process for manufacturing chemicals without using benzene
EPA Chlorofluorocarbons (CFC) Standard	Industry scientists invented a new pump spray that didn't use CFCs that was actually cheaper to produce than aerosol cans

OSHA Vinyl Chloride Standard	Vinyl chloride producers made at least six production changes that eliminated worker exposure and dramatically reduced production costs
OSHA Powered Platforms for Building Maintenance Standard	Allowing greater flexibility in the choice of stabilization systems enabled building owners to save \$3.1 million per year
Wisconsin Pollution Standards	3D Manufacturing, Inc., a company with 150 workers, saved over \$16,000 per month by changing its painting and finishing operations
Minnesota Pollution Standards	Foldcraft Company increased transfer efficiency 29 percent, cut varnish use by 33 percent and saved \$9,500 per year after buying air-assisted airless guns and a high volume/low pressure gun to cut volatile organic compounds and hazardous air pollutants

Conclusion

When making the business case for safety, don't limit yourself to the savings side. True, loss prevention remains a solid economic justification for investing in safety; but it's not your only option. Open your mind to using the link between safety and

productivity to demonstrate safety's potential to make money. It takes some moxie and imagination to make this argument. But you owe it to yourself and the workforce you represent to at least consider giving it a try.

Selling Management on the Value of Safety Perception Surveys

As safety budgets shrink, companies are under mounting pressure to ensure that every dollar they spend on safety programs, activities and equipment directly helps to improve safety performance. But in making decisions about how to reduce injuries and illnesses, companies often overlook a crucial factor: the perceptions of their own workers. Studies show that workers' perceptions of a company's safety culture and senior management's commitment to safety have a measurable impact on injury rates. More precisely, the evidence suggests that in companies with low injury rates, a high percentage of workers have a positive perception of management's commitment to safety; conversely, companies whose workers have a negative perception of management's commitment to their safety tend to have high injury rates.

Workers' Perceptions and the Impact on Safety

One of the implications of this finding is that tracking and improving workers' perceptions can help your OHS program achieve better results. One of the best ways to determine workers' view of your company's safety culture is by conducting safety perception surveys. You can use the data these surveys provide to form a baseline reading of workers' current perceptions against which future improvements can be measured.

But convincing senior management of the value of such surveys can be a hard sell. Management may think safety perception surveys are

a waste of time and money. Or they may be afraid of the survey's results and prefer to stay in the dark as to what workers really think. We'll tell you about a study by a researcher from Purdue University Calumet that you can use to overcome these obstacles and build senior management support for safety perception surveys.

The Purdue Study

The Purdue study focused on a mining and construction products company headquartered in Houston, Texas. In 1998, senior management decided to shift the company's OHS program and safety culture from one driven by compliance to one driven by doing the right thing to prevent incidents and protect workers from injuries and illnesses. The goal was to establish safety as a company core value. A key component of this new approach was an emphasis on management accountability for safety and commitment to demonstrating leadership and support for safety.

As part of this long range goal, the company conducted a safety perception survey in January 2000 to gather information about how workers at different levels of the company regarded the OHS program. In addition, management wanted to establish a benchmark against which to measure future improvements to the OHS program.

The Purdue study is based on the results of the company's safety perception survey as well as in-person interviews with workers. The 41-item survey, which was given to all workers, including office workers, at the company's various locations, was designed to measure seven factors:

1. Management's commitment to safety. To gauge workers' perception of management's safety leadership, the survey posed questions about management's concrete efforts to demonstrate active support and involvement in the company's safety effort. Workers were also asked about management's recognition for safety efforts and involvement of workers in the setting of safety goals. *Sample question:* Have your company's efforts encouraged you to work more safely?

2. Education and knowledge. The questions for this factor covered

safety training and communication. *Sample question:* Are workers adequately informed of the results of their exposure monitoring?

3. Safety supervisory process. Workers were also asked questions about how regulations, rules and procedures are enforced and how standards are communicated. *Sample question:* Are workers checked on a routine basis to see whether they're doing their job safely?

4. Worker involvement and commitment. Questions under this factor gathered feedback on workers' commitment to and involvement in the OHS program. *Sample question:* Do workers caution co-workers about unsafe practices?

5. Drugs and alcohol. This factor dealt with how effectively the company dealt with the potential problems of drug and alcohol use in the workplace. *Sample question:* Are workers who are using drugs or alcohol on the job able to work undetected?

6. Emergency response. The questions under this factor related to the company's preparedness for emergencies. *Sample question:* Have you been properly trained to respond to an emergency situation in your work area?

7. Off-the-job safety. Questions on this factor addressed management's efforts to generalize safety in workers' lives. *Sample question:* Is off-the-job safety a part of your company's safety program?

The Study Results

Of 3,116 surveys distributed to workers, the company got 1,414 responses. (The surveys were supposed to be distributed during safety meetings where workers could complete them on company time. But at some locations, supervisors handed them out at the end or beginning of the shift and simply asked workers to complete and return the survey. As a result, the response rate was lower than expected.) The researcher analyzed these results and compared them to a database of more than 50,000 surveys previously administered at other industrial companies. He also analyzed the responses to specific questions in each factor to identify areas of strength and weakness. *The results:*

Overall result. As the chart below indicates, workers had an overall positive view of the company and its OHS program, with 79% of the total responses in the seven areas measured being positive. In addition, the company's overall results were above the norm established by the information from the database, indicating that workers' perception of the company's OHS program and safety culture was better than that of workers in other companies.

Area of strength. Workers' perception of the safety supervisory process was an area of significant strength. The results suggest that the company has reasonable and fair rules and enforcement and effectively communicated the consequences of safety infractions.

Areas of weakness. Within factor one (management commitment to safety), the weakest worker perception was of management's safety leadership. Interviews of workers bolstered the survey responses in which workers expressed concern or scepticism over management's long-term commitment to safety. In addition, the responses on emergency preparedness and off-the-job safety were strongly negative as compared to the norm. *Other areas of weakness:*

- Communication of operational safety issues;
- Exposure monitoring; and
- Effectiveness of the drug and alcohol policy (note, however, that the policy had only been in effect for a year at the time of the survey).

Bottom line: Workers perceived a positive change in management's approach to safety but weren't yet convinced that this change was both meaningful and lasting. Did this change in workers' perceptions impact the company's injury rates? After management changed its approach to safety, the company's lost time injury rate showed a statistically significant decrease. The company planned to make additional changes to its OHS program based on the survey results and to conduct another survey in three years to measure the company's progress.

Conclusion

The Purdue study shows that where management's commitment to

safety is clearly demonstrated through action, workers' perception of the OHS program is positively influenced. Along with this change in perception, there also appears to be a strong causal relationship to the reduction in injury rates.

Senior management may think that your company has got the most effective and comprehensive OHS program possible. But if workers don't believe in that program and the motives behind it, it isn't as strong or effective as they think. Safety perception surveys can help you analyze what workers *really* think about your OHS program, the company's safety culture and senior management's commitment to safety. Yes, the results may reveal problems you didn't know you had. But knowledge is power. It's better to get honest feedback from workers and then take steps to address their concerns than to go along in ignorance until a major safety incident reveals these concerns anyway—and that's exactly what's likely to happen.

Source: "The relationship between employees' perceptions of safety and organizational culture," O'Toole, Purdue University Calumet, *Journal of Safety Research*, 33 (2002) 231-243.

How to Measure Safety's ROI

Most companies are in business to make money. Of course, safety and profitability are perfectly compatible. But because it doesn't generate revenue, safety tends to be seen as a cost center absorbing resources that could be more profitably invested in initiatives more closely tied to revenue generation.

Your success as a safety coordinator might very well turn on how well you dispel that notion. The good news is that research shows that CEOs and corporate decision makers are coming to appreciate that safety programs do—or at least have the potential to—generate

positive return on investment (ROI). The bad news—if you can call it bad news—is that safety coordinators are still expected to demonstrate the ROI of their *particular* initiatives. Here's how to do that.

What Is ROI?

ROI is a financial metric that business people use to figure out if spending money on a project makes financial sense. In addition to making go/no go decisions, ROI is one of the most popular methods for comparing one investment option to another, e.g., buying new machines vs. retrofitting old ones.

Positive ROI basically means that the benefits yielded by the investment are greater than the amount of the original investment. A negative ROI means the opposite. Although there are lots of different variations, the basic, or “simple” ROI equation is this:

$$\text{ROI} = \frac{\text{Net Benefits}}{\text{Costs}} \times 100 \%$$

Costs

Generally speaking, the higher the ROI, the more desirable the investment.

The Elements of ROI

Here's a closer look at the different parts of the ROI equation:

Net Benefits: This is the difference between the benefits of the investment and the costs associated with the benefits. So, for example, if spending \$100,000 on a new lockout system is expected to generate \$150,000 per year in reduced claims, the net benefit would be \$50,000 (that is, \$150,000 – \$100,000). As a technical matter, you can calculate net benefits either before or after taxes and depreciation.

Costs: The denominator in the ROI equation is the total costs needed to generate the benefits from the investment.

Time Period: There's also a timing element in the ROI equation. Companies generally want to measure recovery of the investment

over a unit of time. In some cases, benefits are shown during the first year of investment—or even within the same fiscal year. In other words, companies want to know if they can recover the costs of the investment in the first year (or fiscal year). Other companies use an ROI formula that spreads out the benefits on a weighted average over the lifetime of the investment.

ROI & Workplace Safety—Proposal Building

Although the basic ROI equation is pretty straightforward, there are some subtle variations in application. So you need to talk to your company's financial officials to make sure you know which formula your company uses:

- Are net benefits calculated before or after taxes?
- Are net benefits calculated before or after depreciation?
- What ROI levels does the company expect to approve investments outside safety?
- If the ROI on your proposed investment isn't competitive with other proposals within the company, it obviously won't stand much chance of being adopted.
- How immediate must ROI be? Does your company insist on recouping all costs within the fiscal year? Within one full year? Over the life of the project? The more immediately you can show a positive ROI, the better your chances of winning financial support for the proposal.

Measuring Safety ROI: Trailing Indicators

Because it looks to future performance, ROI works best with measures that are predictive, rather than reactive in nature. Or, to use the business lingo, measuring success under ROI entails the use of leading rather than trailing indicators.

This puts safety coordinators at a disadvantage. "Historically," explains OHS consultant Wayne Parady, "safety professionals have relied on measures such as lost time injuries, frequency and severity, accident costs, etc. to evaluate safety performance." These measures look at past performance. At first blush, they also appear to provide a reliable indicator of future performance.

After all, if injury rates have been low in the past, it's a sign that the safety program is effective and will continue to work well in the future.

But this isn't necessarily true. The problem with after-the-fact accident and injury statistics is that an accident has to first occur in order to have any reliable indicator of performance, notes Pardy. "This is nothing more than bean counting. It tells you nothing about system improvement opportunities or prevention strategies."

Although they *are* important, accident and injury indicators (including frequency and severity rates) are measures of failure, Pardy continues. They focus on the negative. They can be used for comparison purposes, but that comparison is still based on failures recorded by your safety system, as compared with your performance, and that of others. And you need to wait until you have a statistically reliable number of these indicators tracked over a reliable time frame to give you an accurate picture of your performance. This methodology is ill-suited to the demands of ROI analysis.

Forward Looking ROI: The Procter & Gamble Example

The consumer products giant Procter & Gamble (P&G) is an example of how to use *leading* indicators to measure the success of a safety program. P&G identified 9 "key elements," or indicators of success in the safety realm, including safe practices and effective training sessions and asked each P&G facility administrators to rate the facility's effectiveness in each element on a scale of 0 to 20. After 4 years, all scores were added up and compared to the facility's injury rates.

Result: P&G identified that a score of 8 or better was a strong indicator of low injury rates. Consequently, all facilities falling below an 8 had to develop an action plan and a time frame for reaching a minimum score of 8.

Conclusion

To measure success under ROI, you must turn your safety

performance measurement and recognition system into an achievement-based system, rather than one based on injuries and other failures. Safety professionals must develop measures to assess and reward positive behaviors, not just of workers but everybody in the organization, including management.

Business Case for Safety Talking Points

BENEFITS

Companies are cutting already tight safety budgets. And senior management may not have the time—or patience—to listen to you justify your current budget by explaining in detail how, say, a five-year study of proves that investments in workplace safety actually make companies money. So what you may need are some sound bites or talking points that you can use to make the business case for safety in a brief—but still compelling—way. This tool will help you develop these points.

HOW TO USE THIS TOOL

A white paper from the Kimberly-Clark Corporation might be a good source of ammunition. Here's a breakdown of some key talking points from the study organized by topic.

https://www.honeywellsafety.com/Culture/Committing_to_Zero_Harm_With_Cultures_of_Safety/

Business Case for Safety: Building Support for Pandemic Planning

Most health experts think the occurrence of an influenza pandemic is a question not of if but when. Were a pandemic to occur, it would prove devastating. But while all companies prepare for fire, only a handful prepare for pandemics—even though, statistically, a workplace is more likely to experience a pandemic than a fire. So how *do* you persuade senior management to invest in influenza pandemic planning?

The Risk of Pandemic

A pandemic is a large-scale outbreak of a highly infectious illness to which few, if any, people are immunologically resistant. An influenza pandemic is expected to be significantly worse than the SARS-type epidemic that hit Canada a few years ago in terms of both health and economic impacts, such as worker absenteeism rates. And the SARS outbreak in Canada resulted in a \$2 billion loss to the economy. So you can imagine the possible impact an influenza pandemic would have on the country's economy—and your company's finances.

Some experts estimate that during an influenza pandemic's peak, companies would experience absentee rates of between 15% and 30% due to sickness, quarantine, travel restrictions, family care obligations and fear of contagion.

Why Companies Don't Plan for Pandemics

Given the likelihood that an influenza pandemic will happen and

the severe economic impact it would likely have, you'd think that companies would be investing in pandemic preparedness, much like they invest in, say, fire preparedness. Moreover, many companies have experience in planning for various types of disruptions to their supply of power (such as the 2003 ice storm in Central Canada), information technology (such as Y2K) and hardware and materials (as in 9/11 and Katrina).

But for some reason, companies don't seem to be taking the threat of an influenza pandemic as seriously as other threats to their business. Why aren't companies planning for this potential disruption to their labor supply the same way they do for disruptions to other supplies?

A recent study by a researcher from the Schulich School of Business in Toronto poses several theories. One is that managers are making the assumption that their entire industry would suffer equally and thus no competitor would get an advantage over others in the event of a pandemic. But that assumption may be wrong. Many companies have, in fact, prepared for a pandemic. For example, Alcan and Sunoco have posted their pandemic preparedness plans on their corporate websites.

Managers may also underestimate the probability that a pandemic will happen. But experts have calculated the cumulative probability of an influenza pandemic over time as in the range of:

- 3-10% for 2008;
- 14-41% by 2012; and
- 26-65% by 2017.

A final theory is that executives are underestimating the impact an influenza pandemic would have on the company's bottom line. Studies have been done on the economic impact of a pandemic on a "macro" level-that is, on the overall economy. For example, one expert estimates that a mild pandemic would shrink Canada's Gross Domestic Product (GDP) by 2%, while a severe pandemic would shrink the GDP by up to 6%. But no studies had been done on the economic impact of a pandemic on a "micro" level-that is, on individual companies' finances. And the lack of data of the potential impact

of a pandemic on an individual company has made it harder for safety coordinators to build a compelling business case for pandemic preparedness.

The Schulich Study

The Schulich study is the first to examine the impact of an influenza pandemic on an individual company. The study focuses on a large public Canadian company with approximately 13,000 front-line workers (those who have contact with the public) and uses data showing the impact the SARS outbreak had on that company to estimate how an influenza pandemic would affect the company. The researcher assessed the impact of worker absenteeism on the company's income in 2008 and compared it to the expected costs for the company to prepare for a pandemic. He then evaluated the expected costs and benefits of pandemic planning using several accepted metrics.

Impact of pandemic. During the SARS outbreak in 2003, the company's net income declined by 17%. If an influenza pandemic caused the same 17% decline in 2008, it would reduce the year's estimated income by \$73 million. But note that the absenteeism triggered by an influenza pandemic would be significantly greater than the absenteeism experienced during the SARS outbreak. So estimates of the impact of an influenza pandemic based on the impact of the SARS outbreak are very conservative.

Costs of pandemic planning. A key component of pandemic planning-and the costliest-is the stockpiling of antiviral drugs. An eight-week preventative dose costs about \$250 per person. So stockpiling enough antiviral medication for the company's 13,000 front-line workers would cost approximately \$3.25 million, plus an additional \$500,000 for storage of the drugs. PPE would cost another \$750,000. Planning, training workers and communication would cost an estimated \$700,000. **Total outlay:** \$5.2 million, about \$400 per worker.

Cost/benefit analysis. Based on a straight cost/benefit analysis, a \$5.2 million outlay for pandemic planning significantly outweighs the estimated \$73 million the company would lose in lost

revenue if an influenza pandemic hit in 2008. In fact, even if the company's estimated revenue declined by only 1.3% during a pandemic, the investment in pandemic planning would still be cost effective. But the researcher didn't stop there. He also analyzed the costs and benefits using:

Net present value metric. The most commonly used metric by companies to justify investments is net present value (NPV). NPV is calculated using a complex formula that aggregates the amount to be invested and expected future benefits using the time value of money. The general rule: If the $NPV > 0$, the company should make the investment. Assuming the influenza pandemic was to strike within five years and that the firm's cost of capital is 8%, the NPV of investing in pandemic planning is \$44.5 million—significantly greater than zero. The NPV is even higher if the pandemic strikes sooner.

Internal rate of return metric. Another metric companies use to justify investments is the internal rate of return (IRR) or the breakeven rate. A higher IRR provides a better justification for an investment. The general rule is to invest if the IRR is greater than the firm's cost of capital. Using another complex formula and again assuming that the influenza pandemic were to strike within five years and that the firm's cost of capital is 8%, the IRR of investing in pandemic planning is 70%—significantly greater than the 8% cost of capital.

The Study Results

Based on this data, the Schulich study concluded that investing in pandemic planning for the selected company would be justified. Of course, this conclusion is based on the assumptions that: 1) workers are the principal revenue and profit drivers in the company; and 2) pandemic planning will reduce the anticipated worker absenteeism in the event of an influenza pandemic. But the metrics discussed above don't incorporate some of the other benefits of pandemic planning such as:

- Reduced volatility of cash flows, resulting in lower actual and perceived risk and thus a likely rise in stock prices;

- Improved overall efficiency in the company;
- An enhanced reputation with workers, investors, customers and suppliers;
- Strategic advantages should a pandemic occur; and
- Reduced liability-if pandemic planning becomes generally accepted in the corporate community, courts may consider the identification and assessment of pandemic risk to be an industry standard. In this context, companies that aren't prepared when a pandemic hits may be found negligent and thus liable to shareholders, customers and even workers for unsafe working conditions.

Conclusion

The probability of an influenza pandemic happening in the next 5 years isn't trivial. Such a pandemic will likely cause high levels of worker absenteeism, which will have significant impacts on companies' finances. The Schulich study shows that investing in pandemic planning is not only economically viable but also cost effective-no matter what metric you use to evaluate the investment. You should be able to use this study to convince management that spending the money to prepare for an influenza pandemic will actually improve the company's bottom line and shareholder value.

SOURCE

"Making a Case for Investing in Pandemic Preparedness," Dr. Amin Mawani, Schulich School of Business, <http://www.schulich.yorku.ca/pandemic>.

Presenteeism, Productivity and

the Impact on Your Safety Program

One of the best ways to demonstrate the value of your safety program to management is to link it to the productivity of the workers it protects. Of course, it's one thing to assert that safety measures increase worker productivity and another to prove it. What makes this especially challenging is that traditional views of productivity are being challenged by a concept known as "presenteeism." Here's what presenteeism is all about and how to build a business case for safety initiatives on the basis of minimizing presenteeism.

How Safety Contributes to Productivity

In its simplest form, productivity is about getting the most out of your workers. When workers get injured or ill, they miss work and their productivity suffers. By helping workers avoid illness and injury, safety programs contribute to productivity.

At least that's the traditional way of linking safety to productivity. But while the notion remains fundamentally sound, modern research about what productivity is really all about has cast doubt on this notion. It turns out that eliminating dangers that cause work accidents may not be the *most* effective way to avoid productivity losses after all.

The seminal study challenging the traditional view comes from the American Productivity Audit that appeared in the *Journal of Occupational and Environmental Medicine* in December 2003. Based on over 28,000 employee interviews, the study's authors made some important findings about the impact of 2 health-related factors on productivity losses:

The Absenteeism Factor: The fundamental assumption is that absenteeism is at the root of productivity losses. Simply stated, employees who miss work because of injury or illness are less productive than employees who show up for work. However, the APA

Study found that employees who were absent accounted for only 29% of health-related productivity losses. Only 23% of these absences were due to injury or illness to the employee missing work. The other 6% were due primarily to the health of the employee's family member. 23% is a lot; but clearly there are other more important factors involved. What are they?

The Wellness Factor: The overwhelming majority of health-related productivity losses—71%—occurred *on the job*. They were the result of reduced performance by the employees who actually did show up for work. These losses have gone largely unnoticed, the Study notes, because the ailment detracting from an employee's performance isn't serious enough to keep him from missing work.

The APA Study cites 5 conditions that most frequently impair the performance of employees who show up for work:

- Headache/Pain;
- Cold/Flu;
- Fatigue/Depression;
- Digestive Problems; and
- Arthritis.

Productivity losses from these conditions cost businesses than \$180 billion per year, the Study claims.

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Presenteeism & the Importance of Wellness Programs

Health-related productivity losses attributable to the diminished capacity of workers suffering from minor ailments who still manage to drag themselves to work is known as "presenteeism." The implications of presenteeism are enormous and, at least to some companies highly disruptive of the existing internal order. The best thing a company can do to enhance productivity, the Study suggests, is to concentrate on the little ailments that detract from the performance of workers who do come to work.

A company must also attack the soft and squishy problems that

affect productivity such as fatigue and pain. This is a departure from the traditional focus of safety programs on the physical hazards that cause absenteeism.

Impact on Safety Directors & Safety Programs

Integrating elements of a wellness strategy into a safety program isn't the kind of thing you can do overnight. It takes time. And, as with any other safety initiative, it requires the support and commitment of management and workers. But if you're serious about pursuing a wellness strategy, a good starting point is to consider the model set out by the Canadian Mental Health Association, Manitoba Division (Manitoba Model).

Unlike most wellness plans which count on employees to take responsibility and supply initiative for their own health and wellbeing, the Manitoba Model is controlled from above by management by means of a steering committee that includes both the HR and safety directors. The Manitoba Model is essentially a feedback loop involving 3 basic stages:

- Evaluation;
- Intervention; and
- Re-evaluation.

The basic idea is to keep track of how workers are feeling, measure their productivity and make appropriate changes on the fly.

4 Steps to Take

The Manitoba Model suggests a four-step process:

1. Get Workers' Feedback

The first step is to have your workers fill out a questionnaire to determine their perceptions about their health, well-being and what causes them to feel stress at work. Respondents should remain anonymous so they provide candid responses.

2. Evaluate Feedback

Next, evaluate the results of the questionnaire to identify problems that need to be addressed. For example, questionnaires might reveal that a certain process is unusually stressful or fatiguing to the workers who perform it.

3. Intervention

Prioritize the problems and decide when and how to address them. Management should let workers know when they take steps to resolve problems to reassure them that their concerns are being taken seriously.

4. Re-Issue Questionnaires

The first set of questionnaires serves as a baseline. Once the results have been processed and interventions taken, the cycle begins again. How long should the cycle last? Answer: Between 1 and 3 years, according to the Manitoba Model's authors.

Conclusion

To be fair, the Manitoba Model is a strategy for implementing a wellness program controlled by management across an entire organization, not purely a safety program. Still, it's an effective approach that you can use to introduce and integrate elements of wellness into your overall health and safety program.

Why Companies Shouldn't Cut Corners on PPE, Part II

The economics of PPE, is a topic that doesn't get much attention. And in this era of heavy budget cuts, that's a problem. Last week, I talked about one of the few studies to address this issue. Although the researchers focused on perception and use of PPE in the British construction industry, the survey's findings about the

importance of PPE are also relevant to other industries and countries. Here are the three key lessons:

Lesson #1: PPE Training Is Critical

As we discussed last week, the survey suggests that PPE's effectiveness is based not only on the quality of the equipment but also how it's actually used. PPE training is the best way to ensure that workers understand *why* they need to use PPE and *how* to use it properly.

But workers may not be getting the PPE training they need. So companies shouldn't cut corners when it comes to PPE training. In fact, they should actually ramp up their PPE training efforts with the understanding that dollars spent in the short term will likely cut costs in the long term by reducing illnesses and injuries.

Lesson #2: Economy Could Undercut Safety Efforts

The survey results show that the danger that the economic downturn could cause safety standards to start slipping is very real. In fact, it indicates that the undercutting of safety measures in an effort to save money is already happening. Buying less PPE or cheaper PPE that doesn't protect workers as well isn't an acceptable way for companies to save money. So safety coordinators need to step up their efforts to convince senior management that, if anything, *more* money needs to be spent on workplace safety—not less.

Lesson #3: Support from Senior Management Is Essential

Company safety directors can't do all the heavy lifting. They need support from senior management to be taken seriously by workers and be seen as more than bureaucratic clipboard carriers. A safety culture needs to be embedded in the heart of the company to ensure that workplace safety is taken seriously by all stakeholders at all levels of the company. And that culture needs to start at the top of the company.

Conclusion

PPE is a key component of any OHS program. In general, the preference under the OHS laws is to try to eliminate hazards first. If a hazard can't be completely eliminated, the next step is to use engineering or mechanical controls, such as machine guards, to protect workers from that hazard. But engineering controls aren't always possible. In that case, PPE can be used to protect workers from the hazard. In other words, use of PPE is the *last resort*. So if your company eliminates or cuts corners on PPE, there may be nothing left standing between workers and a hazard.

The 3M report is significant because it sheds light on the link between PPE expenditures and workplace illnesses and injuries. In addition, the report suggests that when it comes to getting the best safety result from PPE dollars, training workers to use the equipment is just as important as choosing which equipment to buy.

Source: "[PPE matters: A report on attitudes towards Personal Protective Equipment in the construction industry](#)," 3M, February 2009.

Globally Harmonized System (GHS) standards

OSHA has published final changes to the Hazcom standard to deal with GHS, i.e., the UN Globally Harmonized System which is designed to coordinate workplace chemical safety regulations across the world.

Download the full text of the GHS below.

<https://www.osha.gov/dsg/hazcom/ghsguideoct05.pdf>

Training Requirements in OSHA Standards and Training Guidelines

Retrieved from: Occupational Safety & Health Administration

The Occupational Safety and Health Administration has developed voluntary training guidelines to assist employers in providing the safety and health information and instruction needed for their employees to work at minimal risk to themselves, to fellow employees, and to the public.

The guidelines are designed to help employers to: (1) determine whether a worksite problem can be solved by training; (2) determine what training, if any, is needed; (3) identify goals and objectives for the training; (4) design learning activities; (5) conduct training; (6) determine the effectiveness of the training; and (7) revise the training program based on feedback from employees, supervisors and others.

<https://www.osha.gov/Publications/osh2254.pdf>

FAQs about Powered Industrial Truck Operator Training

Retrieved from: Occupational Safety & Health Administration

The standard requires employers to develop and implement a training program based on the general principles of safe truck operation, the types of vehicle(s) being used in the workplace, the hazards of the workplace created by the use of the vehicle(s), and the general safety requirements of the OSHA standard. Trained operators must know how to do the job properly and do it safely as

demonstrated by workplace evaluation. Formal (lecture, video, etc.) and practical (demonstration and practical exercises) training must be provided. Employers must also certify that each operator has received the training and evaluate each operator at least once every three years. Prior to operating the truck in the workplace, the employer must evaluate the operator's performance and determine the operator to be competent to operate a powered industrial truck safely. Refresher training is needed whenever an operator demonstrates a deficiency in the safe operation of the truck.

https://www.osha.gov/dte/library/pit/pit_q-a.pdf