



Journey to safety excellence®

... characterized by a more equal distribution of market share major players



THE BUSINESS CASE FOR INVESTMENT IN SAFETY - A GUIDE FOR EXECUTIVES



Projected sales of main products



TYU division
FRT division

Changes in the activity of active and passive...

Distribution of major players

| | TYU division | | |
|-----|--------------|-----|-----|
| GHT | 254 | 550 | 254 |
| RDW | 650 | 320 | 754 |
| TRG | 241 | 450 | 144 |
| RTG | 254 | 650 | 874 |
| WFF | 254 | 320 | 254 |

Revenue growth divisions

TYU division
FRT division

Share of market



Passive market share

THE BUSINESS CASE FOR INVESTMENT IN SAFETY – A GUIDE FOR EXECUTIVES

If you're an executive or a business owner, consider the following facts that can have a direct impact on your operational performance and revenues:

- Employers paid **\$51.1 billion** in 2010 — nearly **\$1 billion per week** — for direct workers compensation costs (medical plus indemnity) for the most disabling workplace injuries and illnesses.¹
- Each prevented lost-time injury or illness **saves \$37,000**, and each avoided occupational fatality **saves \$1,390,000**.²
- Investors are increasingly **using workplace safety and health measures to screen out underperforming stocks**, and are showing stronger returns for doing so.³
- Over 60% of CFOs reported that **each \$1 invested in injury prevention returned \$2 or more**, and over 40% said productivity was the greatest benefit of an effective workplace safety program.⁴
- OSHA continues to ramp up its enforcement efforts for companies ignoring safety, conducting nearly 41,000 inspections resulting in over 96,000 safety and health violations in 2010 – a 15% increase over the previous 5-year period.⁵

That's just a very tiny snapshot of both the potential costs of injury and illness, as well as some of the potential benefits of deploying a structured safety program. While there are many demands vying for the attention of today's executives, decision makers at the highest levels need to have a solid understanding of why investing in health and safety makes sense for their business.

Consider, too, the following scenario:

The financial officer of a small business arrives at work, pulls into the parking lot outside her office and steps into the lobby, only to trip on the weather mat that has a fairly substantial wrinkle in it. Falling to the floor and not able to catch herself, she breaks her fall with her right elbow and lands on her laptop that she was carrying, breaking her elbow and cracking two ribs.

Fast forward fourteen hours and having missed a complete day of work due to a trip to the hospital and in a lot of pain, she's at home resting, in a cast up to her shoulder, and on pain medication prescribed by the doctor. She continues to stay home to heal for two weeks. Meanwhile, the business is in dire need of its CFO. Contract negotiations for a large customer have stalled. The company's new product rollout has hit a snag because the analysis cannot be performed during the CFO's recovery. In addition, the day-to-day activities like vendor payments and payroll approvals are lacking crucial oversight during this downtime.

In a small business, every person counts. Each person wears multiple hats and is a critical member of the business family. A single incident involving one employee such as an accident, a serious illness, or family crisis can affect everyone around them, not to mention the effects the business interruption has on production or service. How do you ensure that your small business continues to operate when a key employee — or even the boss — is suddenly out of commission? As with many aspects of running a business, you need a plan.

The simple fact is that the many benefits of safety and health initiatives cut across every size organization and industry. Studies show that these efforts can have a positive outcome on financial performance, worker productivity and satisfaction, regulatory compliance, and the environment.

This white paper looks at existing safety and health research from peer-reviewed journals, as well as best practices from some of the most well-respected organizations in the U.S. We'll explore how safety — or lack thereof — affects business, attempt to quantify the cost of workplace injury and illness, review the impact of regulation on injuries, and examine the benefits of some of the most common safety practices found in companies exhibiting world-class results. The goal is to provide today's business owners and executives with an opportunity to gain a competitive advantage via a proven source — investment in your organization's safety and health management systems.

HOW DOES SAFETY AFFECT BUSINESS?

Few would argue that your employees are the people who produce the goods and services for your customers, promote your brand, and manage your operations. Success is clearly dependent on the quality and wellbeing of your workforce.

Consider what happened at Alcoa during a period when then CEO Paul O'Neill, a recognized safety visionary and leader, began focusing the organization on becoming the world's safest company with a goal of zero harm.

- Annual earnings went from \$.20 per share in 1994 to \$1.41 in 1999.
- Sales grew an average of 15% per year in the same period.
- By 2000, it was five times safer to work at Alcoa than ten years earlier.⁶

Not only will an employee's injury or illness impact their ability to work, remain financially stable and maintain their livelihood, the toll on co-workers, families and communities can be equally devastating.

"Workplace incidents cause an enormous amount of physical, financial, and emotional hardship for individual workers and their families. Combined with insufficient workers' compensation benefits and inadequate medical insurance, workplace injuries and illnesses cannot only cause physical pain and suffering but also loss of employment and wages, burdensome debt, inability to maintain a previous standard of living, loss of home ownership, and even bankruptcy."⁷

Perhaps O'Neill discovered a key organizational performance metric that has at its root something much more primal—and more appealing to workers—the ability to do their job, earn their living, and do so without harm to them or their families. The human toll of workplace incidents is perhaps an obvious cost to employers. But there are additional downstream effects that are often obscured, many of which can have a negative effect on organizational performance.

Safety, insurance costs and winning bids

When it comes to mid-sized and smaller business, especially contractors, and the constant race to win bids, the safety record of your company will likely impact your results. Workers Compensation (WC) insurance represents a significant cost to organizations. Insurance companies use the previous three full years, after the immediate past year, of WC claims to help calculate a company's experience modification rate (EMR), which in turn helps compute WC premiums.

The EMR is designed to provide an incentive to the employer to improve safety outcomes because of its potential to reduce WC premiums. For example, according to the Construction Users Roundtable, the EMR varied in the construction industry from .50 to 2.05, the multiplier used to calculate WC premium.⁸ If ABC Construction Company had its choice of two equal-sized contractors to hire, each having a similar payroll, Contractor #1, with an EMR of .50 (better safety record than average for the construction industry), would be paying 50% of the standard premium rate. However, if Contractor #2 had a much higher EMR at 2.05 (worse safety record than average for construction industry) their premium would be over twice the standard rate or over 4 times higher than the competitor.

This makes it more difficult for Contractor #2 to bid competitively against Contractor #1 due to the increased overhead costs from a poor safety record. Additionally, the EMR is often used as a qualifier in contractor selection meaning those with a higher EMR are less likely to be invited to compete for the business.

For small businesses with little to no history of injury or illness, safety may not appear to be something about which to be concerned. However, small businesses are perhaps more vulnerable from a single safety incident than their larger business

counterparts as they don't have the same backup and capacity, and one serious injury can produce a financially significant business interruption and/or loss of a key employee that seriously compromises production or service. Even without a history of injuries, small businesses need to identify hazards and necessary controls, as well as areas where only one person performs a key job or where losing one employee may bring the business to a grinding halt and put in place contingency plans.

These are just a couple of examples of how safety, or a lack thereof, can impact business.

REALITY CHECK: THE SIZE OF THE SAFETY PROBLEM

The impact of a lack of safety on people's lives, or the human toll, is immeasurable. However, there are plenty of ways to quantify a company's safety performance and in turn their commitment to safety. There are direct and indirect business costs associated with injuries, illnesses and fatalities. As cold and calculating as measuring the costs of injuries may seem there is a strong argument to be made that identifying these costs will help make the business case for safety investments that will save real lives while it contributes to the bottom line.

Direct costs

When analyzing the impact of injuries and illnesses, direct costs are the most apparent harm to the bottom line. Direct costs can include:

- Workers compensation payments
- Medical expenses
- Civil liability damages
- Litigation expenses
- Property losses
- Indirect costs

While direct expenses are obvious to all those concerned about the cost of a poor safety record, indirect costs are often overlooked, even though they have a far greater impact. In a survey of financial decision makers, it was estimated that the average ratio is \$2.12 in indirect cost for every \$1 spent on direct costs.⁹ The most common indirect costs mentioned in the survey included workplace disruption, downtime and loss of productivity. Additional indirect costs include worker replacement, training, increased insurance premiums and attorney fees.

Another study has calculated that indirect costs outweigh direct medical costs by 2.73 to 1.¹⁰ For example, if the average back injury has a direct medical cost of \$25,000, the real cost of that injury may be closer to \$90,000, or the equivalent of a full-time employee's salary and benefits. Finally, in the construction industry, known for its higher risk, ratios of indirect to direct costs can vary from 4:1 to 17:1 depending on the type of incident.⁸

Other potential indirect costs that can impact the bottom line for any organization include:

- Delays in project schedules
- Administrative time
- Damage to equipment or facility
- Investigation and implementation of corrective actions
- Cost of other government benefits required by injured workers or their survivors
- Abrupt loss of skilled workers

In addition, the negative publicity from a workplace mishap can cause harm that damages a company's reputation. The first wave could be a potential loss of business from customers, such as a reduced ability to win contract bids. There may be a loss of confidence from investors, suppliers and employees, all of which may impact your ability to succeed in a highly competitive market.

Attracting and retaining top talent is always paramount, and your organization's ability to do so may be weakened with negative publicity. That may also lead to the necessity of paying above-market wages in order to maintain a competent workforce.

The cost of workplace injury and illness

In the U.S., approximately 8,900,000 workers suffer from workplace injuries and illnesses annually.⁹

This number represents nearly six percent of all U.S. employees whose health will be compromised from a workplace incident each year. Now take into account estimates that workers compensation records miss between 23-53 percent of all medically-attended nonfatal injuries, and that percentage jumps to between 7 and 9 percent of the U.S. workforce that will suffer an injury.¹¹

The financial cost to businesses associated with workplace injury and illness, by some estimates, is on par with healthcare spending for debilitating conditions such as cancer. For example, the total estimated national costs of both fatal and non-fatal occupational injuries and illnesses among civilians in the U.S. in 2007 was \$250 billion.¹⁰

For you as a business owner this means that to offset these costs, each and every worker must produce an extra \$1,340 in goods or services, putting undue strain on your healthy workforce and increased pressure on your business to remain competitive.² It would seem worthwhile to at least examine whether claims of the benefit of investing in safety and health are true.

If just one workplace injury can be avoided through an investment in safety on average it saves your company \$37,000.² If you know how many injuries you've had in your organization, some quick math will help you realize that improvements in safety can impact your financials, or at the very least free up dollars that could be spent on other fund-worthy initiatives.

Injuries in the workplace are only a fraction of the problem. Illnesses that arise out of occupational exposure to contaminants and individual employee health challenges all contribute to the problem of lost productivity, absences and medical costs. Because of its often latent effects on an employee's health, occupational illness is often underrepresented in an organization's safety performance data. In addition, chronic disease will affect many organizations not necessarily in terms of workers compensation costs, but in work absences and health care costs. When it comes to illnesses, attention to health promotion and management efforts may yield positive results, especially when you consider the costs and trends.

- Workers compensation records miss at least 91 percent of occupational disease deaths.¹²
- 75% of U.S. healthcare dollars go toward treatment of chronic disease.¹³
- The number of working-age adults with a chronic condition has grown by 25 percent in ten years.¹⁴
- More than one-third of U.S. adults (35.7%) are obese; the medical costs for people who are obese are \$1,429 higher than those of normal weight.¹³
- Workers who smoke cost U.S. employers \$5,816 more per year to employ than their non-smoking counterparts.¹⁵

Safety and health programs can address a multitude of risk factors arising from your employees' state of health. We'll look at the financial results from some of these programs later in this paper.

Fatalities

One of the most psychologically debilitating events that a business owner or executive can face is a workplace fatality. Co-workers, families and communities of the workers killed on the job are forever changed by these tragic events. Every day in the U.S. nearly 11 workers die on the job—almost 4,000 a year.² There is no way a company can be truly prepared for the aftermath of this

kind of incident. But this statistic alone should demand the attention of business owners and executives, especially in high-risk industries such as construction, transportation, agriculture and mining. It is also increasingly recognized that even companies with exceptional safety records can still experience the tragedy of a fatality or catastrophic incident if they have not paid sufficient attention to the risks of such events.

Workplace fatalities can have a major effect on the viability of your business. Some facts:

- Each fatality avoided saves an employer \$1,390,000.²
- Beyond the cost to an employer OSHA estimates the monetary value of each life lost to be \$8.7M.⁷

Global considerations

The United States is not alone in these challenges. The safety of work is not just a domestic issue, but a global one. Business is becoming more and more globalized, so it makes sense to also look at the magnitude of the safety issue from a worldwide perspective. For those businesses with operations outside the United States, particular attention should be paid to the safety and health practices in emerging markets. These are usually markets where there may be considerable cultural and language differences, labor shortages and poor infrastructure that complicate safety implementation.

The International Labour Organization (ILO) estimated in 2003 that annual global losses in gross domestic product (GDP) due to workplace illness, injury and death is \$1.25 trillion, or 4 percent of annual global GDP.¹⁶ They also estimate that 2.34 million people in the world die each year as a result of workplace incidents and diseases—more than 6,000 per day.¹⁷ While the United States may provide safer workplaces, the effect of unsafe workplaces across the world can and do impact the U.S. economy.

THE BARE NECESSITIES OF SAFETY

Recognizing the devastation of workplace injuries, regulations were put in place long ago to enact some minimum standards for worker safety. Federal, state and local mandates and regulations are designed to compel companies to create and improve their safety programs. The function of workplace safety in the United States has been shown to be positively impacted by two public policy forces: OSHA and state workers compensation insurance. Complying with OSHA regulations will improve safety.

At a federal level, there has been good success. Four decades since the OSH Act was signed into law, workplace deaths and reported occupational injuries have dropped by more than 60 percent.⁷ However, the National Safety Council data shows a plateau in the rate of serious and fatal injury rates (see below chart from Injury Facts, 2013). Of note, this plateau coincides with an economic recession so it is not clear what the long-term future trends will be.

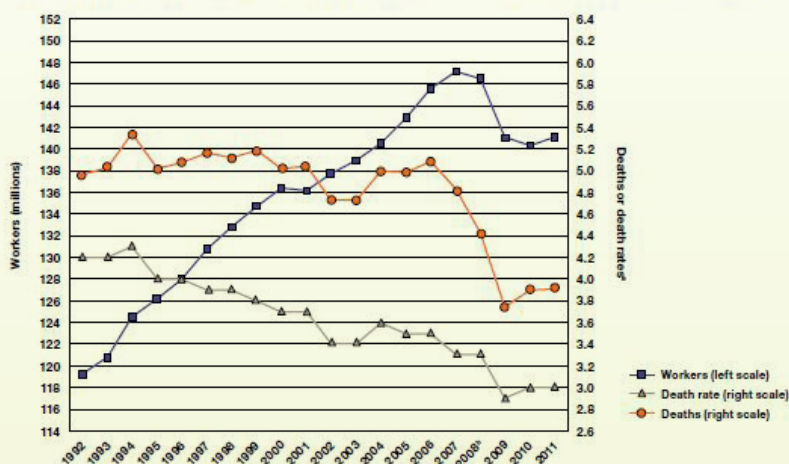
At a state level, many safety interventions have gone beyond federal OSHA requirements. This is an outgrowth of workers compensation reform from the 1980s and 1990s. These reforms included workplace safety committee laws, safety program laws, insurance carrier loss control regulations and targeted enforcement directed toward high-incident or high claim frequency employers, either through the state OSHA department or through the state's WC administrative agency.

One study looked at the effectiveness of the four types of mandatory state workplace safety interventions on occupational rates between 1992 and 1997. It found that workplace safety committee regulations and safety program regulations had the most injury-reducing potential. The study also showed that OSHA inspections, OSHA consultations and fines, industry, employer size, union presence, unemployment rates, workers compensation benefit waiting periods and ratio of maximum weekly benefit to average wages all had significant effects on injury rates in their analysis.¹⁸

According to OSHA 34 states and many nations around the world have programs to encourage employers to implement injury and illness prevention programs. There are currently 15 states that require a program, while 19 other states encourage it through incentives.⁷

One study of manufacturers in 13 states found that mandatory regulations for both injury and illness programs, or health and safety committee requirements, were effective in reducing injury and illness incidence rates.¹⁵ In fact, three of the four states with only mandatory safety and health program requirements had the largest reductions in injury and illness rates after implementing these mandates.¹⁸

Workers, unintentional-work-related-injury deaths, and death rates, United States, 1992-2011



⁷Deaths in thousands; rate per 100,000 workers.
¹⁸Starting in 2008, the Bureau of Labor Statistics changed from an employment-based rate to an hours-based rate.

OSHA also examined injury and illness programs in eight states where a program was required or incentives were provided through worker's compensation programs. Such programs lowered injury and illness rates between 9 and 60 percent.⁷

Although federal and state programs can have a positive impact on injury and illness rates, many companies have yet to perfect compliance. The companies who have not been as successful at following these mandates may experience more trouble than just fines and citations. **At a local government level**, a company's compliance and injury and illness experience can become publicly available over the Internet and from federal agencies through Freedom of Information

Act (FOIA) requests. Community opponents of industrial growth in their area may exploit this data, using it to thwart permit applications or zoning change requests.¹⁹

While following the law is certainly a "must have" in any safety program these activities fall short of what could even be called "safety mediocrity" let alone "safety excellence." The bottom line is that while mandates are great for establishing a baseline or minimum threshold for all companies, those with excellent performance go well beyond regulatory requirements to safeguard the health and wellbeing of their employees. And they realize the many benefits of doing so.

ELEMENTS OF HEALTH & SAFETY: RESEARCH ON WHAT WORKS

So if it's clear that the investment in safety pays good returns, how is one to know where to invest and what to do? Going even further, how can an executive or business owner know prior to implementation which safety solution is likely to have a better cost-benefit ratio and payback period?

Benefits and return on investment

There have been several compelling research studies relating the cost of safety to the financial benefit derived making the case that investment in safety does produce solid returns:





- OSHA's review of the literature on the effectiveness of injury and illness programs estimates that companies can reduce injuries by 15-35 percent, compared to employers without these programs.⁷
- Over 60 percent of CFOs report that each \$1 invested in injury prevention returns \$2 or more.⁴

- In another survey of financial decision-makers the average perceived return on safety investment was \$4.41 for every dollar spent on safety.⁹
- Research in Europe concluded that the average cost for a minor incident is 16 times higher than the cost of the related preventive measure. For serious, very serious, or fatal incidents, the incident is 48 times higher than the cost of the preventive measure.²⁰
- The Construction Users Roundtable data showed that safety programs typically cost about 2.5 percent of direct labor costs. Using eight percent reduction in losses as a typical result of safety programs, the ratio of savings-to-safety and health program costs would be 3.2 to 1.⁸

So if the investment in safety, broadly speaking, has demonstrated positive financial and other returns, the next consideration is what specific safety investments might prove most beneficial to your organization in terms of their ability to reduce injuries and illnesses.

Common safety and health elements

Research on what is effective at improving safety results, including what the National Safety Council has learned from numerous organizations' best practices, shows that there are common safety and health elements among companies with superior safety outcomes and that these elements do serve to quantifiably reduce risk and lower injury and illness rates. NSC outlines these elements in the Journey to Safety Excellence model which consists of four pillars that, if performed optimally, lead to better safety outcomes. The pillars are:

-  Leadership and engagement
-  Safety management systems
-  Risk reduction
-  Performance measurement

Within each of these pillars there are several safety practices that are prescribed, and the following sections will review existing literature on the effectiveness of many of these practices. The list to the right shows some of the most common and effective safety practices within each of the four pillars.



Common safety practices within the NSC four Journey to Safety Excellence pillars.

Leadership and engagement

- Active role of top management in safety
- Participative leadership style
- High-ranking safety officer
- Delegation of safety activities
- Supervisor commitment
- Supervisor does task checking and monitoring
- Safety meetings
- Safety policy
- Incentives for employee participation
- Employee training and development
- Safety communication
- Safety committee comprised of managers and employees
- Good management-labor relations
- Empowerment of workforce
- Resources made available

Safety management systems

- Workplace design and engineering
- Preventive planning
- Emergency planning
- Drills (emergency, safety, rescue)
- Equipment inspections
- Facility inspections
- Control and review of activities (JHA, JSA)
- Audits
- Behavior-based safety (observation and feedback)
- Use of modified duty
- Incident analysis
- Inclusion of contractors, suppliers, in safety programming
- Human resources planning
- Discipline, counseling structure outlined
- Reward, incentive system

Risk reduction

- Risk assessment
- Job planning
- Evaluation of job hazards
- Ergonomics
- Machine safeguarding
- Monitoring of use of personal protective equipment
- Preventive maintenance
- Industrial hygiene
- Employee health screening

Performance measurement

- Use of lagging and leading indicators
- Benchmarking
- Measurement of performance improvement over baseline
- Goal setting
- Safety management assessment tools
- Employee perception surveys
- Use of technology to capture and analyze safety data

LEADERSHIP AND ENGAGEMENT

Of all the pillars of safety excellence, leadership and engagement is arguably the most vital. Unfortunately, for many companies it is also the most allusive and difficult to attain. Interestingly, research indicates that the level of commitment at the organization's highest level permeates throughout the company and offers a better prediction of safety outcomes than does regulatory compliance. A leadership team that invests time and money into creating a culture rich in environmental, health and safety initiatives will see improved behaviors, higher productivity, better worker morale, lower employee expenses and an overall increase in the bottom line.²¹ The leadership, in essence, has the capability to unleash discretionary employee behavior that will contribute to enhanced organizational performance.²²

One study found that lower lost-time injury rates were associated with both management demonstration of concern for the workforce and employee involvement in general decision-making.²³ Another report examining data from 10 different research studies showed that empowerment of the workforce, good relations between management and workers, and an active role by top management in safety and health positively impacted injury rates.²⁴ Yet another study concluded that companies with management teams and systems that are highly rated among employees are more likely to have higher share price performance suggesting it is financially profitable to engage and empower employees.³

In an example that reflects the impact of safety efforts from the top down, the Dutch Ministry of Social Affairs and Employment provided safety subsidies over the period 2004-2008 to a number of companies. These funds promoted changes aimed at reducing incidents by boosting a culture of safety and introducing aspects of a safety management system. There were safety interventions and constructive dialogue sessions between shop-floor and line management providing incentives to those managers adopting these practices. This strengthened the rollout and adoption of the safety management system which directly impacted lost-time injury rates. The study concluded that the amount of energy and creativity injected by top managers, as well as the safety coordinators, appeared to be a top factor in injury reductions.²⁵

Employee engagement and training

A Towers Perrin study of 50 multinational companies found that over a 12-month period, companies with high levels of employee engagement outperformed those with less engaged employees. Three key financial performance metrics were analyzed: operating income, net income growth and earnings per share. Higher levels of employee engagement were also associated with higher levels of customer satisfaction.²⁶ Another Towers Perrin study showed that engaged employees are less likely to leave their employment benefiting their companies with lower recruiting and training costs than companies with a less engaged workforce.²⁷

SAFETY MANAGEMENT SYSTEMS

The safety management system pillar of safety excellence goes beyond compliance and injury-focused safety efforts by taking a more holistic look across the many safety and health programs and activities that may benefit an organization in an attempt to help identify and fill any gaps in safety programming. Legislation is often insufficient to address changing working conditions, work processes and the new hazards and risks that accompany these. To supplement legislation, safety practice relies on management systems to help “build in” safety to everyday work practices and processes.

Safety management systems (SMS) can be comprised of many different components, depending on the organization and even specific industry hazards or concerns. They all typically try and take a comprehensive approach to safety by addressing many key areas that cut across an organization. One study of 455 firms in Spain²⁸ with an SMS showed they typically were comprised of:

- Safety policies
- Incentives for employee participation
- Training and development of employee competencies
- Communication of workplace risks and how to mitigate them
- Planning, both preventive and emergency
- Analysis of working conditions and events within the company (internal control)
- Comparisons with other companies (benchmarking)

However, there is no set standard for an SMS. For example, a different study defined SMS being comprised of components such as: definition of safety goals and their communication to employees, risk data updating and risk analysis, identification of risks and definition of corrective actions, and employee training.²⁹ So the key for business leaders to keep in mind is that an

SMS program effectively addresses all the major components relevant and most useful to specific needs of the organization.

Results attributable to SMS

When broken down further, the study reviewed the effect these SMS elements had on three dimensions of performance: safety performance, competitiveness performance and economic-financial performance.

It found that an SMS has the strongest effect on an organization’s competitiveness performance. This includes the firm’s image and reputation, its productivity and capacity to innovate. The study also found a significant effect of SMS on safety performance meaning fewer injuries and less serious injuries. And finally, the effect of SMS on the economic-financial performance was measurable and had a positive influence on an organization’s sales and financial profitability.

Another study analyzed 53 safety programs and reviewed 10 types of incident prevention initiatives. The study found the following percentage reduction in incidents attributable to the following programs:

- Comprehensive ergonomics: 51.6 percent
- Behavior-based safety (safety information training regarding safe behavior, observation, and feedback): 38.6 percent
- Technological intervention (robotics and comprehensive facility redesign to solve product quality, productivity, and cost reduction problems): 29.0 percent
- Quality circles (a committee of employees who perform similar work who meet to be the most effective): 20 percent³⁰

RISK REDUCTION

The value of health and wellness programs

In an era when the workforce is getting older and becoming less fit, many organizations have broadened the practice of “safety” to encompass health and wellness. It’s troubling that less than half of all adults between the ages of 18-64 meet the 2008 Physical Activity Guidelines published by the CDC in 2012.¹³ The issue of health and wellness and an employer’s role in promoting healthy habits and lifestyle are just as relevant to safety, especially when you consider there are similarly considerable benefits from deploying these types of programs.

Here are some quick facts:

- More than one third of U.S. adults are obese, or 35.7 percent, with medical costs being \$1,429 higher per year than those of normal weight.¹³
- Average medical expenditures of those with Type 2 diabetes is 2.3 times higher than those without this chronic illness.¹³
- Workplace wellness programs result in significant decreases in health care costs including a savings in medical costs ranging from \$11 to \$626 per year per person.³¹

One study showed wellness programs reduced healthcare costs \$176 per employee, which is a savings of \$1.65 for every \$1.00 spent on a comprehensive wellness program.³²

Employers are faced with a growing challenge of proactively addressing health concerns among employees with the end goal of keeping employees on the job and free from sickness and injury. The biggest challenge with these types of programs is their voluntary nature, with employees themselves determining whether to participate. On top of that, the employees most likely to take advantage of such programs are usually healthier and more fit to start, reinforcing the need for companies to find ways to encourage less fit employees to participate.

Risk is always present in the workplace, and those institutions that actively work to identify and reduce it outperform those focused solely on compliance or common injuries. Studies have shown that it takes an organization committing to increasing prevention and detection activities to significantly decrease the likelihood of incidents.³³ Furthermore, it has been demonstrated that organizations that focus on risk reduction are successful in reducing company expenses. It is for this reason that risk reduction is yet another pillar making up the definition of safety excellence.

Let’s look at some additional methods for reducing workplace risk and review the literature to examine the impact on injuries and illnesses.

Design modifications

According to the National Institute for Occupational Safety and Health (NIOSH), one of the best ways to prevent and control occupational injuries, illnesses and fatalities is to “design out” or minimize hazards and risks early in the design process. NIOSH is leading a national initiative called Prevention through Design (PtD) to promote this concept and highlight its importance in all business decisions.

PtD can be defined as addressing occupational safety and health needs in the design process to prevent or minimize the work-related hazards and risks associated with the construction, manufacture, use, maintenance and disposal of facilities, materials and equipment.

An examination of the research in this area has revealed a strong link between design and jobsite safety in the construction industry:

- In a review of workplace fatalities in Australia, 37 percent of these “definitely” or “probably” had design issues involved.³⁴
- In 2005, an estimated 42 percent of construction fatalities studied was associated with design issues.³⁵
- Studies that looked at UK construction fatalities concluded that, in 47% of the fatalities, changes in permanent design would have reduced the likelihood of the incident.^{36,37}
- Another study of the aviation and nuclear industries found that 50 percent of incidents and accidents have their root cause in design.³⁸

Ergonomic interventions

Another fundamental practice dedicated to reducing or eliminating workplace risk is ergonomics. In 2003, Beevis and Slade did a review of cases showing the cost and benefit of ergonomic interventions. They concluded that financial benefits can and do accrue from the redesign of equipment and tasks using ergonomic principles.³⁹ A more recent study looked at implementation of ceiling and mechanical lifts for patients at a hospital netting a savings of \$.14 per \$100 of payroll two years after implementation.⁴⁰

One of the first studies to address the economic costs and benefits of safety intervention showed that whereas safety interventions can be costly and payoffs sometimes delayed the long term

economic impact can be substantial. In some cases the rates of return exceeded a 10:1 ratio, so for every \$1 spent on behavioral and ergonomic interventions, there were \$10 in savings in workers compensation costs realized.⁴¹

Protective safety equipment

Other common safety practices employed in the reduction of risk to workers include machine safeguarding and use of personal protective equipment (PPE). One study surveyed small businesses on what safety initiatives they had in place along with collecting their incident data over a multi-year period to see if it could predict the risk of injuries in subsequent years. Out of all the reported safety initiatives, two were found to be significantly correlated with lower occupational injuries—machine safeguarding and use of personal protective equipment.⁴²

Summing up the elements

While a number of methods exist for reducing workplace risk, this paper attempts to review the research that exists for several of the more common ones and to illustrate statistically what has been demonstrated to work. One author sums it up best saying that a culture of safety provided by supportive leadership, maintained by favorable environment and health-related policies, and that promotes employee health and risk reduction will result in a substantial decrease in costs.⁴³ However, we’d be remiss if we didn’t review the final pillar of safety excellence—the one that gives us a sense of how well safety is performing in your organization—performance measurement.

PERFORMANCE MEASUREMENT

It is essential for any organization to measure its safety performance. Performance measurements help organizations benchmark themselves against others, determine targets for safety intervention and set baselines on which to measure performance improvements, to name a few benefits. However, it is also crucial that safety, and the activities that support it, be quantifiable so that business cases for further investment in safety can be developed, return on investments calculated, or cost-benefit ratios determined. Quantitative safety measurements are also necessary for independent third parties to “validate” and provide positive recognition for a company’s commitment to safety, should companies desire such recognition.

Lagging and leading indicators

To make up the safety measurements, various safety “indicators” need to be identified and monitored regularly. Safety performance indicators help determine the current level of safety in organizations, monitor the effects of proactive safety work and anticipate emerging vulnerabilities.⁴⁴ There are generally two types of safety indicators—lagging and leading.

Lagging indicators refer to those downstream measures that reflect what a lack of safety has resulted in, usually expressed in terms of injuries, illnesses, near misses, days lost and cost. Leading indicators, on the other hand, measure actions that are more proactive in nature and vary widely but could include things like number of audits performed, percent safe behaviors observed, or frequency of safety committee meetings.

If an organization balances its approach between leading and lagging indicators, it can monitor the effectiveness of the control in their safety management.⁴⁵ Organizations representing safety excellence set metrics to measure both leading and lagging indicators of safety and health performance and expect quantitative returns, but don’t

necessarily expect safety investments to be fully justified in financial terms.⁴⁶ Thus, organizations should be mindful of the fact that safety, like any other business metric, should be defined in terms that can be quantified, measured with some regularity, managed in terms of data collected and repurposed in business case arguments.

Benchmarking

Performance measurements also help companies determine how they “stack up” against their competition. Benchmarking with peer organizations is an exercise that executives find particularly informative and can represent the extent to which they are better or worse than industry averages. Typically, lagging indicators are used in this exercise and ones that every company tracks so that a true apples-to-apples comparison is possible.

The issue with capturing common metrics and industry-specific data is that the U.S. does not have a comprehensive system for measuring occupational injuries and illnesses. Businesses with ten employees or less for a full calendar year are exempt from recording injuries, accounting for over 4.5 million businesses. In fact, one of the most dangerous industries – construction – had nearly 80 percent of their establishments under this employee threshold in 2007.⁴⁷ However, there are two sources of data available that can help in monitoring safety nationally and on which comparisons can be made. The first source is injury and illness statistics collected by the Occupational Safety and Health Agency (OSHA) and reported annually by the Bureau of Labor Statistics (BLS).

The second data source is the experience modification rate (EMR), which allows for a reasonable comparison across companies but is not typically a publicly-available metric for which to do benchmarking. That said, it is often a required metric for contractors to share when bidding on projects affecting not only the ability to win bids but will likely affect the profitability of completed projects with margins getting squeezed to cover injury costs. EMR is truly a lagging indicator as it looks at 3 years of experience, not including the year just completed, so it is important to understand what this measure tells you and its importance relative to workers compensation insurance and sometimes contract bid processes.

Recognition programs

A clear indication of the increasing importance of health and safety to business success is in how organizations are making significant efforts to publicize and communicate their environmental, health and safety initiatives. Awards and other recognition programs provide an avenue for securing further investment in safety initiatives as well as crafting a responsible corporate image. Besides the attractive media attention and industry recognition these distinguished honors can provide, they can also give organizations a performance-enhancing morale boost, not to mention the financial benefits that come from fewer injuries and lost days, more productive employees and lower turnover.

The OSHA Voluntary Protection Programs (VPP) promotes effective worksite-based safety and health and encompasses many of the elements mentioned in the Journey to Safety Excellence. With VPP, management, labor and OSHA establish cooperative relationships at workplaces that have implemented a comprehensive safety and health management system. VPP designation is OSHA's official

recognition of the outstanding efforts of employers and employees who have achieved exemplary occupational safety and health.

Some facts about the OSHA VPP program:

- As of the end of March 2013, there were 2,333 organizations participating in OSHA's VPP program.
- The average worksite in this program has a Days Away Restricted or Transferred (DART) case rate that is 52 percent below the average for its industry.
- Businesses that partner with OSHA through VPP have 50 percent fewer lost workday injuries and illnesses than the average for their industry and incidence rates 50 percent below the national average.
- VPP companies have saved more than \$1 billion since 1982.

Similarly, **OSHA's Safety and Health Achievement Recognition Program (SHARP)** recognizes small employers with exemplary injury and illness prevention programs.

The Ohio Bureau of Workers' Compensation (2011) analyzed the policies of 16 SHARP employers over a 12-year period from 1999-2010. In a pre-post analysis, the study showed an average decrease of 52 percent in number of claims, 80 percent in average claim cost and 87 percent in average lost time per claim (as cited by OSHA White Paper, 2012).⁷ It is clear these programs foster the right kinds of safety programming that deliver tangible, measurable results.

The National Safety Council established the Campbell Award in 2004 and it is supported by a network of 22 Global Partners across five continents. The international Robert W. Campbell Award recognizes organizations that achieve

excellence through the integration of environmental, health and safety management in business operations. Using a rigorous, evidence-based review process, the Campbell Award identifies and shares critical knowledge that enables current and future business leaders to enhance and sustain organizational vitality by embracing the intrinsic value of EHS.

At a high level, Campbell Award-winning organizations:

- Demonstrate that EHS excellence hinges upon the ability of individuals at all levels of the organization to contribute to building and sustaining an organizational culture that places EHS on par with business performance.
- Successfully utilize a systems-based approach to EHS management by adopting and adapting existing industry standards and international guidelines to ensure that EHS is seamlessly integrated across all business functions, structures and geographies including consideration of contractors.
- Rely on a combination of leading and lagging indicators to promote and monitor continuous improvement activities of EHS management systems.
- Keep EHS firmly aligned with other organizational objectives, strategies and values regardless of the complexities and uncertainties of running a successful business.
- Extend their efforts to promote the health and safety of their employees off-site as well as investing resources in the surrounding communities and environment.

In essence, these companies epitomize the four pillars of safety excellence and have the safety performance metrics and outcomes to prove these practices work. For more detailed analysis of these companies' leading EHS management system practices, see "Defining World Class EHS."

Similarly, established in 2000, the **Green Cross for Safety medal** is presented annually by the National Safety Council to an organization and its CEO that have distinguished themselves through outstanding safety leadership.

These are just a sample of the types of recognition programs and honors available to those companies who invest in safety and health and include it among the top business imperatives. The benefits are not only in the reduction of workplace injuries, but such recognition makes these businesses ideal places to work, reducing the cost of attracting—and retaining—the best workforce.

CONCLUSION: WHY SAFETY?

The facts, statistics and examples presented in this white paper provide an overwhelming amount of evidence that support the business sense for embracing and deploying a structured safety program. However, whether you're a high-level executive at a publicly-traded company, or a business owner focused on the bottom line, you must draw a straight line between safety and business metrics in your own mind and in the mind of your stakeholders.

Safety, Stock Prices and Returns

Take, for example, a recent study of the impact of safety programs on stock prices. The study concluded that between November of 2004 and October of 2007, investors could have increased their returns by at least four percentage points above market benchmarks had they used workplace health and safety measures cited in "Board/Executive Oversight" or "Work Health & Safety Management Systems" to screen out underperforming stocks.³ The assumption one can make is that good attention to workplace health and safety equals good investment returns. But the more obvious point to make is that increasingly, financial analysts and investors are using published HSE results, social responsibility mission statements and sustainability reports to inform investment decisions.

Asset managers, pension trustees and stock exchanges are increasingly scrutinizing environmental, social and governance (ESG) performance. In fact, in April 2006, the UN Global Compact and the UN Environment Program Finance Initiative helped to launch "Principles for Responsible Investment" which encourages investors to incorporate ESG issues into their investment strategies.

And, of course, lest we forget, the media is vigilant in reporting injuries or fatalities which can have devastating consequences on business performance as a result of the ensuing negative publicity. The financial media also reports on how any such news or safety issues can impact corporate performance. The stock market implications, investigations, prosecutions, regulatory penalties and civil suits can make for a potential PR nightmare for any organization that doesn't make safety a high priority.⁴⁸

The bottom line

We hope that the wealth of information here presents a solid business case for investing in your organization's safety and health management systems. As with most good investments, the benefits in the long-term—and many times even in the short-term—can outweigh the initial costs.

From a less calculated and more human perspective, investing in the safety and health of your greatest assets – your people– is perhaps the strongest case any business leader can make.

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