COMPASSPRO

THE FINANCIAL BENEFITS OF INVESTING IN SAFETY

How Safeguard Equipment's® COMPASS Pro™ can alleviate the financial burdens of work related injuries and fatalities.

The Cost of Safety Versus the Cost of Injury: Assessing the Benefits of the COMPASS Pro™ Emergency Response Solution

It is without question that workplace injuries are a problem that employers are interested in avoiding. Unfortunately, for some types of businesses, the incidence of a workplace injury, or even death, are not so much a question of whether, but a question of when.

Many hard physical jobs, including roofing, oil rig work, firefighting, construction, utility line maintenance and repair, steel and iron work, mining, and trucking, inherently carry a high risk of physical injury. This is borne out by the fact that several of these occupations are consistently at the top of the list when it comes to assessing annual workplace injuries. These injuries occur despite the existence of numerous safety regulations and the use of safety-rated equipment. There are just too many variables in the tasks involved and too much unpredictability in the work environments to eliminate risk. There is always some risk of injury in many other types of jobs, from working in a kitchen to driving a taxi. But for inherently dangerous physical jobs, safety is not just a critical component, but a primary component of how they conduct their operations.

In these occupations, all of which are vital to a diversified and modern economy, complete safety is not achievable. Nonetheless, important strides have been made over the years in addressing the most pressing safety issues. In all of these industries, advances have been made in creating equipment or machinery that is safer to operate, in developing industry- and job-specific personal protective equipment, by implementing evolving best practices, by increasing and enhancing training regimens, and so on. While all of these efforts continue to improve, as time progresses, many of the improvements

are now made at the margins, making incremental inroads into reducing both the number and the seriousness of injuries that occur.

This paper will discuss some of the broader considerations in evaluating the efficacy of worker safety measures, and specifically how companies should approach whether and which safety measures they should adopt. Additionally, it will address why, in light of these considerations, Safeguard Equipment believes that its newest product, the COMPASS Pro emergency response solution, offers a practical and valuable solution to companies whose workers perform a specific type of inherently dangerous job: those who work with and around energized lines.

The Cost-Benefit Analysis Approach to Workplace Injury

One cannot gainsay that a human life is of incalculable value, and it may seem somewhat callous to engage in cost-benefit analysis when it comes to safety measures for workers. At the same time, cost-benefit analysis is the only really useful tool that a company can use in assessing how it will go about conducting its business, while at the same time taking adequate measures to reduce the risk of injury to its workforce. As noted above, many of the trades that carry inherent risk are vital trades, without which modern life with all of its conveniences would not be possible. These jobs are necessary to a functioning economy.

Consequently, determining the extent to which a company can invest in safety measures depends on being able to adopt any particular risk-reduction measure while still maintaining competitiveness in the marketplace and business viability.

To illustrate, one can consider two extremes. One is to invest as much money as possible toward the goal of eliminating all risk of injury or death.

Realistically, this is not an achievable goal in many cases; there is simply no way to effectively and successfully carry out the task of firefighting, for example, in such a way that injuries will not occur. Moreover, investing an unlimited amount of funds on safety is not sustainable: there is a limit to how much a fire department can spend. At the other extreme, a fire department that invests no amount of money in safety measures is also not sustainable; no reasonable person would engage in it.

Consequently, for businesses for which risk of injury is inherent, the real question is how it can reasonably limit risk by investing in appropriate measures that still make the business model sustainable. This is not to say that these companies believe that there is a certain number of injuries that they are willing to accept as a cost of doing business. It only means that, when it comes to safety measures, a company can only do what it reasonably can, and there is often no way to perform the job functions that these companies perform in a way that eliminates human risk.

In the end, the cost-benefit approach is what businesses have to use in assessing the value of any new safety measure. The benefit side of the equation is pretty clear; the difficult part of the analysis is calculating cost.

The Cost of Workplace Injuries

There are numerous resources that discuss the cost of workplace injuries, and they all acknowledge several things. The first is that there are different types of costs: direct financial impacts, indirect financial impacts, and social costs. The second is that calculating these costs is not a straightforward exercise. Different types of businesses vary widely in terms of the associated risks and how the costs of a worker injury will impact that business.

Furthermore, injuries themselves vary widely in type as well as the extent of costs they incur. A third point is that, while it is possible to estimate some of the costs that would not have been incurred had an injury not occurred, the long terms costs of of serious workplace injury are extremely difficult to calculate with any degree of accuracy, not only for the worker involved, but for the company, the industry, and the economy overall.

Despite these difficulties, it is nevertheless useful to at least break down the types of costs that are relevant to the cost-benefit analysis. The difficulty is not an impediment to recognizing their existence and acknowledging their very real impact.

Macro-economically, reliable sources, including OSHA and the National Safety Council, can only provide broad estimates when it comes to calculating the costs of workplace injury in any given year. Depending upon which parameters they use, however, even the most conservative estimates place preventable worker injury costs at anywhere from $164 billion to over $700 billion per year in the United States. Even at the low end, this translates into a cost of injury, collectively, of $1,100 per every worker nationwide, over $1.3 million per workplace injury that results in death, and roughly $44,000 per injured worker.

But the significant discrepancy between these numbers tells a more nuanced story. The variation in these numbers may seem like they are somewhat arbitrary, but there is a very valid reason for this wide variation, when you consider which elements are used – and which may be ignored – when making these calculations. This paper discusses these costs solely from the perspective of the businesses, and not from the perspective of workers. While the latter perspective is worthy of attention, this paper focuses on the responsibility of businesses to invest in worker safety, and how financial considerations can and do support that obligation.

Direct Costs

Some analyses differ in where to draw the line between direct and indirect costs. But here, direct costs can be defined as those costs that directly address the injury itself. These are the easiest costs to calculate.

Direct costs include line-item costs such as the cost of a worker's compensation insurance claim and the medical bills that end up being covered, including any costs for rehabilitation or therapy. If the incident involves equipment such as a vehicle or machine, direct costs also include any costs associated with their repair or replacement, and time lost getting the equipment back on line.

Indirect Costs

Indirect costs are just one step away from direct costs, and most are also quantifiable. However, whether a given company incurs each of these types of indirect costs will depend on the nature of the injury and nature of the business.

It is estimated that the average workplace injury, if it requires a medical response, incurs roughly four dollars of indirect costs for every dollar of direct costs. However, this is merely an average. For some jobs and some injuries, the ratio may be as low as two dollars of indirect costs for every dollar of direct costs. For highly specialized work and a serious injury, the ratio may be as high as 17 dollars of indirect costs for every dollar of direct costs. As noted above, while some of these indirect costs are quantifiable, it would take a significant investment of time and effort to calculate them in any particular case. However, when you consider what can be accounted for as an indirect cost, it is easy to see how they can dwarf direct costs fairly quickly.

For a company, the most obvious indirect cost will be the cost of lost productivity from the injured worker. While it is theoretically possible to replace that productivity by substituting another worker, many workers are simply not fungible: the company will have to expend sums hiring and training a new worker, and, in the meantime, may have to replace lost productivity through overtime or temporary work from others. If a work injury is not completely debilitating, the company will have to make adjustments to accommodate the injured worker, such as shifting to light duties. In some cases, if an injury causes a disability, that shift will be long-term or even permanent.

Co-workers who are not injured also create indirect costs for the company. There is the immediate impact of lost productivity and wages paid while co-workers respond to the injury event. Indirect costs will also include time spent on investigating the incident, and the amount of productive time lost and wages paid for personnel writing up incident reports and completing other administrative paperwork related to the injury.

Basically, the cost of any time spent and wages paid on matters related to addressing the injury event, and not spent on producing work related to a business's core purpose, is a sunk indirect cost of the injury. Additional costs can include legal fees, costs associated with having to interact with relevant government regulatory bodies, and any fines for safety or other workplace violations.

Other indirect costs might include rate increases for workers compensation insurance and, in cases involving non-company personnel or property, costs of liability.

Social Costs

Social costs are the most difficult to measure, but they are not illusory. On the contrary; in some cases, social costs may be the most obvious, even if they are the hardest to quantify.

Focusing on the corporate side of the issue, in the worst case scenarios, when a co-worker dies or suffers a serious injury from an on-the-job incident, the event can impact the overall productivity and success of a company.

If the injury was preventable, and particularly if any incident was caused by errors or accident involving other workers, workplace injuries can generate bad feelings between employees, and also between management and employees. Once that rift arises, it is very difficult to overcome. But regardless of the situation, in virtually any serious workplace injury, the event casts a dark shadow over the company, resulting in low employee morale and decreased motivation, which has a direct impact on employee productivity and retention.

Social costs can also involve impacts to a company's reputation. For example, serious industry-related injuries can garner significant publicity, either generally or in trade publications. Contrary to the oft-repeated maxim that any publicity is good publicity, publicity surrounding a worker injury or death is inherently negative. It can have a direct impact on consumer perception, and the negative association can linger for years, regardless of the factual details. When consumers lose confidence in a product or service, a company will generally see a decrease in market share. But even for companies with a guaranteed market – for example, a utility company – a negative impression will cost the company in terms of its reputation, and consequently in being able to attract and retain good workers.

Taking into account all of these costs – direct, indirect, and social – a simple formula can be used to illustrate the cost side of a cost-benefit analysis for worker safety. Taking even a very conservative approach, if you have a relatively low-level injury and a direct/indirect cost ratio of one to three, an injury that incurs $10,000 of direct costs will cause an additional $30,000 of indirect costs: $10,000 direct + $30,000 indirect = $40,000 costs.

Assuming that same company has a profit margin of 10% and employs 100 workers, that single incident means that a company will have to make an additional $400,000 in revenue to cover the cost of that one incident: $40,000 of direct and indirect costs = 10% of $400,000. For 100 employees, that further equates to $4,000 of "additional productivity" that existing employees must absorb to cover the costs of one relatively minor injury.

If you further assume that there is a social cost, even for this minor injury, of damage to the morale of the workforce and damage to the company's reputation, it is easy to see how difficult it may be to generate the additional $400,000 of revenue to cover the costs of this one injury.

COMPASS Pro™ : A Rational Solution to Enhance Worker Safety

As a manufacturer, Safeguard Equipment is well aware of the limitations businesses must operate under when trying to assess the value of safety equipment for its workers. While worker safety is critical, it also has to be financially justifiable: the cost of adopting of any particular article of safety equipment must yield a commensurate benefit in terms of reducing the likelihood of an injury occurring, the overall number of injuries sustained by its workers, the severity of injuries sustained, or a combination of these factors.

Safeguard Equipment's products focus on the sorts of injuries for which the costs are generally extremely high: injury from exposure to and contact with energized lines. These types of injuries are usually serious. Shock and arc flash injuries can result in burns, loss of vision or hearing, and internal tissue damage, including heart and nerve damage. In some cases, the result may be death. Many of the jobs in this field – particularly for line workers, and telecom workers – also expose workers to significant fall risks, since overhead power and transmission lines are usually 18 to 35 feet off the ground. According to the Bureau of Labor Statistics, falls account for over 29% of work-related injuries that lead to time lost at work.

Given the seriousness of these risks, utility companies, telecom companies, arborists, and other businesses whose personnel work around and with energized lines and at elevations generally take safety very seriously. They invest significantly in safety equipment, training, and PPE.

At Safeguard Equipment, we have worked diligently in this arena. In 2016, Safeguard Equipment developed its first Personal Voltage and Current Detector, or PVCD. This device provides enhanced protection for line workers and others who are exposed to energized lines in the course of their job responsibilities. Safeguard Equipment's COMPASS was the first of its kind, providing a hands-free, hard-hat mounted non-contact voltage and current detection device,
giving workers audible and visual alerts when they come within proximity of electrical or magnetic fields, and providing directional signals indicating the location of the source.

Since the release of its first product, Safeguard Equipment has continued to innovate in this field, carefully assessing the particular injury risks associated with this type of work. Its latest product is the COMPASS Pro. The product is not just a PVCD unit, but a hardware detection device fully integrated

with the Safeguard Equipment app interface that supplies a complete emergency response solution.

The hardware component of the COMPASS Pro provides the same voltage and current detection as previous COMPASS devices, but has now added arc flash, fall, head impact, and fall detection, as well. When the device is paired with a smartphone through the Safeguard Equipment app (App), the App will automatically initiate an emergency protocol when any of the injury detection features are triggered. Once the device detects an adverse event, the app will begin an audible 60-second countdown timer. This gives the user a short window in which to cancel the alert in the case of a false alarm. After 60 seconds, the app will immediately notify the company's internal response team of the time and nature of the event, and identify who is involved and where the event happened. This connectivity is dependent on the phone being within a cell-phone service area.

The App opens a direct channel of communication between the user and the response team, without the home office having to rely on check-ins – or, more pointedly, failures to check in – to know the safety status of a worker. Once the alert goes out, the App will also activate location sharing on the user's

cell-phone. This enables nearby workers and any emergency responders to locate a downed worker as quickly and accurately as possible.

In addition, the user may initiate an immediate SOS alert at any time by holding down the SOS button on the hardware device for 5 seconds, or by touching a screen prompt on the phone App, regardless of whether the device has detected an injury event. This means workers can instantaneously signal a need for help for any medical emergency, such as in the case of a vehicle accident or cardiac event.

Medical statistics clearly demonstrate that survival from many traumatic injuries or events frequently depends upon reducing the interval between the onset of the injury and the time medical assistance is rendered. The Safeguard Equipment app materially increases the speed with which emergency medical help can be summoned and on-site.

For added utility, the COMPASS Pro emergency response solution has several features that make the App practical and user-oriented. In addition to the emergency response features, the Safeguard Equipment app enables the user to activate different features on the hardware device, such as providing a visual graph that gauges the strength of a detected electrical or magnetic field, activating and deactivating Smart Adaptive Mode, and setting the device for different voltage detection ranges. Overall, the Safeguard Equipment app makes controlling the hardware device more user-friendly and intuitive.

With both preventative as well as responsive safety features in one integrated product, the COMPASS Pro emergency response solution can yield significant safety benefits for companies whose workforces operate near energized lines, including utility companies, telecom companies, and contractors.

Testimony from existing clients have already confirmed that use of Safeguard Equipment's COMPASS G2 has saved lives. The new COMPASS Pro emergency response solution, in conjunction with other safety practices, training, and PPE, can minimize the risks of workers sustaining serious electrical injuries. With injury detection utility as well as enhancing the connectedness of workers in the field and with the home office, the COMPASS Pro emergency response solution can significantly reduce the likelihood that injured workers will suffer exacerbated harm as a result of delayed emergency medical aid.

Safeguard Equipment believes that incorporating the COMPASS Pro emergency response solution into standard PPE will make workers safer, and provide companies with significant savings related to the direct, indirect, and social costs of worker injuries.